Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Amita Vakil
Class : FY
Subject : Soft Skills

Semester: I

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	FY	15	14	Introduction to Soft Skills Personality Development Emotional Intelligence	Soft Skills: An Introduction - Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. Personality Development: Knowing Yourself, Positive Thinking, Johari's Window, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Ethical Values: Ethics and Society: Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics
Aug	FY	15	13	Basic Skills in Communication	Components of effective communication Communication Skills Job Interviews Group Discussion:
S ep	FY	15	15	Academic and Professional Skills	Professional Presentation Creativity at Workplace:
Oct	FY	15		Relational data model Relational Algebra Functions	omains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural joins, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - inner join, outer join (left outer, right outer, full outer) Subqueries - subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries 1
Nov	FY	15		Exam & Paper evaluation	

Signature Of Teacher

Signature
Head Of Department

Coordinator
Computer Science Department
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Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Amita Vaid Semester: III

Class : SY Subject :Operating System,Web Tech

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15+15	22	Introduction to Operating-Systems Operating-System Structures Processes Threads Process Synchronization	Definition of Operating System, Operating System's role, Operating-System Operations, Functions of Operating System, Competing Environments Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure .
				HTML5 CSS	Fundamental Elements of HTML, Formatting Text in HTML, Organizing Text in HTML, Links and URLs in HTML, Tables in HTML, Images on a Web Page, Image Formats, Image Maps, Colors, Pitfalls in HTML, Interactive Elements, Working with Multimedia : Audio and Video File Formats, HTML elements for inserting Audio / Video on a web page CSS: Understanding the Syntax of CSS, CSS Selectors, Inserting CSS in an HTML Document, CSS properties to work with background of a Page, CSS properties to work with Fonts and Text Styles, CSS properties for positioning an element
Aug	SY	15+15	26	Process Synchronization Scheduling: Deadlocks:	General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock
				Doubly Linked list Trees Priority Queues & Heaps Graph	ADT of doubly linked list, Advantages & Disadvantages, Insertion and deletion of nodes at various positions Trees: ADT for Tree Structure, Advantages & disadvantages, Binary TreeProperties, Implementation and Traversals, Binary Search Tree, Balanced BST,Threaded Binary Trees, AVL Trees, Applications of Tree like Huffman Coding, Priority Queues & Heaps: Priority Queue, Priority Queue ADT,
Sep	SY	15+15	18	Main Memory Virtual Memory Mass-Storage Structure File-System Interface	Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Overview, Disk Structure, Disk Scheduling, Disk Management
				AJAX PHP Introduction to jQuery	AJAX: AJAX Web Application Model, How AJAX Works, XMLHttpRequest Object - Properties and Methods, handling asynchronous requests using AJAX PHP: Variables and Operators, Program Flow, Arrays, working with Files and Directories, working with Databases, Working with Cookies, Sessions and Headers Introduction to jQuery: Fundamentals, Selectors, methods to access HTML attributes, methods for traversing, manipulate
oct	SY	15+15	15	File-System Implementation	File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management
Non Exam & paper Assessment					

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Department of Computer Science

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Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Amita Vakil
Class : FY
Subject : Database System

Semester: II

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
Jan	FY	15	15	Entity Relationship Model ER to Table DDL Statements DML Statements	Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints - primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables
Feb	FY	15	10	Relational data model Relational Algebra Functions	Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural joins, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - inner join, outer join (left outer, right outer, full outer) Subqueries - subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries 1
March	FY	15	14	Schema refinement and Normal forms: Functional dependencies, first,	Database Protection: Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control, Backing Up and Restoring databases Views (creating, altering dropping, renaming and manipulating views) DCL Statements (creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges), Transaction control commands - Commit, Rollback Index Structures of Files: Introduction, Primary Index, Clustering Index, Multilevel Indexes 1

Signature Of Teacher

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Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Prathita Sawant

Semester: VI

Class : TY

Subject :Data Science

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
Jan	TY	15	15	Introduction to Data Science Data Management	What is Data? Different kinds of data. 15L Introduction to high level programming language + Integrated Development Environment (IDE). Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, Data Managment: Data Collection, Data cleaning/extraction, Data analysis & Modeling
Feb	TY	15	10	Data Curation	Query languages and Operations to specify and transform data. Structured/schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data. Unstructured systems in the acquisition and structuring of data. Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)
March	TY	15	05	Statistical Modelling and Machine Learning	Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO Data transformations: Dimension reduction, Feature extraction, Smoothing and aggregating Supervised Learning: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, separating hyperplanes, k-NN Unsupervised Learning: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods
March &b April	SY		Practical Exam, Theory exam , Paper Assessment and Result		

Signature Of Teacher

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Coordinator
Department of Computer Science

Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Anita Vaid | Semester: V

Class : | Subject :Web Service

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Web services basicsation Practical 1-3	What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platforms
Aug	SY	15	13 9	The REST Architectural style Practical from 3-6	Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services
Sep	SY	15	9 9	Developing Service-Oriented Applications with WCF	What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details, Web Service QoS
Oct & Nov Exam & Paper Assessment					

Signature Of Teacher

Coordinator

Computer Science Department
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Department of C Computer Science
Arts, Science & Commerce
Jogeshwari (East), Mumbai - 400 060.

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Jogeshwari (East), Mumbai – 400060

Teaching Plan

Subject: Design & Analysis of Algorithms USCS201 Class :F Y C S

Sem: II 2022-23

Faculty Name: Dr Ashwin I Mehta

Month	Topics to be covered	Assigned Lecture	Lectures Undertaken
January	**Introduction to algorithms** - What is algorithm, analysis of algorithm, Types of complexity, Running time analysis, How to Compare Algorithms, Rate of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Performance characteristics of algorithms, Estimating running time / number of steps of executions on paper, Idea of Computability.	12	
February	**Introduction to Data Structures** - What is data structure, types, Introduction to Array(1-d & 2-d), Stack and List data structures, operations on these data structures, advantages disadvantages and applications of these data structures like solving linear equations, Polynomial Representation, Infix-to-Postfix conversion	15	
March	**Recursion** - What is recursion, Recursion vs Iteration, recursion applications like Factorial of a number, Fibonacci series & their comparative analysis with respect to iterative version, Tower of Hanoi problem.		
	Basic Sorting Techniques - Bubble, Selection and Insertion Sort & their comparative analysis **Searching Techniques** - Linear Search and its types, Binary Search and their comparative analysis **Selection Techniques** - Selection by Sorting, Partition-based Selection Algorithm, Finding the Kth Smallest Elements in Sorted Order & their comparative analysis		

	String Algorithms - Pattern matching in strings, Brute Force Method & their comparative analysis		
April	**Algorithm Design Techniques** - Introduction to various types of classifications/design criteria and design techniques **Greedy Technique** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - file merging problem **Divide-n-Conquer** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - merge sort, Strassen's Matrix Multiplication **Dynamic Programming** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - Fibonacci series, Factorial of a number, Longest Common subsequence **Backtracking Programming** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like N-Queen Problem		

Signature
Faculty member

Signature
Coordinator
Head of the Department
Computer Science Department Coordinator
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Government of Maharashtra

ISMAIL YUSUF COLLEGE OF ARTS, SCIENCE & COMMERCE

Jogeshwari (East), Mumbai – 400060

Teaching Plan

Subject: Design & Analysis of Algorithms USCS201 Class :F Y C S

Sem: II 2022-23

Faculty Name: Dr Ashwin I Mehta

Month	Topics to be covered	Assigned Lecture	Lectures Undertaken
January	**Introduction to algorithms** - What is algorithm, analysis of algorithm, Types of complexity, Running time analysis, How to Compare Algorithms, Rate of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Performance characteristics of algorithms, Estimating running time / number of steps of executions on paper, Idea of Computability.	12	
February	**Introduction to Data Structures** - What is data structure, types, Introduction to Array(1-d & 2-d), Stack and List data structures, operations on these data structures, advantages disadvantages and applications of these data structures like solving linear equations, Polynomial Representation, Infix-to-Postfix conversion	15	
March	**Recursion** - What is recursion, Recursion vs Iteration, recursion applications like Factorial of a number, Fibonacci series & their comparative analysis, with respect to iterative version, Tower of Hanoi problem. **Basic Sorting Techniques** - Bubble, Selection and Insertion Sort & their comparative analysis **Searching Techniques** - Linear Search and its types, Binary Search and their comparative analysis **Selection Techniques** - Selection by Sorting, Partition-based Selection Algorithm, Finding the Kth Smallest Elements in Sorted Order & their comparative analysis **String Algorithms** - Pattern matching in strings, Brute Force Method & their comparative analysis		

April	**Algorithm Design Techniques** - Introduction to various types of classifications/design criteria and design techniques **Greedy Technique** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - file merging problem **Divide-n-Conquer** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - merge sort, Strassen's Matrix Multiplication **Dynamic Programming** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - Fibonacci series, Factorial of a number, Longest Common subsequence **Backtracking Programming** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like N-Queen Problem		

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Signature
Faculty member

Signature
Head of the Department/Coordinator

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Charul Singh
Class : FY

Semester: I,II.
Subject : DSA,E-Comm.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
July	FY	15	Fundamentals of Digital Logic	07	Fundamentals of Digital Logic: Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. Combinational Circuits: Adders, Mux, De-Mux, Sequential
Aug	FY	15	Circuits	08	Circuits: Flip Flops (SR, JK & D), Counters: synchronous and asynchronous Counter Computer System: Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input / Output: I/O Module, Programmed I/O, Interrupt Driven I/O, Direct Memory Access
Sep	FY	15	Memory System Organization	08	Memory System Organization: Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels Processor Organization: Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU], Processor Organization, Structure and Function. Register 15 Page 8 of 49 Organization, Basic Microprocessor operations: Data Transfer (Register / Memory) Operations, Arithmetic & Logical Operations, Instruction Cycle, Instruction Pipelining. Introduction to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors: Design Issues
Oct	FY	15	Control Unit		Control Unit: Micro-Operations, Functional Requirements, Processor Control, Hardwired Implementation, Micro-programmed Control. Fundamentals of Advanced Computer Architecture: Parallel Architecture: Classification of Parallel Systems, Flynn's Taxonomy, Array Processors, Clusters, and NUMA Computers. Multiprocessor Systems: Structure & Interconnection Networks, Multi-Core Computers: Introduction, Organization and Performance.
Jan	FY	15	Introduction to E-Commerce and E- Business.		Introduction to E-Commerce and E- Business: Definition and competing in the digital economy, Impact of E-Commerce on Business Models, FactorsDriving e-commerce and e-Business Models, Economics and social impact of e-Business, opportunities and Challenges, e-Commerce vs m Commerce, Different e-Commerce Models (B2B, B2C, C2B, C2C, B2E), e-Commerce Applications: e-Trading, e-Learning, e-Shopping, Virtual Reality & Consumer

					Experience, Legal and Ethical issues in e-Commerce. Overview ... Payment systems: Types of Electronic payment schemes (Credit ... cards, Smartcards, Internet banking), E checks, E-Cash Concept ... applications of EDI and Limitation Introduction & origin of Digital Ma... Traditional v/s Digital Marketing. Digital Marketing Strategy, The P-C... Framework, Segmenting & Customizing Messages, The Digital landscape... Digital Advertising Market in India. Skills required in Digital Marketing. Digital Marketing Plan.
Feb	FY	15	Social Media Marketing,Content Marketing		Social Media Marketing: Meaning, Purpose, types of social media websites, Social Media Engagement, Target audience, Facebook Marketing: Business through Facebook Marketing, Creating Advertising Campaigns, 15 Page 48 of 49 Adverts, Facebook Marketing Tools, LinkedIn Marketing: Importance of LinkedIn Marketing, Framing LinkedIn Strategy, Lead Generation through LinkedIn, Content Strategy, Analytics and Targeting, Twitter Marketing: Framing content strategy, Twitter Advertising Campaigns, YouTube Marketing: Video optimization, Promoting on YouTube, Monetization, YouTube Analytics Email Marketing: Types of Emails, Mailing List, Email Marketing tools, Email Deliverability & Email Marketing automation Mobile Marketing: Introd...n, Mobile Usage, Mobile Advertising, Mobile Marketing Types, Mobile Marketing Features, Mobile Campaign Development, Mobile Advertising Analytics Content Marketing: Introduction, Content marketing statistics, Types of Content, Types of Blog posts, Content Creation, Content optimization, Content Management & Distribution, Content Marketing Strategy, Content creation tools and apps, Challenges of Content Marketing.
March	FY	15	Search Engine Optimization,marketing, Buying Models.		Search Engine Optimization: Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization Search Engine Marketing: Introduction to SEM, Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing, Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). Web Analytics: Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. Google Analytics: Basics of Google Analytics, Installing Goo... Analytics in website, Parameters of Google Analytics, Reporting and Analysis

Name Of the Te...

Class : S...

Signature Of Teacher

Coordinator

Signature
Coordinator

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Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Charul Singh

Semester: III,IV

Class : SY

Subject : DS,GT,TOC,CN.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
Jun	SY	15	Abstract Data Type:	5	Abstract Data Type: Different Data Types, different types of data structures & their classifications. Introduction to ADT, Creating user-specific ADT Linked Structures: ADT for linked list, Advantages & Disadvantages, Singly Linked List-Traversing, Searching, Prepending and Removing Nodes, applications of linked list like polynomial equation Stacks: Stack ADT for Stack, Advantages & Disadvantages, Applications of stack like balanced delimiter, prefix to postfix notation Queues: Queue ADT, Advantages & Disadvantages, linked representations. Circular Queue operations. Dequeues, applications of queue like job scheduling queues
July	SY	15	Doubly Linked list:	10	Doubly Linked list: ADT of doubly linked list, Advantages & Disadvantages, Insertion and deletion of nodes at various positions Trees: ADT for Tree Structure. Advantages & disadvantages, Binary Tree-Properties, Implementation and Traversals, Binary Search Tree, Balanced BST, Threaded Binary Trees. AVL Trees, Applications of Tree like Huffman Coding. Priority Queues & Heaps: Priority Queue, Priority Queue ADT, Advantages and Disadvantages, Applications, Heaps, types of heaps, Heapifying the element,
Aug	SY	15	Graph	15	Graph: Introduction, Graph ADT, Advantages and Disadvantages, Graph Representation using adjacency matrix and adjacency list, Graph operations like insertion and deletion of nodes, Graph Traversals using BFS & DFS, Applications of Graphs like shortest path algorithms, Hashing: Hash Table ADT, Advantages & Disadvantages, Concept of hashing, hash table, hash functions, collision, collision avoidance techniques, Applications of hashing
Jun	SY	15	Green IT Fundamentals	05	Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future.
July	SY		Green IT Strategies	10	Green IT Strategies: Green strategic alignment, Green IT Drivers-Cost, Regulatory and Legal, Sociocultural and Political, Business ecosystem, New market opportunities, Green IT Business Dimensions, KPIs in Green Strategies Environmentally Responsible Business: Developing ERBS, Policies, Practices, and Metrics, Mobility and Environment, Green It Metrics and Measurements, Green IT Readiness and CMM, Context Sensitivity and Automation in Green IT Measures Green Assets: Introduction, Green Assets, Green IT Hardware, Green Data Centers and ICT Equipment, Server and Data Strategy.
Aug	SY	15	Green Assets and emerging Trends	15	Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling, Cloud Computing and Data Centers, Networking and CommunicationsInfrastructure, End-User Devices, Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM, Green Mobile Business Process. Digital Library Green Enterprise Architecture. Green IT and organizational Systems. Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture. Green Supply Chain Management, Green Portals in Green Enterprise Architecture, Environmental Intelligence.
Sep	SY	15	Green Information Systems(GIS)	15	Green Information Systems(GIS): Design and Development Models: Describing GIS, GIS Requirements Sociocultural Aspects of Green IT: Green IT's Social Impact, Learning Organization, Green Social Stakeholders, Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT.

					Green IT Ethics and Code of Conduct, Privacy and Security of Green Information... Communications in Green Transformation Projects, Green HR and Changing Organ... Green-Collar Workers: Roles and Skill Sets, Green Virtual Communities Green Comp... Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various ... stakeholders, Green Audits and types. Audit and use of Carbon emission management soft... Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technol... Cloud Computing, Nanotechnology, Quantum computing. Renewable energies, eco-design, C... environmental intelligence
	SY	15	Automata Theory	07	Defining Automaton, Finite Automaton, Transitions and Its properties, Acceptability by Finit... Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moo... Machines
	SY		Automata Theory 1) Formal Languages	08	Minimizing Automata, Mealy and Moore Machines. Minimizing Automata. Defining Grammar, Derivations, Languages generated by Grammar, Chomsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on Languages, Languages and Automata.Regular Grammar, Regular Expressions, Finite automata and Regular Expressions.
	SY	15	1) Regular Sets and Regular Grammar	6	Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar.Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG.
	SY	15	1)Context Free Languages 2) Pushdown Automata 3) Linear Bound Automata 4) Turing Machines	7	Definitions, Acceptance by PDA, PDA and CFG.The Linear Bound Automata Model, Linear Bound Automata and Languages. Turing Machine Definition, Representations, Acceptability by Turing Machines. Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine,
	SY		Undecidability		The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems.
DEC	SY	15	Introduction	8	Introduction: Networking standards and Administrations, networks, network types – LAN, MAN, WAN. Network Models: The OSI model, TCP/IP protocol suite, Introduction to Physical layer: Data and signals, periodic analog signals, digital signals, transmission impairment, data rate limits, performance. Digital transmissions: Digital-to-digital conversion, analog-to-digital conversion, transmission modes Analog transmissions: digital-to-analog conversion, analog-to-analog conversion. Bandwidth Utilization – Multiplexing and Spectrum spreading: Multiplexing, Spread Spectrum Transmission media: Guided Media, Unguided Media Switching: Introduction, Circuit Switched Network, Packet Switching.
Jan	SY	15	Data Link Layer	7	Introduction to Data Link Layer: Link layer addressing, Data Link Layer Design Issues. Error detection and correction: -Block coding, cyclic codes, checksum, forward error correction, error correcting codes, error detecting codes. Data Link Control: DLC services, data link layer protocols, HDLC, Point-to-point protocol. Media Access Control: Random access, controlled access, channelization,Wired LANs – Ethernet: EthernetProtocol, standard Ethernet, fastEthernet, gigabit Ethernet, 10 gigabit EthernetWired Network: Telephone Network, Cable Network, SONET, ATMWireless LANs: Introduction, IEEE 802.11 project, Bluetooth, WiMAX, Cellular telephony, Satellite networks.Introduction to Network Layer: Network layer services, packet switching, network layer performance, IPv4 addressing, forwarding of IP packets,Network Layer Protocols : Internet Protocol, ICMPv4, Mobile IP
Feb	SY	15	Graphics, Animations, and Integrating Media in Android 2) Interacting With Camera. 3) Gathering Location Data: 1) Managing Background Tasks. 2) Deploying Android applications on Google Play	15	Unicast Routing: Introduction, routing algorithms, unicast routing protocols. Next generation IP: IPv6 addressing. IPv6 protocol, ICMPv6 protocol, transition from IPv4 to IPv6. Introduction to the Transport Layer: Transport Layer Protocol, User Datagram Protocol, Transmission Control Protocol, SCTP. Introduction to Application Layer: Client Server Programming, Iterative Programming. Standard Client-Server Protocols: WWW, HTTP, FTP, Electronic Mail, TELNET, Secure Cell, DNS, SNMP Quality of Service: Data Flow to improve QoS, Flow control to improve QoS, Integrated service (Intserv), Differentiated Service(Diffserv).

Signature Of Teacher

Signature

Coordinator

Computer Science Department
Siddharth College of Arts, Science & Commerce,
Jogeshwari (East), Mumbai - 400 060

Department of Computer Science A.Y. 2023-24
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: V&VI**

Class : TY **Subject : INS,EH.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	TY	15	Introduction	05	Introduction: Security Trends, The OSI Security Architecture, Security Attacks, Security Services,
July	TY		Cryptography and RSA.	10	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round 15 Page 10 of 63 details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm
Aug	TY	15	Key Management	15	Key Management: Public-Key Cryptosystems, Key Management, Diffie Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC Digital Signatures and Authentication: Digital Signatures, Authentication Protocols, Digital Signature Standard Authentication Applications: Kerberos, X.509 Authentication, Public-Key Infrastructure
Sep	TY	15	Electronic Mail Security	15	Electronic Mail Security: Pretty Good Privacy, S/MIME IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction Intrusion: Intruders, Intrusion Techniques, Intrusion Detection Malicious Software: Viruses and Related Threats, Virus Countermeasures, DDOS Firewalls: Firewall Design Principles, Types of Firewalls

Jan	TY	15	Introduction, Scanning and Enumeration.	15	Introduction: Terminology, Hacking Technology Types, Eth... Phases, Hacktivism, Hacker Classes, Skills Required for an ... Hacker, Vulnerability Research, Ways to Conduct Ethical Ha... Footprinting: Definition, Information Gathering Methodolog... Competitive Intelligence, DNS Enumeration, Whois and ARIN Loo... Types of DNS Records, Traceroute in Footprinting, E-Mail Trackin... Social Engineering: Common Types Of Attacks Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scannin... CEH Scanning Methodology, Ping Sweep Techniques, Nmap Comma... Switches, SYN, Stealth, XMAS, NULL, 15 Page 48 of 63 IDLE, FIN... Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration
Feb	TY	15	System Hacking,Hacking Web Servers.	15	System Hacking: Password-Cracking Techniques, Types of Password... Keyloggers and Other Spyware Technologies, Escalating Privileges, Rootkits Sniffers: Protocols Susceptible to Sniffing, Active and Passiv... Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniq... Sniffing Countermeasures Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures Session Hijacking: Spoofing vs Hijacking, Types, Sequence Prediction, Steps, Prevention Hacking Wel... Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening
March	TY	15	Web Application Vulnerabilities,Penetration Testing Methodologies.	15	Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures Web-Based Password Cracking Techniques: Authentication Types, Password Cracker... Countermeasures SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques Wireless Hacking: WEP, WPA Authentication Mechanisms, and Cracking Techniques, Wireless Sni...rs, Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables

Signature Of Teacher

Signature
Coordinator

Computer Science Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal **Semester: V,VI**
Class : TY
Subject : Artificial intelligent , Information retrieval

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	TY	15	1	Introduction to AI and Intelligent Agents What Is AI	Foundations, History and State of the Art of AI
July	TY		14 9	1) Intelligent Agents 2) Problem Solving by searching 3) Practical from 1 to 2 4)Knowledge Representation	1) Agents and Environments, Nature of Environments, Structure of Agents. 2) Problem-Solving Agents, Uninformed Search Strategies, Informed (Heuristic) Search Strategies 3) Knowledge Representation and different forms,
Aug	TY	15	8	Reasoning, and Machine Learning 1)Knowledge Representation and Reasoning	1)Reasoning, Planning, Uncertainty in Knowledge Fuzzy Logic & Fuzzification
Sep			12	2) Practical from 3 to 5	
oct	TY	15	7 8 9	Machine Learning Probabilistic Models, Unsupervised Learning, and Reinforcement Learning	Forms of Learning, Parametric & Non-Parametric Models, Classification, Regression, Regularization, Decision Trees, SVM, Artificial Neural Networks, Ensemble Learning, Boosting, K-NN, Gradient Descent UNIT 2 Statistical Learning, Learning with Complete Data, Naive Bayes Classifier, Learning with Hidden Variables: The EM Algorithm

			2) Practical from 6 to 8	
Nov	TY	15 3	1)Unsupervised Learning 2)Reinforcement learning 3)Practical 9 and 10	1)Concept of Unsupervised learning,, Association Rule Mining 2)Concept of Reinforcement learning, Q-Learning, Hidden Markov Model
Dec	TY		Revision for Lect and Practical	
Jan	TY	15 2	1) Introduction to Information Retrieval (IR) systems 2) Document Indexing, Storage, and Compression	Definition and goals of information retrieval, Components of an IR system, Challenges and applications of IR 1)Inverted index construction and compression techniques, Document representation and term weighting, Storage and retrieval of indexed documents,
Feb	TY	15 9	1)Retrieval Models Spelling 2) Correction in IR Systems 3) Performance Evaluation 4) Practical from 1 to 4	2) Boolean model: Boolean operators, query processing, Vector space model: TF-IDF, cosine similarity, query-document matching, Probabilistic model: Bayesian retrieval, relevance feedback 3)Challenges of spelling errors in queries and documents, Edit distance and string similarity measures, Techniques for 15 Page 42 of 63 spelling correction in IR systems 4)Evaluation metrics: precision, recall, F-measure, average precision, Test collections and relevance judgments, Experimental design and significance testing
March	TY	15 15	1)Text Categorization and Filtering 2)Text Clustering	1)Text classification algorithms: Naive Bayes, Support Vector Machines, Feature selection and dimensionality reduction, Applications of text categorization and filtering 2) Clustering techniques: Kmeans, hierarchical clustering,

		9	for Information Retrieval 3)Web Information Retrieval 4)Learning to Rank 5)Link Analysis and its Role in IR Systems 6)Crawling and Near-Duplicate Page Detection 1) Practical from 5 to 7	Evaluation of clustering results, Clustering for query expansion and result grouping 3)Web search architecture and challenges, Crawling and indexing web pages, Link analysis and PageRank algorithm 4)Algorithms and Techniques, Supervised learning for ranking: RankSVM, RankBoost, Pairwise and listwise learning to rank approaches Evaluation metrics for learning to rank 5)Web graph representation and link analysis algorithms, HITS and PageRank algorithms, Applications of link analysis in IR systems 6)Web page crawling techniques: breadth-first, depth-first, focused crawling, Near-duplicate page detection algorithms, Handling dynamic web content during crawling
April TY	15	15 12	1)Advanced Topics in IR 2)Cross-Lingual and Multilingual Retrieval 3) User-based evaluation 4) Practical from 8 to 10	1) 2)Text Summarization: extractive and abstractive methods, Question Answering: approaches for finding precise answers, Recommender Systems: collaborative filtering, content-based filtering 3) Challenges and techniques for cross-lingual retrieval, Machine translation for IR, Multilingual document representations and query translation, Evaluation Techniques for IR Systems 4)user studies, surveys, Test collections and benchmarking, Online evaluation methods: A/B testing, interleaving experiments
TY			Revision, Practical Exam, Theory exam , Paper Assessment and Result	

Signature Of Teacher

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Head Of Department

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Computer Science Department
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Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal Semester: III,IV
Class : SY
Subject : Advanced Database Program, Advanced Application Development

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	SY	15	1	Overview of PL/SQL	What is PL/SQL, Advantages of PL/SQL, Features of PL/SQL, Architecture of PL/SQL etc.
July	SY	15	14 9	1) Fundamentals of PL/SQL 2) Control Statements 3) Sequences 4) Stored Procedures and Functions 5)Triggers 5) Practical from 1 to 4	1)Character Sets, Lexical Units, Declarations, References to Identifiers, Scope and Visibility of Identifiers, Assigning Values to Variables, Expressions, Error-Reporting Functions, Data Types 2) Conditional Selection Statements, LOOP Statements, Sequential Control Statements, GOTO, and NULL Statements. 3) creating sequences, referencing, altering, and dropping a sequence. 4) Procedures: Types and benefits of stored procedures, creating stored procedures, executing stored procedures, altering stored procedures, viewing stored procedures. Functions: Calling function and recursion function. 5)Overview of Triggers, implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting, and modifying triggers, and enforcing data integrity through triggers.
Aug	SY	15	15	1)Packages 2)Transaction Management 3)Crash Recovery	1)Overview of a Package. Need of Packages, Package Specification, Package Body, Package Instantiation and Initialization 2)ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem, Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol 3)ARIES algorithm. The log-based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases
Sep	SY	15	15 9	1)Collections and Records 2)Error Handling 3)Cursors 4)Static and Dynamic SQL 1) Practical from 9 to 12	1)Associative Arrays, Varrays (Variable-Size Arrays), Nested Tables, Collection Constructors, Assigning Values to Collection Variables, Multidimensional Collections, Collection Comparisons, Collection Methods, Collection Types Defined in Package Specifications, Record Variables, Assigning Values to Record Variables 2)Compile-Time Warnings, Overview of Exception Handling, Internally Defined Exceptions, Predefined Exceptions, UserDefined Exceptions, Redeclared Predefined Exceptions, Raising Exceptions Explicitly, Exception Propagation, Unhandled Exceptions 3) Overview of Cursor, Types of cursors, Invalid cursor Exception.

					4) Description of Static SQL, Cursors Overview, Processing Query Result Sets, C... Variables, CURSOR Expressions, Transaction Processing and Control, Autonomou... Transactions. Native Dynamic SQL, DBMS_SQL Package, SQL Injection.
Oct	SY				
Nov	SY	15	8	Node.js	Introduction to Node.js. Installing Node.js. The package.json File. The Node.js Event Loop. The I/O Cycle. The Anatomy of a Node.js Module.
Dec	SY	15 15	7 5 6	1) Node.js 2) MongoDB 3) Server-Side Development with Express 4) Practical from 1 to 2	Creating Node Modules. Exploring the Node.js HTTP Module. Creating an HTTP Webserver with Node.js. Responding to HTTP Requests. Routing in Node.js. Creating a Sample Node.js Application Introduction to MongoDB. Installing MongoDB. Using MongoDB Compass. Using Mongo Shell Interface. Connecting to MongoDB. Creating Schemas and Models. Querying Documents Using find(). Inserting Documents Using create(). Updating Documents Using findOneAndUpdate(). Deleting Documents Using findOneAndDelete & deleteMany() Introduction to the Express Framework. Installing and Testing Express. Creating a Node.js Express App. Restructuring an Express App. Creating Templates. Using Express Middleware Functions. Creating the List Page. Creating the Details Page. Creating the Edit Page. Creating the Add Page. Deleting Data. REST API Basics
Jan	SY	15	2 9	1) Server-Side Development with Express 2) Practical from 3 to 7	Testing REST APIs. Refactoring APIs.
Feb	SY	15 15 15	8 2 3 9	1) Internal Exam 2) Understanding Angular.JS(A) 3) Understanding Flutter 4) Dart Programming 5) Practical from 8 to 11	Getting Started with Angular. Creating an Angular Application. Angular Project File Structure. Anatomy of an Angular Component. One-way Data Binding. Two-way Data Binding. Using NgIf Directive. Using NgForOf Directive. Angular Modules. Creating NgModules Using Angular Router. Configuring Templates. Creating Navigations. Working with Template-driven Forms. Working with Reactive Forms. Validating Form Data. Services Dependency Injection (DI). Reading Data from Database. Inserting Data into Database. Updating Data in the Database. Delete Data from Database. Importance of Flutter, Flutter Framework, Android Studio, Flutter SDK, Installing and Configuring Flutter SDK main() function, Dart Variables, Dart Data Types, Dart Conditional Operators, Control Flow & Loops. Dart Functions - Functions, Function Structure, creating a Function, Function Returning Expression. Object-Oriented Programming (OOP) - Creating a Class, Adding Methods to Classes, Class — Getters and Setters, Class Inheritance, Abstract Class.

Marc h	SY	15	5 5 3	1)Flutter Widgets Fundamentals 2)Navigation and Routing 3) Practical from 12 4)Practical Exam	Scaffold Widget, Image Widget, Container Widget, Column and Row Widgets, Icon Widget, Layouts in Flutter, Card Widget, Hot Reload and Hot Restart, Stateful and Stateless Widgets Button Widget, App Structure and Navigation, Navigate to a New Screen and Back, Navigate with Named Routes, Send and Return Data among Screens, Animate a Widget across Screens, WebView Widget in Flutter
April	SY			Theory exam , Paper Assessment and Result	

Signature Of Teacher

Coordinator
Computer Science Department
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Arts, Science
Jogeshwari (East),

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal Semester: I,II
Class : FY
Subject : Programming with Python-I, Advanced Python Programming

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	FY				
July	FY	15	7	1)Overview of Python 2)Data Types, Variables and Other Basic Elements	History & Versions, Features of Python, Execution of a Python Program, Flavours of Python, Innards of Python, Python Interpreter, Memory Management in Python, Garbage Collection in Python, Comparison of Python with C and Java, Installing Python, Writing and Executing First Python Program, Getting Help, IDLE Comments, Docstrings, Data types- Numeric Data type, Compound Data Type, Boolean Data type, Dictionary, Sets, Mapping, Basic Elements of Python, Variables
Aug	FY		4 4 9 9	1) Input and Output Operations 2) Control Statements 3) Practical from 1 to 4 4) Operators 5) Practical from 5 to 7	Input Function, Output Statements, The print() function, The print("string") function, The print(variables list) function, , The print(object) function, The print(formatted string) function, Command Line Arguments The if statement, The if ... else Statement, The 'if ... elif ... else' Statement, Loop Statement- while loop, for loop, Infinite loop, Nested loop, The else suite, break statement, continue statement, pass statement, assert statement, return statement **Arithmetic operators, Assignment operators, Unary minus operator, Relational operators, Logical operators, Bitwise operators, Membership operators, Identity operators, Precedence of Operators, Associativity of Operators**
Sep	FY	15	15 9	1)Arrays 2)Functions 3)Modules 4)Practical from 5 to 8	1)Creating Arrays, Indexing and Slicing of Arrays, Basic Array Operations, Arrays Processing, Mathematical Operations on Array, Aliasing Arrays, Slicing and Indexing in NumPy Arrays, Basic slicing, Advanced Indexing, Dimensions of Arrays, Attributes of an Array, The ndim Attribute, The shape Attribute, The size Attribute, The itemsize Attribute 2): Function definition and call, Returning Results, Returning Multiple Values from a Function, Built-in Functions, Difference between a Function and a Method, Pass Value by Object Reference, Parameters and Arguments, Formal and Actual Arguments, Positional Arguments, Keyword Arguments, Default Arguments, Arbitrary

					Arguments, Recursive Functions, Anonymous or Lambda Functions, Using Lambda with the filter() Function, Using Lambda with the map() Function, Using Lambda with the reduce() Function 3)Introduction to Modules in Python
Oct	FY	15	15 9	1)Strings 2)List and Tuples 3)Dictionaries 4)Practical from 8 to 10	Creating Strings, Functions of Strings, Working with Strings, Length of a String, Indexing and Slicing, Repeating and Concatenating Strings, Checking Membership, Comparing Strings, Removing Spaces, Finding Substrings, Counting Substrings, Immutability, Splitting and Joining Strings, Changing Case, Checking Starting and Ending of a String, Sorting Strings, Searching in the Strings, Testing Methods, Formatting Strings, Finding the Number of Characters and Words, Inserting Substrings into a String 2) Lists, List Functions and Methods, List Operations, List Slices, Nested Lists, Tuples, Functions in Tuple 3) Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries, Operations on Dictionaries, Converting Lists into Dictionary, Converting Strings into Dictionary, Passing Dictionaries to Functions, Sorting the Elements of a Dictionary using Lambda, Ordered Dictionaries
Nov	FY			Practical Exam	
Dec	FY	15	4	Working with files	Files, opening and closing a file, working with text files containing strings, knowing whether a file exists or not, working with binary files, the 'with' statement, the seek() and tell() methods, random accessing of binary files, zipping and unzipping files, working with directories, running other programs from python program
Jan	FY		11 9	1)Regular expressions 2)Threads in python 3)Date and time in python 4)Practical from 1 to 4	1)What is a regular expression?, sequence characters in regular expressions, quantifiers in regular expressions, special characters in regular expressions, using regular expression on files, retrieving information from an html file, 2)Difference between process and thread, types of threads, benefits of threads, creating threads, single tasking and multitasking, thread synchronization, deadlock in threads, daemon threads 3) Date and time now, combining date and time, 15 Page 32 of 49 formatting dates and times, finding durations using "time delta", comparing two dates, sorting dates, stopping execution temporarily, knowing the time taken by a program, calendar module
Feb	FY	15	15 9	1)Database in python 2)Exceptions in python 3)Networking 4)Graphical user interface 5) OOPs in python 6)Practical from 5 to 7	1)Using SQL with python, retrieving rows from a table, inserting rows into a table, deleting rows from a table, updating rows in a table, creating database tables through python, Exception handling in databases. 2)Errors in a python program, compile & run-time errors, logical error, exceptions-exception handling, types of exceptions, the except block, the assert statement, user-defined exceptions, logging the exceptions 3)Protocols,server-client architecture, tcp/ip and udp communication

					4)Creating a GUI in python, Widget classes, Working with Fonts and Colours, working with Frames, Layout manager, Event handling 5)Features of Object Oriented Programming system (oops)-classes and objects, encapsulation, abstraction, inheritance, polymorphism, constructors and destructors
March	FY	15	15 9	1)Classes and objects 2)Inheritance and polymorphism 3)Abstract classes and interfaces 4) Practical from 8 to 10	2)Creating a class, the self-variable, types of variables, namespaces, types of methods, instance methods, class methods, static methods, passing members of one class to another class, inner classes 3)Inheritance in python, types of inheritance-single inheritance, multilevel inheritance, hierarchical inheritance, multiple inheritance, constructors in inheritance, overriding super class constructors and methods, the super() method, method resolution order (mro), polymorphism, duck typing, operator overloading, method overloading, method overriding, 4)Abstract class, abstract method, interfaces in python, abstract classes vs. Interfaces
April	FY			Practical Exam, Theory exam , Paper Assessment and Result	

Signature Of Teacher

Coordinator
Computer Science Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Sir [illegible] Commerce,
Jogeshwari (East), Mumbai - 400 060.

Signature
Head Of Department

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Sybal Dias Semester: V,VI

Class : TY

Subject : Linux Administration system,Cloud computing

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	**Introduction Single-Host Administration Networking and Security** Practical 1-3	Technical Summary of Linux Distributions, Managing Software Managing Users and Groups, Booting and shutting down processes. File Systems, Core System Services, Process of configuring, compiling, Linux Kernel TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security
Aug	FY	15	13 9	**Internet Services** **Practical 4-6**	Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMPT), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network authentication system (Kerberos), Domain Name Service (DNS), Security
Sep	FY	15	9 9	**Internet Services** **Practical 7-8**	Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS
Oct	FY	15	9		Lightweight Directory Access Protocol (LDAP), Dynamic Host configuration Protocol (DHCP), MySQL, LAMP Applications, File Services, Email Services, Chat applications, Virtual Private Networking.
Nov	FY			**Practical Exam**	
Dec				**Exams**	
Jan		15	15 9	**Cloud Computing Basics** **Web Services –** **Virtulization:-** Practical 1-2.	Distributed Computing, Parallel Computing, WSDL structure, SOAP- Structure of SOAP Message (In JAX-WS), SOAP Messaging Architecture, SOAP Header, Client-side SOAP Handler, REST What is REST? HTTP methods, Java API for RESTful Web Services (JAXRS) Characteristics of Virtualized Environments.. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management toolforvirtualization environment

Feb		15	15 9	**Introduction to Cloud Computing: Cloud Computing Software Security fundamentals Practical 3-4**	Definition, Types of Clouds, Deployment of software solutions and web applications, Types of Cloud Platforms, Essential characteristics – On demand self-service, Broad network access, Location independent resource pooling ,Rapid elasticity , Measured service, Comparing cloud providers with traditional IT service providers Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices, Approaches to Cloud Software Requirement Engineering, Cloud Security Policy Implementation.
March		15	15 9	**Cloud Applications CloudSim: AWS: Practical 6-8**	Introduction to Simulator, understanding CloudSim simulator, CloudSim Architecture(User code, CloudSim, GridSim, SimJava) Understanding Working platform for CloudSim, **OpenStack:** Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat Architecting on AWS, Building complex solutions with Amazon Virtual Private Cloud (Amazon VPC).
April			**Practical Exam, Theory exam , Paper Assessment and Result**		

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Sybal Dias
Class : FY
Subject : Linux Operating System ,Introduction to OOPs using C++

Semester: I,II

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	1)Linux operating system and Basics 2)Basic Bash shell commands 3)Practical from 1 to 3	History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files. More file attributes
Aug	FY	15	13 9	1)Advanced Bash shell commands 2)The Linux environment variable 3)Understanding Linux file permission 4)Linux Security 5)Practical from 4 to 6	Simple Filters, Filters using regular expressions. Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliase Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files. Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh.
Sep	FY	15	9 9	1)Networking 2)Working withEditors 3)Basic script building 4) Practical from 6 to 9	TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS awk, sed and Introduction to vi.Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting Input and Output, Pipes performing math, Exiting the script.
Oct	FY	15	9	1) Using structured commands 2)Script and Process control	Working with if-then, if-then-else and nested if statements, test command, Compound condition testing, while command, until command, case command. Handling signals, Running scripts in background mode, Running scripts without a console, Job control, Job scheduling commands: ps, nice, renice, at, batch, cron table, Running the script at boot
Nov	FY			Practical Exam	
Dec				1)Introduction to Programming Concepts	Object oriented programming paradigm, basic concepts of object oriented programming, benefits of object oriented programming, object oriented languages, applications of object oriented programming.
Jan		15	15 9	1) Data Types, Data Input Output and Operators 2)Unified Modeling Language (UML)	Tokens-keywords, identifiers, constants-integer, real, character and string constants, backslash constants, features of C++ and its basic structure, simple C++ program without class, compiling and running C++ program.

				3)Arrays and Strings 4)Classes, Abstraction & Encapsulation 5)Practical from 1 to 6	Basic data types, variables, rules for naming variables, programming constants, the type cast operator, implicit and explicit type casting, cout and cin statements, operators, precedence of operators. Decision Making, Loops, Conditional statements-if, if...else, switch loops- while, do...while, for, types of arrays and string and string manipulations Introduction to UML & class diagrams. Classes and objects, Dot Operator, data members, member functions, passing data to functions, scope and visibility of variables in function.
Feb		15	15 9	1)Constructors and Destructors 2)Working with objects 3)Modeling Relationships in Class Diagrams 4)Practical from 6 to 10	Constructors and Destructors: Default constructor, parameterized constructor, copy constructor, private constructor, destructors. Accessor - mutator methods, static data and static function, access specifiers, array of objects. Polymorphism - Binding-static binding & overloading, constructor overloading function overloading, operator overloading, overloading unary and binary operators. Association, Aggregation-Composition and examples covering these principles
March		15	15 9	1)Inheritance 2)Modelling 3)Relationships 4)Pointers 5)File Handling 6)Applying OOP to solve real life applications 7)Practical from 10 to14	Defining base class and its derived class, access specifiers, types of inheritance-single, multiple, hierarchical, multilevel, hybrid inheritance, friend function and friend class, constructors in derived classes. Generalization-Specialization and examples covering these principles Run time Polymorphism - Dynamic Binding, Function overriding, virtual function, pure virtual function, virtual base class, abstract class. Introduction to pointers, * and & operators, assigning addresses to pointer variables, accessing values using pointers, pointers to objects & this pointer, pointers to derived classes File Stream classes, opening and closing file-file opening modes, text file handling, binary file handling. Applying OOP to solve real life applications: To cover case studies like library management, order management etc. to design classes covering all relationships
April			Practical Exam, Theory exam , Paper Assessment and Result		

Signature Of Teacher

Signature

Head Of Department

Coordinator
Computer Science Department
Government of Maharashtra's
Ismail Yusuf College of
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Jogeshwari (East), Mumbai - 6

Department of Computer Science A.Y. 2022-23
Semester wise Plan

Name Of the Teacher: Sybal Dias **Semester:** III,IV

Class : SY **Subject :** Java,Android.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	Introduction,Java Tokens. OOPS.	5	Introduction: History, Features of Java, Java Development Kit, Java Application Programming Interface, Java Virtual Machine Java Program Structure, Java Tokens. OOPS: Introduction, Class, Object, Static Keywords, Constructors, this keyword, Inheritance.
July	SY		Access specifiers Exception Handling.	10	Inner class, Anonymous Inner class, super keyword, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces Packages: Introduction to predefined packages, User Defined Packages, Access specifiers Exception Handling: Introduction, Pre-Defined Exceptions, try-catch finally, throws, throw, User Defined Exceptions Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, wait() notify() notify all() methods
Aug	SY	15	Collection Framework	15	Collection Framework: Introduction, java.util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its classes. 15 Page 18 of 51 Introduction to JFC and Swing- Features of the Java Foundation Classes, Swing API Components, JComponent Class, Windows, Dialog Boxes, and Panels, Labels, Buttons, Check Boxes, Menus, Toolbars, Implementing Action interface, Pane, JScrollPane, Desktop pane, Scrollbars, Lists and Combo Boxes, Text-Entry Components, Colors and File Choosers, Tables and Trees, Printing with 2D API and Java Print Service API. Event Handling: Delegation Event Model, Events, Event classes, Event listener interfaces, Using delegation event model, adapter classes. JDBC: Introduction, JDBC Architecture, JDBC Drivers, JDBC Connectivity Model, java.sql package, Using Statement, PreparedStatement, CallableStatement, ResultSet, Scrollable and Updatable ResultSet, Navigating and manipulating data, ResultSetMetaData, Managing Transactions in JDBC, JDBC Exception classes, BLOB & CLOB
Sep	SY	15	Servlets	15	Servlets: Introduction, Servlet Life Cycle, Types of Servlet, Servlet Configuration with Deployment Descriptor, Working with ServletContext and ServletConfig Object, Attributes in Servelt., Response and Redirection using Request Dispacher and using sendRedirect Method, Filter API, Manipulating Responses using Filter API, Session Tracking: using Cookies, HTTPSession, Hidden Form Fields and URL Rewriting,Types of Servlet Event: ContextLevel and SessionLevel. Java Server Pages (JSP): Introduction to JSP , Comparison with Servlet, JSP Architecture, JSP Life Cycle, JSP Scripting Elements, JSP Directives, JSP Action, JSP Implicit Objects, JSP Expression Language, JSP Standard Tag Libraries, JSP Custom Tag, JSP Session Management, JSP Exception Handling, JSP CRUD Applications JSON: Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java
DEC	SY	15	1) Introduction to Kotlin Advanced Concepts in Kotlin 2) App Development with Android Studio:	8	Collections in Kotlin, Mutable and Immutable Collections, Ranges, type Checks, casting concept, this expression, Null safety, exception handling, annotations. Android Architecture, Android Application Framework, Android Virtual Device, Creating and running First Android Application, working with Physical Android Device, Adding Kotlin Files in Android Studio.
Jan	SY	15	) Basics Of Android 2) Designing Android	7	Application Components: Activities, Intent, and Broadcast Receiver, Services, Fragment, Activity Life Cycle, Content Provider, Widgets, and Notifications.

			3) UIHandle Images, ListviewAnd Menu 4) Data binding in Android 5) Implementing Data Persistence		User Interface (UI), Layout and Its Types, Layout Attribute, working with Views, Android UI Controls, Styles and Themes, Event Handler, setting up themes in Manifest and from the application, dialog in activity, using intents, fragments.ImageView, ImageSwitcher, ListView, Menu, and its types,Designing menu in XML, Option menu, Context menu, popup menu, Screen Navigation, RecyclerView, Interaction of Views.AdapterView, Spinner, Gallery view, AutotextCompleteView, screen orientation, Design The View Dynamically. Data Storage-Shared Preference, Internal And External Storage Storing Data Using SQLite Databases, Content Provider, Firebase Real-Time Data.
Feb	SY	15	1) Graphics, Animations, and Integrating Media in Android. 2) Interacting With Camera. 3) Gathering Location Data: 1) Managing Background Tasks. 2) Deploying Android applications on Google Play	15	Drawable Class, Animation in Android, MediaPlayer API and in Android, Mediaplayer and AudioManger Class. Android Camera, Input gestures-multiple touch, swipe, drag, scroll, zoom, Recording. Broadcast Receivers, Services, Threads and Process, AsyncTask, JobScheduler, Manage device Awake State. Publishing/Deploy the application, Versioning, signing Application.
March	SY	15	Search Engine Optimization,marketing, Buying Models.	15	Search Engine Optimization: Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization Search Engine Marketing: Introduction to SEM, Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing, Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). Web Analytics: Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. Google Analytics: Basics of Google Analytics, Installing Google Analytics in website, Parameters of Google Analytics, Reporting and Analysis

Signature Of Teacher

Signature
Head Of Department

Coordinator
Computer Science Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Sybal Dias Semester: I,II
Class : FY
Subject : Linux Operating System ,Introduction to OOPs using C++

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	1)Linux operating system and Basics 2)Basic Bash shell commands 3)Practical from 1 to 3	History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files, More file attributes
Aug	FY	15	13 9	1)Advanced Bash shell commands 2)The Linux environment variable 3)Understanding Linux file permission 4)Linux Security 5)Practical from 4 to 6	Simple Filters, Filters using regular expressions, Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliase Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files, Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh.
Sep	FY	15	9 9	1)Networking 2)Working withEditors 3)Basic script building 4) Practical from 6 to 9	TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS awk, sed and Introduction to vi.Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting Input and Output, Pipes performing math, Exiting the script.
Oct	FY	15	9	1) Using structured commands 2)Script and Process control	Working with if-then, if-then-else and nested if statements, test command, Compound condition testing, while command, until command, case command. Handling signals, Running scripts in background mode, Running scripts without a console, Job control, Job scheduling commands: ps, nice, renice, at, batch, cron table, Running the script at boot
Nov	FY			Practical Exam	
Dec				1)Introduction to Programming Concepts	Object oriented programming paradigm, basic concepts of object oriented programming, benefits of object oriented programming, object oriented languages, applications of object oriented programming.
Jan		15	15 9	1) Data Types, Data Input Output and Operators 2)Unified Modeling Language (UML) 3)Arrays and Strings 4)Classes, Abstraction & Encapsulation 5)Practical from 1 to 6	Tokens-keywords, identifiers, constants-integer, real, character and string constants, backslash constants, features of C++ and its basic structure, simple C++ program without class, compiling and running C++ program. Basic data types, variables, rules for naming variables, programming constants, the type cast operator, implicit and explicit type casting, cout and cin statements, operators, precedence of operators.

					Decision Making, Loops, Conditional statements-if, if... else, switch loops- while, do...,while, for, types of arrays and string and string manipulations Introduction to UML & class diagrams. Classes and objects, Dot Operator, data members, member functions, passing data to functions, scope and visibility of variables in function.
Feb		15	15 9	1)Constructors and Destructors 2)Working with objects 3)Modeling Relationships in Class Diagrams 4)Practical from 6 to 10	Constructors and Destructors: Default constructor, parameterized constructor, copy constructor, private constructor, destructors. Accessor - mutator methods, static data and static function, access specifiers, array of objects. Polymorphism - Binding-static binding & overloading, constructor overloading function overloading, operator overloading, overloading unary and binary operators. Association, Aggregation-Composition and examples covering these principles
March		15	15 9	1)Inheritance 2)Modelling 3)Relationships 4)Pointers 5)File Handling 6)Applying OOP to solve real life applications 7)Practical from 10 to14	Defining base class and its derived class, access specifiers, types of inheritance-single, multiple, hierarchical, multilevel, hybrid inheritance, friend function and friend class, constructors in derived classes. Generalization-Specialization and examples covering these principles Run time Polymorphism - Dynamic Binding, Function overriding, virtual function, pure virtual function, virtual base class, abstract class. Introduction to pointers, * and & operators, assigning addresses to pointer variables, accessing values using pointers, pointers to objects & this pointer, pointers to derived classes File Stream classes, opening and closing file-file opening modes, text file handling, binary file handling. Applying OOP to solve real life applications: To cover case studies like library management, order management etc. to design classes covering all relationships
April			Practical Exam, Theory exam , Paper Assessment and Result		

Department of Computer Science A.Y. 2021-22

Semester wise Plan

Name Of the Teacher: Sybal Dias **Semester: III,IV**

Class : SY **Subject : Core java ,Advanced java**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	The Java Language OOPS	5	Features of Java, Java programming format, Java Tokens, Java Statements, Java Data Types, Typecasting, Arrays Introduction, Class, Object, Static Keywords, Constructors, this Key Word, Inheritance, super Key Word, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces String,
July	SY		String Manipulations .	10	String Buffer, String Tokenizer Packages: Introduction to predefined packages (java.lang, java.util, java.io, java.sql, java.swing), User Defined Packages, Access specifiers.
Aug	SY	15	Exception Handling: I/O Streams:	15	Introduction, Pre-Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods ResultSet, Navigating and manipulating data, ResultSetMetaData, Managing Transactions in JDBC, JDBC Exception classes, BLOB & CLOB Introduction, Byte-oriented streams, Character- oriented streams, File, Random access File, Serialization Networking: Introduction, Socket, Server socket, Client –Server Communication
Sep	SY	15	Wrapper Classes AWT	15	: Introduction, Byte, Short, Integer, Long, Float, Double, Character, Boolean classes Collection Framework: Introduction, util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its Inner Classes: Introduction, Member inner class, Static inner class, Local inner class, Anonymous inner class AWT: Introduction, Components, Event-Delegation-Model, Listeners, Layouts, Individual components Label, Button, CheckBox, Radio Button, Choice, List, Menu, Text Field, Text Area
DEC	SY	15	Swing Swing components	8	Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Jlabel, JTextField and JPasswordField, JTextAres, JButton, JCheckBox, JRadioButton, JComboBox and JList JDBC: Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updations, CallableStatement, BLOB & CLOB
Jan	SY	15	Servlets: Session Tracking Mechanisms JSP:	7	Servlets: Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms JSP: Introduction, JSP LifeCycle, JSP Implicit Objects & Scopes, JSP Directives, JSP Scripting Elements, JSP Actions: Standard actions and customized actions.

Feb	SY	15	Java Beans:	15	Introduction, JavaBeans Properties, Examples Struts 2: Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results & Result Types, Value
March	SY	15	Stack/OGNL JSON:	15	Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java.

Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Sybal Dias
Class : TY
Subject : Linux Administration system, Cloud computing

Semester: V,VI

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	**Introduction** **Single-Host Administration** **Networking and Security** **Practical 1-3**	Technical Summary of Linux Distributions. Managing Software Managing Users and Groups. Booting and shutting down processes. File Systems. Core System Services, Process of configuring, compiling, Linux Kernel TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security
Aug	FY	15	13 9	**Internet Services** **Practical 4-6**	Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMPT), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network authentication system (Kerberos), Domain Name Service (DNS), Security
Sep	FY	15	9 9	**Internet Services** **Practical 7-8**	Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS
Oct	FY	15	9		Lightweight Directory Access Protocol (LDAP), Dynamic Host configuration Protocol (DHCP), MySQL, LAMP Applications, File Services, Email Services, Chat applications, Virtual Private Networking.
Nov	FY			**Practical Exam**	
Dec				**Exams**	
Jan		15	15 9	**Cloud Computing Basics** **Web Services –** **Virtulization:-** Practical 1-2.	Distributed Computing, Parallel Computing, WSDL structure, SOAP- Structure of SOAP Message (In JAX-WS), SOAP Messaging Architecture, SOAP Header, Client-side SOAP Handler, REST What is REST? HTTP methods, Java API for RESTful Web Services (JAXRS) Characteristics of Virtualized Environments. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management toolforvirtualization environment

Feb		15	15 9	**Introduction to Cloud Computing:** **Cloud Computing Software Security fundamentals** **Practical 3-4**	Definition, Types of Clouds, Deployment of software solutions and web applications, Types of Cloud Platforms, Essential characteristics – On demand self-service, Broad network access, Location independent resource pooling ,Rapid elasticity , Measured service, Comparing cloud providers with traditional IT service providers Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices, Approaches to Cloud Software Requirement Engineering, Cloud Security Policy Implementation.
March		15	15 9	**Cloud Applications** **CloudSim:** **AWS:** **Practical 6-8**	Introduction to Simulator, understanding CloudSim simulator, CloudSim Architecture(User code, CloudSim, GridSim, SimJava) Understanding Working platform for CloudSim, **OpenStack:** Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat Architecting on AWS, Building complex solutions with Amazon Virtual Private Cloud (Amazon VPC).
April			**Practical Exam, Theory exam , Paper Assessment and Result**		

Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: I,II.**
Class : FY **Subject : DSA,E-Comm.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
July	FY	15	Fundamentals of Digital Logic	07	Fundamentals of Digital Logic: Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. Combinational Circuits: Adders, Mux, De-Mux, Sequential
Aug	FY	15	Circuits	08	Circuits: Flip Flops (SR, JK & D), Counters: synchronous and asynchronous Counter Computer System: Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures, Bus Interconnections, Input / Output: I/O Module, Programmed I/O, Interrupt Driven I/O, Direct Memory Access
S	FY	15	Memory System Organization	08	Memory System Organization: Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels Processor Organization: Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU], Processor Organization, Structure and Function. Register 15 Page 8 of 49 Organization, Basic Microprocessor operations. Data Transfer (Register / Memory) Operations, Arithmetic & Logical Operations, Instruction Cycle, Instruction Pipelining. Introduction to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors: Design Issues
Oct	FY	15	Control Unit		Control Unit: Micro-Operations, Functional Requirements, Processor Control, Hardwired Implementation, Micro-programmed Control. Fundamentals of Advanced Computer Architecture: Parallel Architecture: Classification of Parallel Systems, Flynn's Taxonomy, Array Processors, Clusters, and NUMA Computers. Multiprocessor Systems: Structure & Interconnection Networks, Multi-Core Computers: Introduction, Organization and Performance
Jan	FY	15	Introduction to E-Commerce and E- Business.		Introduction to E-Commerce and E- Business: Definition and competing in the digital economy, Impact of E-Commerce on Business Models, FactorsDriving e-commerce and e-Business Models, Economics and social impact of e-Business, opportunities and Challenges, e-Commerce Vs m Commerce, Different e-Commerce Models (B2B, B2C, C2B, C2C, B2E), e-Commerce Applications: e-Trading, e-Learning, e-Shopping, Virtual Reality & Consumer

					Experience, Legal and Ethical issues in e-Commerce. Overview of Electronic Payment systems: Types of Electronic payment schemes (Credit cards, Debit cards, Smartcards, Internet banking), E checks, E-Cash Concepts and applications of EDI and Limitation Introduction & origin of Digital Marketing. Traditional v/s Digital Marketing. Digital Marketing Strategy. The P-O-E-M Framework, Segmenting & Customizing Messages, The Digital landscape. Digital Advertising Market in India. Skills required in Digital Marketing. Digital Marketing Plan.
Feb	FY	15	Social Media Marketing,Content Marketing		Social Media Marketing: Meaning, Purpose, types of social media websites. Social Media Engagement, Target audience, Facebook Marketing. Business through Facebook Marketing, Creating Advertising Campaigns, 15 Page 48 of 49 Adverts, Facebook Marketing Tools, LinkedIn Marketing. Importance of LinkedIn Marketing, Framing LinkedIn Strategy, Lead Generation through LinkedIn, Content Strategy. Analytics and Targeting. Twitter Marketing. Framing content strategy, Twitter Advertising Campaigns. YouTube Marketing. Video optimization, Promoting on YouTube, Monetization, YouTube Analytics Email Marketing: Types of Emails, Mailing List, Email Marketing tools, I Deliverability & Email Marketing automation Mobile Marketing. Introduction. Mobile Usage, Mobile Advertising, Mobile Marketing Types, Mobile Marketing Features, Mobile Campaign Development, Mobile Advertising Analytics Content Marketing: Introduction, Content marketing statistics, Types of Content, Types of Blog posts, Content Creation, Content optimization, Content Management & Distribution, Content Marketing Strategy, Content creation tools and apps, Challenges of Content Marketing.
March	FY	15	Search Engine Optimization,marketing, Buying Models.		Search Engine Optimization: Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization Search Engine Marketing: Introduction to SEM, Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing. Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). Web Analytics: Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. Google Analytics: Basics of Google Analytics, Installing Goog... Analytics in website, Parameters of Google Analytics, Reporting and Analysis

Signature Of Teacher

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Head Of Department

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: III,IV**

Class : SY **Subject : IOT,TOC,CN,Android.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	SoC and Raspberry Pi	5	System on Chip: What is System on chip? Structure of System on Chip. SoC products: FPGA, GPU, APU, Compute Units. ARM 8 Architecture: SoC on ARM 8. ARM 8 Architecture Introduction Introduction to Raspberry Pi: Introduction to Raspberry Pi, Raspberry Pi Hardware, Preparing your raspberry Pi. Raspberry Pi Boot: Learn how this small SoC boots without BIOS. Configuring boot sequences and hardware.
July	SY		Programming Raspberry Pi	10	Raspberry Pi and Linux: About Raspbian, Linux Commands, Configuring Raspberry Pi with Linux Commands Programing interfaces: Introduction to Node.js, Python.
Aug	SY	15	Raspberry Pi Interfaces	15	Raspberry Pi Interfaces: UART, GPIO, I2C, SPI Useful Implementations: Cross Compilation, Pulse Width Modulation, SPI for Camera.
Sep	SY	15	IoT and Protocols	15	Introduction to IoT: What is IoT? IoT examples, Simple IoT LED Program. IoT and Protocols IoT Security: HTTP, UPnp, CoAP, MQTT, XMPP.

					IoT Service as a Platform. Clayster. Thinger.io. SenseIoT, carriots and Node RED. IoT Security and Interoperability Risks, Modes of Attacks, Tools for Security and Interoperability.
Dec	SY	15	Introduction Network Models:	05	Introduction to data communication, Components, Data Representation, Data Flow, Networks, Network Criteria, Physical Structures, Network types, Local Area Network, Wide Area Network, Switching, The Internet, Accessing the Internet, standards and administration Internet Standards, Network Models, Protocol layering, Scenarios, Principles of Protocol Layering, Logical Connections, TCP/IP Protocol Suite, Layered Architecture, Layers in the TCP/IP Protocol Suite, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing. Detailed introduction to Physical Layer, Detailed introduction to Data-Link Layer, Detailed introduction to Network Layer, Detailed introduction to Transport Layer, Detailed introduction to Application Layer. Data and Signals, Analog and Digital Data, Analog and Digital Signals, Sine Wave Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth, Digital Signal, Bit Rate, Bit Length, Transmission of Digital Signals, Transmission Impairments, Attenuation, Distortion, Noise, Data Rate Limits, Performance, Bandwidth, Throughput, Latenc (Delay)
Jan	SY		Introduction to Physical Layer and Data-Link Layer:	10	Digital Transmission digital-to-digital conversion, Line Coding, Line Coding Schemes, analog-to-digital conversion, Pulse Code Modulation (PCM), Transmission Modes, Parallel Transmission, Serial Transmission, Analog Transmission, digital-to-analog Conversion, Aspects of Digital-to-Analog Conversion, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, analog-to-analog Conversion, Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), Multiplexing, Frequency-Division

					Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing, Transmission Media, Guided Media, Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable, Switching, Three Methods of Switching , Circuit Switched Networks, Packet Switching, Introduction to Data-Link Layer, Nodes and Links, Services, Two Sub-layers, Three Types of addresses, Address Resolution Protocol (ARP), Error Detection and Correction, introduction, Types of Errors, Redundancy, Detection versus Correction,
Feb	SY	15	Network layer, Transport Layer	15	Media Access Control (MAC), random access, CSMA, CSMA/CD, CSMA/CA, controlled access, Reservation, Polling, Token Passing, channelization, FDMA, TDMA, CDMA. Connecting Devices and Virtual LANs, connecting devices, Hubs, Link-Layer Switches, Routers, Introduction to Network Layer, network layer services, Packetizing, Routing and Forwarding, Other Services, IPv4 addresses, Address Space, Classful Addressing, Unicast Routing, General Idea, Least-Cost Routing, Routing Algorithms, Distance-Vector Routing, Link-State Routing, Path-Vector Routing, Introduction to Transport Layer, Transport-Layer Services, Connectionless and Connection-Oriented Protocols, Transport-Layer Protocols, Service, Port Numbers, User Datagram Protocol, User Datagram, UDP Services, UDP Applications, Transmission Control Protocol, TCP Services, TCP Features, Segment.
June	SY	15	Automata Theory	07	Defining Automaton, Finite Automaton, Transitions and Its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines
July	SY		Automata Theory 1) Formal Languages	08	Minimizing Automata, Mealy and Moore Machines, Minimizing Automata. Defining Grammar, Derivations, Languages generated by Grammar, Chomsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on

					Languages, Languages and Automata,Regular Grammar, Regular Expressions, Finite automata and Regular Expressions.
Aug	SY	15	1) Regular Sets and Regular Grammar	6	Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar.Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG.
Sep	SY	15	1)Context Free Languages 2) Pushdown Automata 3) Linear Bound Automata 4) Turing Machines, Undecidability	7	Definitions, Acceptance by PDA, PDA and CFG.The ... Linear Bound Automata Model, Linear Bound Automata and Languages. Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine,The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems.
DEC	SY	15	1) Introduction to Kotlin) Advanced Concepts in Kotlin 2) App Development with Android Studio:	8	Collections in Kotlin, Mutable and Immutable Collections, Ranges, type Checks, casting concept, t... expression, Null safety, exception handling, annotations. Android Architecture, Android Application Framework, Android Virtual Device, Creating and running First Android Application, working with Physical Android Device, Adding Kotlin Files in Android Studio.
Jan	SY	15	1) Basics Of Android 2) Designing Android 3) UIHandle Images, ListviewAnd Menu 4) Data binding in Android 5) Implementing Data Persistence	7	Application Components: Activities, Intent, and Broadcast Receiver, Services, Fragment, Activity Life Cycle, Content Provider, Widgets, and Notifications. User Interface (UI), Layout and Its Types, Layout Attribute, working with Views, Android UI Controls, Styles and Themes, Event Handler, setting up themes in Manifest and from the application, dialog in activity, using intents, fragments.ImageView, ImageSwitcher,

					ListView, Menu, and its types,Designing menu in XML. Option menu, Context menu, popup menu, Screen Navigation, RecyclerView, Interaction of Views.AdapterView, Spinner, Gallery view, AutotextCompleteView, screen orientation, Design The View Dynamically. Data Storage-Shared Preference, Internal And External Storage Storing Data Using SQLite Databases, Content Provider, Firebase Real-Time Data.
Feb	SY	15	1) Graphics, Animations, and Integrating Media in Android. 2) Interacting With Camera. 3) Gathering Location Data: 1) Managing Background Tasks. 2) Deploying Android applications on Google Play	15	Drawable Class, Animation in Android, MediaPlayer API and in Android, Mediaplayer and AudioManger Class. Android Camera, Input gestures-multiple touch, swipe, drag, scroll, zoom, Recording. Broadcast Receivers, Services, Threads and Process, AsyncTask, JobScheduler, Manage device Awake State. Publishing/Deploy the application, Versioning, signing Application.
March	SY	15	Search Engine Optimization.marketing, Buying Models.	15	Search Engine Optimization: Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization Search Engine Marketing: Introduction to SEM. Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing, Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). Web Analytics: Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. Google Analytics: Basics of Google Analytics, Installing Google Analytics in website, Parameters of Google Analytics, Reporting and Analysis

Signature Of Teacher

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Head Of Department

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Jogeshwari (East), Mumbai

Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Charul Singh

Semester: V&VI

Class : TY

Subject : INS,EH.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	TY	15	Introduction	05	Introduction: Security Trends, The OSI Security Architecture, Security Attacks, Security Services,
July	TY		Cryptography and RSA.	10	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round 15 Page 10 of 63 details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm
Aug	TY	15	Key Management	15	Key Management: Public-Key Cryptosystems, Key Management, Diffie Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC Digital Signatures and Authentication: Digital Signatures, Authentication Protocols, Digital Signature Standard Authentication Applications: Kerberos, X.509 Authentication, Public-Key Infrastructure
Sep	TY	15	Electronic Mail Security	15	Electronic Mail Security: Pretty Good Privacy, S/MIME IP Security Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction Intrusion: Intruders, Intrusion Techniques, Intrusion Detection Malicious Software: Viruses and Related Threats, Virus Countermeasures, DDOS Firewalls: Firewall Design Principles, Types of Firewalls

Jan	TY	15	Introduction, Scanning and Enumeration.	15	Introduction: Terminology, Hacking Technology Types, Ethical Hacking Phases, Hacktivism, Hacker Classes, Skills Required for an Ethical Hacker, Vulnerability Research, Ways to Conduct Ethical Hacking Footprinting: Definition, Information Gathering Methodology, Competitive Intelligence, DNS Enumeration, Whois and ARIN Lookups, Types of DNS Records, Traceroute in Footprinting, E-Mail Tracking Social Engineering: Common Types Of Attacks Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scanning, CEH Scanning Methodology, Ping Sweep Techniques, Nmap Command Switches, SYN, Stealth, XMAS, NULL, 15 Page 48 of 63 IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration
Feb	TY	15	System Hacking,Hacking Web Servers.	15	System Hacking: Password-Cracking Techniques, Types of Passwords, Keyloggers and Other Spyware Technologies, Escalating Privileges, Rootkits Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniques, Sniffing Countermeasures Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures Session Hijacking: Spoofing vs. Hijacking, Types, Sequence Prediction, Steps, Prevention Hacking Web Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening
March					
	TY	15	Web Application Vulnerabilities,Penetration Testing Methodologies.	15	Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures Web-Based Password Cracking Techniques: Authentication Types, Password Crackers, Countermeasures SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques Wireless Hacking: WEP, WPAng. Authentication Mechanisms, and Cracking Techniques, Wireless Sniffers, Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal **Semester: III,IV**
Class : SY
Subject : Advanced Database Program, Asp.Net

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	SY		1	1) What is Stored Procedure with adv. And dis adv.	**Stored Procedures:** Types and benefits of stored procedures, creating stored
July	SY	15	14 9	1) Creation , Deletion and updateion of procedure with in and out parameters 2) Practical 1 and 2	procedures, executing stored procedures, altering stored procedures, viewing stored procedures. **Triggers:** Concept of triggers, Implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting and modifying triggers, and enforcing data integrity through triggers. **Sequences**: creating sequences, referencing, altering and dropping a sequence. **File Organization and Indexing:** Cluster, Primary and secondary indexing, Index data structure: hash and Tree based indexing, Comparison of file organization: cost model, Heap files, sorted files, clustered files. Creating, dropping and maintaining indexes.
Aug	SY	15	8 7	1) Variables , datatypes and operators 2) Conditional statements , loop statements Etc. 3) Practical 3 to 6	**Fundamentals of PL/SQL:** Defining variables and constants, PL/SQL expressions and comparisons: Logical Operators, Boolean Expressions, CASE Expressions Handling, Null Values in Comparisons and Conditional Statements, PL/SQL Datatypes: Number Types, Character Types, Boolean Type, Datetime and Interval Types. **Overview of PL/SQL Control Structures:** Conditional Control: IF and CASE Statements, IF-THEN Statement, IF-THEN-ELSE Statement, IFTHEN-ELSIF Statement, CASE Statement, Iterative Control: LOOP and EXIT Statements, WHILE-LOOP, FOR-LOOP, Sequential Control: GOTO and NULL Statements
Sep	SY	15	15 9	1) All Properties, recovery of the databases etc. 2) Practical 7 to 10	**Transaction Management:** ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem , Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol. **DCL Statements:** Defining a transaction, Making Changes Permanent with COMMIT, Undoing Changes with ROLLBACK, Undoing Partial Changes with SAVEPOINT and ROLLBACK **Crash Recovery:** ARIES algorithm. The log based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases.
Oct	SY			Theory and Practical exams	

Nov	SY	15	8 7 2	1) Overview with life cycle. 2) Different types of pages with extensions 3) Practical 1 to 2	**The .NET Framework:** .NET Languages, Common Language Runtime, Class Library **C# Language Basics:** Comments, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Metho Classes, Value Types and Reference Types, Namespaces and Assemblies, Inheritance, Static Members, Casting Objects, Partial Classes **ASP.NET:** Creating Websites, Anatomy of a Web Form - Page Directive, Doctype, Writing Code - Code-Behind Class, Adding Event Handlers, An of an ASP.NET Application - ASP.NET File Types, ASP.NET Web Folder **HTML Server Controls** - View State, HTML Control Classes, HTML C Events, HtmlControl Base Class, HtmlContainerControl Class, HtmlInputControl Class, Page Class, global.asax File, web.config File
Dec	SY	15	7 4 4	1) Different types of controls 2) Validations 3) How to create website with consistent layouts 4) Practicals from 3 to 7	**Web Controls:** Web Control Classes, WebControl Base Class, List Control Table Controls, Web Control Events and AutoPostBack, Page Life Cycle **State Management:** ViewState, Cross-Page Posting, Query String, Cookies Session State, Configuring Session State, Application State **Validation:** Validation Controls, Server-Side Validation, Client-Side Validation, HTML5 Validation, Manual Validation, Validation with Regular Expressions **Rich Controls:** Calendar Control, AdRotator Control, MultiView Control **Themes and Master Pages:** How Themes Work, Applying a Simple Theme, Handling Theme Conflicts, Simple Master Page and Content Page, Connectin Master pages and Content Pages, Master Page with Multiple Content Regions, Master Pages and Relative Paths **Website Navigation:** Site Maps, URL Mapping and Routing, SiteMapPath Control, TreeView Control, Menu Control
Jan	SY	15	2 5 8	1) Database binding 2) Different data controls 3) Ajax on pages 4) Practicals 8 to 10	**ADO.NET:** Data Provider Model, Direct Data Access - Creating a Connection, Select Command, DataReader, Disconnected Data Access **Data Binding**: Introduction, Single-Value Data Binding, Repeated-Value Data Binding, Data Source Controls – SqlDataSource **Data Controls:** GridView, DetailsView, FormView **Working with XML:** XML Classes – XMLTextWriter, XMLTextReader **Caching:** When to Use Caching, Output Caching, Data Caching **LINQ:** Understanding LINQ, LINQ Basics, **ASP.NET AJAX:** ScriptManager, Partial Refreshes, Progress Notification, Timed Refreshes
April	SY			Theory exam , Paper Assessment and Result	

Signature Of Teacher

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal **Semester: V,VI**
Class : TY
Subject : Artificial intelligent , Information retrieval

Semester Planning of Teaching

Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
TY	15	1	Introduction to AI and Intelligent Agents What Is AI	Foundations, History and State of the Art of AI
TY		14 9	1) Intelligent Agents 2) Problem Solving by searching 3) Practical from 1 to 2 4)Knowledge Representation	1) Agents and Environments, Nature of Environments, Structure of Agents. 2) Problem-Solving Agents, Uninformed Search Strategies, Informed (Heuristic) Search Strategies 3) Knowledge Representation and different forms,
TY	15	8 12	Reasoning, and Machine Learning 1)Knowledge Representation and Reasoning 2) Practical from 3 to 5	1)Reasoning, Planning, Uncertainty in Knowledge Fuzzy Logic & Fuzzification
TY	15	7 8 9	Machine Learning Probabilistic Models, Unsupervised Learning, and Reinforcement Learning	Forms of Learning, Parametric & Non-Parametric Models, Classification, Regression, Regularization, Decision Trees, SVM, Artificial Neural Networks, Ensemble Learning, Boosting, K-NN, Gradient Descent UNIT 2 Statistical Learning, Learning with Complete Data, Naive Bayes Classifier, Learning with Hidden Variables: The EM Algorithm

			2) Practical from 6 to 8	
TY	15	15 3	1)Unsupervised Learning 2)Reinforcement learning 3)Practical 9 and 10	1)Concept of Unsupervised learning,, Association Rule Mining 2)Concept of Reinforcement learning, Q-Learning, Hidden Markov Model
TY			Revision for Lect and Practical	
TY	15	2	1) Introduction to Information Retrieval (IR) systems 2) Document Indexing, Storage, and Compression	Definition and goals of information retrieval, Components of an IR system, Challenges and applications of IR 1)Inverted index construction and compression techniques, Document representation and term weighting, Storage and retrieval of indexed documents,
TY	15	15 9	1)Retrieval Models Spelling 2) Correction in IR Systems 3) Performance Evaluation 4) Practical from 1 to 4	2) Boolean model: Boolean operators, query processing, Vector space model: TF-IDF, cosine similarity, query-document matching, Probabilistic model: Bayesian retrieval, relevance feedback 3)Challenges of spelling errors in queries and documents, Edit distance and string similarity measures, Techniques for 15 Page 42 of 63 spelling correction in IR systems 4)Evaluation metrics: precision, recall, F-measure, average precision, Test collections and relevance judgments, Experimental design and significance testing
TY	15	15	1)Text Categorization and Filtering 2)Text Clustering	1)Text classification algorithms: Naive Bayes, Support Vector Machines, Feature selection and dimensionality reduction, Applications of text categorization and filtering 2) Clustering techniques: Kmeans, hierarchical clustering,

		9	for Information Retrieval 3)Web Information Retrieval 4)Learning to Rank 5)Link Analysis and its Role in IR Systems 6)Crawling and Near-Duplicate Page Detection 1) Practical from 5 to 7	Evaluation of clustering results, Clustering for query expansion and result grouping 3)Web search architecture and challenges, Crawling and indexing web pages, Link analysis and PageRank algorithm 4)Algorithms and Techniques, Supervised learning for ranking: RankSVM, RankBoost, Pairwise and listwise learning to rank approaches Evaluation metrics for learning to rank 5)Web graph representation and link analysis algorithms, HITS and PageRank algorithms, Applications of link analysis in IR systems 6)Web page crawling techniques: breadth-first, depth-first, focused crawling, Near-duplicate page detection algorithms, Handling dynamic web content during crawling
TY	15	15 12	1)Advanced Topics in IR 2)Cross-Lingual and Multilingual Retrieval 3) User-based evaluation 4) Practical from 8 to 10	1) 2)Text Summarization: extractive and abstractive methods, Question Answering: approaches for finding precise answers, Recommender Systems: collaborative filtering, content-based filtering 3) Challenges and techniques for cross-lingual retrieval, Machine translation for IR, Multilingual document representations and query translation, Evaluation Techniques for IR Systems 4)user studies, surveys, Test collections and benchmarking, Online evaluation methods: A/B testing, interleaving experiments
TY			Revision, Practical Exam, Theory exam , Paper Assessment and Result	

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Amita Vakil Semester: V,

Class : Subject :Web Service

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
Jul	SY	15	5	Web services basicsation Practical 1-3	What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture. Web Services Development Life Cycle, Developing and consuming simple Web Services across platforms
Aug	SY	15	13 9	The REST Architectural style Practical from 3-6	Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services
Sep	SY	15	9 9	Developing Service-Oriented Applications with WCF	What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details, Web Service QoS
Oct & Nov Exam & Paper Assessment					

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Amita Vakil
Class : FY
Subject : Soft Skills,Programming with C,Database System,Green Technologies

Semester: I,II

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	FY	15+15	14	Introduction to Soft Skills Personality Development Emotional Intelligence	Soft Skills: An Introduction - Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. Personality Development: Knowing Yourself, Positive Thinking, Johari"s Window, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics
July	FY			Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership	Capacity Building: Learn, Unlearn and Relearn Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress
Aug	FY	15+15	13	Basic Skills in Communication	Components of effective communication Communication Skills Job Interviews Group Discussion:
				Introduction to DBMS Data models	Database, DBMS - Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data Independence, DBMS Architecture Data models - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network)
S ep	FY	15+15	20	Academic and Professional Skills	Professional Presentation Creativity at Workplace:
				Entity Relationship Model ER to Table DDL Statements DML Statements	Viewing the structure of a table Insert, update, delete, Select all columns, specific columns, unique records, conditional select, In clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints - primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables
Oct	FY	15+15		Relational data model Relational Algebra Functions	omains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural joins, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - inner join, outer join (left outer, right outer, full outer)

					Subqueries - subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries 1
Nov	FY	15		Exam & Paper evaluation	
Dec	FY	15+15	12+05	Structure of C program Data Variables Types of operators	Header and body, Use of comments. Interpreters vs compilers, Python vs C. Compilation of a program. Formatted I/O: printf(), scanf(). Data: Variables, Constants, data types like: int, float char, double and void, short and long size qualifiers, signed and unsigned qualifiers. Compare with datatypes in Python. Compare static typing in C vs dynamic typing in Python Variables: Declaring variables, scope of the variables according to block, hierarchy of data types. Compare explicit declarations in C with implicit declarations in Python. Types of operators: Arithmetic, relational, logical, compound assignment, increment and decrement, conditional or ternary, bitwise and comma operators. Precedence and order of evaluation, statements and Expressions. Automatic and explicit type conversion.
				Green IT Fundamentals	Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future.
Jan	FY	15+15	12	Iterations Arrays Data Input and Output functions Manipulating Strings	Control statements for decision making: (i) Branching: If statement, else.. if statement, (does the writer mean if-else or nested if's)switch statement. (ii) Looping: while loop, do.. while, for loop. (iii) Jump statements: break, continue and goto. declaring array variables, initialization of arrays, accessing array elements. Compare array types of C with list and tuple types of Python. Character I/O format: getch(), getche(), getchar(), getc(), gets(), putchar(), putc(), puts()Declaring and initializing String variables, Character and string handling functions. Compare with Python strings.
				Green Assets and emerging Trends	Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling. Cloud Computing and Data Centers, Networking and CommunicationsInfrastructure. End-User Devices. Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM. Green Mobile Business Process, Digital Library Green Enterprise Architecture: Green IT and organizational Systems, Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture, Green Supply Chain Management, Green Portals in Green Enterprise Architecture: Environmental Intelligence.
Feb	FY	15+15	11	Functions Recursion Pointer	Functions: Function declaration, function definition, Global and local variables, return statement, Calling a function by passing values. Recursion: Definition, Recursive functions. 15L 20 Unit III Pointer: Fundamentals, Pointer variables, Referencing and de-referencing, Pointer Arithmetic, Using Pointers with Arrays, Using Pointers with Strings, Array of Pointers, Pointers as function arguments, Functions returning pointers
				Green Information Systems(GIS)	Green Information Systems(GIS): Design and Development Models: Describing GIS, GIS Requirements Sociocultural Aspects of Green IT: Green IT's Social Impact. Learning Organization, Green Social Stakeholders. Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT. Green IT Ethics and Code of Conduct. Privacy and Security of Green Information, Green Washing, Communications in Green Transformation Projects, Green HR and Changing Organizational Structure, Green-Collar Workers: Roles and Skill Sets, Green Virtual Communities Green Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Emerging Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technology Trends, Cloud Computing, Nanotechnology, Quantum computing, Renewable energies, eco-design, Collaborative environmental intelligence
March	FY	15+15	06	Pointer Memory Allocation	Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() and sizeof operator. Compare with automatic garbage collection in Python. Structure: Declaration of structure, reading and assignment of structure variables, Array of structures, arrays within structures, structures within structures. Compare C structures with Python tuples. Unions: Defining and working with unions. File handling: Different types of files like text and binary, Different types of functions: fopen(), fclose(), fgetc(), fputc(), fgets(), fputs(), fscanf(), fprintf(), getw(), putw(), fread(), fwrite(), fseek().
April	FY			Exam & paper assessment	

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Amita Vaid **Semester: V, VI**

Class : TY **Subject :Web Service, Datatn science**

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Web services basicsation **Practical 1-3**	What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platform
Aug	SY	15	13 9	The REST Architectural style **Practical from 3-6**	Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services
Sep	SY	15	9 9	**Developing Service-Oriented Applications with WCF**	What is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details, Web Service QoS
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	**Introduction to Data Science**	What is Data? Different kinds of data, 151. Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, Data Management: Data Collection, Data cleaning/extraction, Data analysis & Modeling
Jan	SY	15	15 9	**Data Curation** **Practical from 5-7**	Query languages and Operations to specify and transform data, Structured/schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems in the acquisition and structuring of data. Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)
Feb	SY	15	15 9	Statistical Modelling and Machine Learning Practical 7-9	Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO Data transformations: Dimension reduction, Feature extraction, Smoothing and aggregating Supervised Learning: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, separating hyperplanes, k-NN Unsupervised Learning: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods
March &b April	SY		**Practical Exam, Theory exam , Paper Assessment and Result**		

Signature Of Teacher

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Department of Computer Science A.Y. 2021-22
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: III**

Class : SY **Subject :Operating System,Fundamentals of Algorithms**

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
Jul	SY	15	5	Introduction to Operating-Systems Operating-System Structures Processes Threads Process Synchronization **Practical 1-3**	Definition of Operating System, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure
Aug	SY	15	13 0	**Process Synchronization** **Scheduling:** **Deadlocks:** **Practical from 3-6**	General structure of a typical process, race conditions, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock
Sep	SY	15	9 9	**Main Memory** **Virtual Memory** **Mass-Storage Structure** **File-System Interface** **File-System Implementation**	Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Overview, Disk Structure, Disk Scheduling, Disk Management File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	**Introduction to algorithm**	Introduction to algorithm, Why to analysis algorithm, Running time analysis, How to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming
Jan	SY	15	15 9	**Tree algorithms** **Graph Algorithms** **Practical from 5-7**	Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees, Graph Algorithms, Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree
Feb	SY	15	15 9	Dynamic Programming Practical 7-9	Introduction, What is a Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence
March & April	SY		**Practical Exam, Theory exam , Paper Assessment and Result**		

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Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal
Semester: I,II
Class : FY
Subject : Programming with Python-I, Advanced Python Programming

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	FY	15	7	1)Overview of Python 2)Data Types, Variables and Other Basic Elements	Reasons for Python as the learner's first programming language. Introduction to the IDLE interpreter (shell) and its documentation. Expression evaluation: similarities and differences compared to a calculator; expressions and operators of types int, float, boolean. Built-in function type. Operator precedence. Enumeration of simple and compound statements. The expression statement. The assert statement, whose operand is a boolean expression (values true or false). The assignment statement, dynamic binding of names to values, (type is associated with data and not with names); automatic and implicit declaration of variable names with the assignment statement; assigning the valueNone to a name. The del (delete) statement. Input/output with print and input functions. A statement list (semicolon separated list of simple statements on a single line) as a single interpreter command. The import statement for already-defined functions and constants. The augmented assignment statement. The built-inhelp() function.
Aug	FY		4 4 9 9	1) Input and Output Operations 2) Control Statements 3) Practical from 1 to 4 4) Operators 5) Practical from 5 to 7	Interactive and script modes of IDLE, running a script, restarting the shell. The compound statement def to define functions; the role of indentation for delimiting the body of a compound statement; calling a previously defined function. Compound data types str, tuple and list (enclosed in quotes, parentheses and brackets, respectively). Indexing individual elements within these types. Strings and tuples are immutable, lists are mutable. Built-in functions min, max, sum. Interactive solution of model problems, (e.g., finding the square root of a number or zero of a function), by repeatedly executing the body of a loop (where the body is a statement list).
Sep	FY	15	15 9	1)Function 2) if else 3) Loops 4) Dictionary Concept 5)Practicals from 5 to 8	Advantages of functions, function parameters, formal parameters, actual parameters, global and local variables. The range function, the iterative for statement. The conditional statements if, if-else, if-elif-else. The iterative statements while, while-else, for-else. The continue statement to skip over one iteration of a loop, the break statement to exit the loop. Nested compound statements. Dictionaries: concept of key-value pairs, techniques to create, update and delete dictionary items. Problem-solving using compound types and statements.
Oct	FY	15	15 9	1)Strings 2)List and Tuples 3)Dictionaries 4)Practical from 8 to 10	Anonymous functions. List comprehensions. Gentle introduction to object-oriented programming; using the built-in dir() function, enumerate the methods of strings, tuples, lists, dictionaries. Using these methods for problem-solving with compound types.
Nov	FY			Practical Exam	

Dec	FY	15	4	1)Working with files and Exception handling	Python File Input-Output: Opening and closing files, various types modes, reading and writing to files, manipulating directories. Iterables, Iterators and their problemsolving applications. Exception handling: What is an exception, various keywords to hand exceptions such try, catch, except, else, finally, raise.
Jan	FY		11 9	1)Regular expressions 2)GUI BASED Concepts 3)Practical from 1 to 4	1) Regular Expressions: Concept of regular expression, various types regular expressions, using match function. 2) GUI Programming in Python (using Tkinter/wxPython/Qt) What is GUI, Advantages of GUI, Introduction to GUI library. Layout management, events and bindings, fonts, colours, drawing on canvas (line, oval, rectan etc.) Widgets such as : frame, label, button, checkbutton, entry, listbox, messa radiobutton, text, spinbox etc
Feb	FY	15	15 9	1)Database in python 2)Practical from 5 to 7	1) Database connectivity in Python: Installing mysql connector, accessing connector module module, using connect, cursor, execute & close functions, reading single & multiple results of query execution, executing different types of statements, executing transactions, understanding exceptions in database connectivity.
March	FY	15	15 9	1)Sokets and Creation of Sockets 4) Practical from 8 to 10	Network connectivity: Socket module, creating server-client programs, sending email, reading from URL
April	FY			Practical Exam, Theory exam , Paper Assessment and Result	

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal **Semester: III,IV**
Class : SY
Subject : Advanced Database Program, Asp.Net

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	SY		1	1) What is Stored Procedure with adv. And dis adv.	**Stored Procedures:** Types and benefits of stored procedures, creating stored
July	SY	15	14 9	1) Creation , Deletion and updateion of procedure with in and out parameters 2) Practical 1 and 2	procedures, executing stored procedures, altering stored procedures, viewing stored procedures. **Triggers:** Concept of triggers, Implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting and modifying triggers, and enforcing data integrity through triggers. **Sequences**: creating sequences, referencing, altering and dropping a sequence. **File Organization and Indexing:** Cluster, Primary and secondary indexing, Index data structure: hash and Tree based indexing, Comparison of file organization: cost model, Heap files, sorted files, clustered files. Creating, dropping and maintaining indexes.
Aug	SY	15	8 7	1) Variables , datatypes and operators 2) Conditional statements , loop statements Etc. 3) Practical 3 to 6	**Fundamentals of PL/SQL:** Defining variables and constants, PL/SQL expressions and comparisons: Logical Operators, Boolean Expressions, CASE Expressions Handling, Null Values in Comparisons and Conditional Statements, PL/SQL Datatypes: Number Types, Character Types, Boolean Type, Datetime and Interval Types. **Overview of PL/SQL Control Structures:** Conditional Control: IF and CASE Statements, IF-THEN Statement, IF-THEN-ELSE Statement, IFTHEN-ELSIF Statement, CASE Statement, Iterative Control: LOOP and EXIT Statements, WHILE-LOOP, FOR-LOOP, Sequential Control: GOTO and NULL Statements
Sep	SY	15	15 9	1) All Properties, recovery of the databases etc. 2) Practical 7 to 10	**Transaction Management:** ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem , Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol. **DCL Statements:** Defining a transaction, Making Changes Permanent with COMMIT, Undoing Changes with ROLLBACK, Undoing Partial Changes with SAVEPOINT and ROLLBACK **Crash Recovery:** ARIES algorithm. The log based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases.
Oct	SY			Theory and Practical exams	

Nov	SY	15	8 7 2	1) Overview with life cycle. 2) Different types of pages with extensions 3) Practical 1 to 2	**The .NET Framework:**.NET Languages, Common Language Runtime, Class Library **C# Language Basics:** Comments, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods, Classes, Value Types and Reference Types, Namespaces and Assemblies, Inheritance, Static Members, Casting Objects, Partial Classes **ASP.NET:** Creating Websites, Anatomy of a Web Form - Page Directive, Doctype, Writing Code - Code-Behind Class, Adding Event Handlers, Anatomy of an ASP.NET Application - ASP.NET File Types, ASP.NET Web Folders, **HTML Server Controls** - View State, HTML Control Classes, HTML Control Events, HtmlControl Base Class, HtmlContainerControl Class, HtmlInputControl Class, Page Class, global.asax File, web.config File
Dec	SY	15	7 4 4	1) Different types of controls 2) Validations 3) How to create website with consistent layouts 4) Practicals from 3 to 7	**Web Controls:** Web Control Classes, WebControl Base Class, List Controls, Table Controls, Web Control Events and AutoPostBack, Page Life Cycle **State Management:** ViewState, Cross-Page Posting, Query String, Cookies, Session State, Configuring Session State, Application State **Validation:** Validation Controls, Server-Side Validation, Client-Side Validation, HTML5 Validation, Manual Validation, Validation with Regular Expressions **Rich Controls:** Calendar Control, AdRotator Control, MultiView Control **Themes and Master Pages:** How Themes Work, Applying a Simple Theme, Handling Theme Conflicts, Simple Master Page and Content Page, Connecting Master pages and Content Pages, Master Page with Multiple Content Regions, Master Pages and Relative Paths **Website Navigation:** Site Maps, URL Mapping and Routing, SiteMapPath Control, TreeView Control, Menu Control
Jan	SY	15	2 5 8	1) Database binding 2) Different data controls 3) Ajax on pages 4) Practicals 8 to 10	**ADO.NET:** Data Provider Model, Direct Data Access - Creating a Connection, Select Command, DataReader, Disconnected Data Access **Data Binding**: Introduction, Single-Value Data Binding, Repeated-Value Data Binding, Data Source Controls – SqlDataSource **Data Controls:** GridView, DetailsView, FormView **Working with XML:** XML Classes – XMLTextWriter, XMLTextReader **Caching:** When to Use Caching, Output Caching, Data Caching **LINQ:** Understanding LINQ, LINQ Basics, **ASP.NET AJAX:** ScriptManager, Partial Refreshes, Progress Notification, Timed Refreshes
April	SY			Theory exam , Paper Assessment and Result	

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Head Of Department

Coordinator
Computer Science Department
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Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal **Semester: V,VI**
Class : TY
Subject : Artificial intelligent , Information retrieval

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	TY	15	1	Introduction to AI and Intelligent Agents What Is AI	**What Is AI:** Foundations, History and State of the Art of AI. **Intelligent Agents:** Agents and Environments, Nature of Environments, Structure of Agents.
July	TY		14 9	1) Intelligent Agents 2) Problem Solving by searching 3) Practical from 1 to 2 4)Knowledge Representation	**Problem Solving by searching:** Problem-Solving Agents, Example Problems, Searching for Solutions, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions.
Aug	TY	15	8 7 12	1) Supervised learning 2) NPM and SVM etc. 3) Practical from 3 to 7	**Learning from Examples:** Forms of Learning, Supervised Learning, Learning Decision Trees, Evaluating and Choosing the Best Hypothesis, Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks, Nonparametric Models, Support Vector Machines, Ensemble Learning, Practical Machine Learning
Oct	TY	15	15 3	1)Unsupervised Learning 2)Reinforcement learning 3)Practical 8 to 10	**Learning probabilistic models:** Statistical Learning, Learning with Complete Data, Learning with Hidden Variables: The EM Algorithm. Reinforcement learning: Passive Reinforcement Learning, Active Reinforcement Learning, Generalization in Reinforcement Learning, Policy Search, Applications of Reinforcement Learning.
Nov	TY			Revision for Lect and Practical	

Dec	TY	15	2	1) Introduction to Information Retrieval (IR) systems 2) Document Indexing, Storage, and Compression 3) Practical from 1 to 4	**Introduction to Information Retrieval:** Introduction History of IR, Components of IR, and Issues related to IR, Boolean retrieval, Dictionaries and tolerant retrieval.
Jan	TY	15	15 9	1)Learning to Rank 2)Link Analysis and its Role in IR Systems 3)Crawling and Near-Duplicate Page Detection 4) Practical from 5 to 7	**Link Analysis and Specialized Search:** Link Analysis, hubs and authorities, Page Rank and HITS algorithms, Similarity, Hadoop & Map Reduce, Evaluation, Personalized search, Collaborative filtering and content-based recommendation of documents and products, handling "invisible" Web, Snippet generation, Summarization, Question Answering, Cross- Lingual Retrieval
March	TY	15	15 12	1)Web search engine with different techniques 2)retrival using XML 3) Practical from 8 to 10	**Web Search Engine:** Web search overview, web structure, the user, paid placement, search engine optimization/spam, Web size measurement, search engine optimization/spam, Web Search Architectures. **XML retrieval:** Basic XML concepts, Challenges in XML retrieval, A vector space model for XML retrieval, Evaluation of XML retrieval, Text-centric versus data-centric XML retrieval.
April	TY			Revision, Practical Exam, Theory exam , Paper Assessment and Result	

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Jogeshwari (West), Mumbai-400 060.

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal **Semester: III,IV**
Class : SY
Subject : Advanced Database Program, Asp.Net

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	SY		1	1) What is Stored Procedure with adv. And dis adv.	**Stored Procedures:** Types and benefits of stored procedures, creating stored procedures, executing stored procedures, altering stored procedures, viewing stored procedures. **Triggers:** Concept of triggers, Implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting and modifying triggers, and enforcing data integrity through triggers. **Sequences**: creating sequences, referencing, altering and dropping a sequence. **File Organization and Indexing:** Cluster, Primary and secondary indexing, Index data structure: hash and Tree based indexing, Comparison of file organization: cost model, Heap files, sorted files, clustered files. Creating, dropping and maintaining indexes.
July	SY	15	14 9	1) Creation , Deletion and updateion of procedure with in and out parameters 2) Practical 1 and 2	
Aug	SY	15	8 7	1) Variables , datatypes and operators 2) Conditional statements , loop statements Etc. 3) Practical 3 to 6	**Fundamentals of PL/SQL:** Defining variables and constants, PL/SQL expressions and comparisons: Logical Operators, Boolean Expressions, CASE Expressions Handling, Null Values in Comparisons and Conditional Statements, PL/SQL Datatypes: Number Types, Character Types, Boolean Type, Datetime and Interval Types. **Overview of PL/SQL Control Structures:** Conditional Control: IF and CASE Statements, IF-THEN Statement, IF-THEN-ELSE Statement, IFTHEN-ELSIF Statement, CASE Statement, Iterative Control: LOOP and EXIT Statements, WHILE-LOOP, FOR-LOOP, Sequential Control: GOTO and NULL Statements
Sep	SY	15	15 9	1) All Properties, recovery of the databases etc. 2) Practical 7 to 10	**Transaction Management:** ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem , Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol. **DCL Statements:** Defining a transaction, Making Changes Permanent with COMMIT, Undoing Changes with ROLLBACK, Undoing Partial Changes with SAVEPOINT and ROLLBACK **Crash Recovery:** ARIES algorithm. The log based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases.
Oct	SY			Theory and Practical exams	

Nov	SY	15	8 7 2	1) Overview with life cycle. 2) Different types of pages with extensions 3) Practical 1 to 2	**The .NET Framework:**.NET Languages, Common Language Runtime, Class Library **C# Language Basics:** Comments, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods, Classes, Value Types and Reference Types, Namespaces and Assemblies, Inheritance, Static Members, Casting Objects, Partial Classes **ASP.NET:** Creating Websites, Anatomy of a Web Form - Page Directive, Doctype, Writing Code - Code-Behind Class, Adding Event Handlers, Anatomy of an ASP.NET Application - ASP.NET File Types, ASP.NET Web Folders, **HTML Server Controls** - View State, HTML Control Classes, HTML Control Events, HtmlControl Base Class, HtmlContainerControl Class, HtmlInputControl Class, Page Class, global.asax File, web.config File
Dec	SY	15	7 4 4	1) Different types of controls 2) Validations 3) How to create website with consistent layouts 4) Practicals from 3 to 7	**Web Controls:** Web Control Classes, WebControl Base Class, List Controls, Table Controls, Web Control Events and AutoPostBack, Page Life Cycle **State Management:** ViewState, Cross-Page Posting, Query String, Cookies, Session State, Configuring Session State, Application State **Validation:** Validation Controls, Server-Side Validation, Client-Side Validation, HTML5 Validation, Manual Validation, Validation with Regular Expressions **Rich Controls:** Calendar Control, AdRotator Control, MultiView Control **Themes and Master Pages:** How Themes Work, Applying a Simple Theme, Handling Theme Conflicts, Simple Master Page and Content Page, Connecting Master pages and Content Pages, Master Page with Multiple Content Regions, Master Pages and Relative Paths **Website Navigation:** Site Maps, URL Mapping and Routing, SiteMapPath Control, TreeView Control, Menu Control
Jan	SY	15	2 5 8	1) Database binding 2) Different data controls 3) Ajax on pages 4) Practicals 8 to 10	**ADO.NET:** Data Provider Model, Direct Data Access - Creating a Connection, Select Command, DataReader, Disconnected Data Access **Data Binding:** Introduction, Single-Value Data Binding, Repeated-Value Data Binding, Data Source Controls – SqlDataSource **Data Controls:** GridView, DetailsView, FormView **Working with XML:** XML Classes – XMLTextWriter, XMLTextReader **Caching:** When to Use Caching, Output Caching, Data Caching **LINQ:** Understanding LINQ, LINQ Basics, **ASP.NET AJAX:** ScriptManager, Partial Refreshes, Progress Notification, Timed Refreshes
April	SY			Theory exam , Paper Assessment and Result	

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Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Snehlata Agarwal
Class : FY
Subject : Programming with Python-I, Advanced Python Programming

Semester: I,II

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	FY	15	7	1)Overview of Python 2)Data Types, Variables and Other Basic Elements	Reasons for Python as the learner's first programming language. Introduction to the IDLE interpreter (shell) and its documentation. Expression evaluation: similarities and differences compared to a calculator; expressions and operators of types int, float, boolean. Built-in function type. Operator precedence. Enumeration of simple and compound statements. The expression statement. The assert statement, whose operand is a boolean expression (values true or false). The assignment statement, dynamic binding of names to values, (type is associated with data and not with names); automatic and implicit declaration of variable names with the assignment statement; assigning the valueNone to a name. The del (delete) statement. Input/output with print and input functions. A statement list (semicolon separated list of simple statements on a single line) as a single interpreter command. The import statement for already-defined functions and constants. The augmented assignment statement. The built-inhelp() function.
Aug	FY		4 4 9 9	1) Input and Output Operations 2) Control Statements 3) Practical from 1 to 4 4) Operators 5) Practical from 5 to 7	Interactive and script modes of IDLE, running a script, restarting the shell. The compound statement def to define functions; the role of indentation for delimiting the body of a compound statement; calling a previously defined function. Compound data types str, tuple and list (enclosed in quotes, parentheses and brackets, respectively). Indexing individual elements within these types. Strings and tuples are immutable, lists are mutable. Built-in functions min, max, sum. Interactive solution of model problems, (e.g., finding the square root of a number or zero of a function), by repeatedly executing the body of a loop (where the body is a statement list).
Sep	FY	15	15 9	1)Function 2) if else 3) Loops 4) Dictionary Concept 5)Practicals from 5 to 8	Advantages of functions, function parameters, formal parameters, actual parameters, global and local variables. The range function, the iterative for statement. The conditional statements if, if-else, if-elif-else. The iterative statements while, while-else, for-else. The continue statement to skip over one iteration of a loop, the break statement to exit the loop. Nested compound statements. Dictionaries: concept of key-value pairs, techniques to create, update and delete dictionary items. Problem-solving using compound types and statements.
Oct	FY	15	15 9	1)Strings 2)List and Tuples 3)Dictionaries 4)Practical from 8 to 10	Anonymous functions. List comprehensions. Gentle introduction to object-oriented programming; using the built-in dir() function, enumerate the methods of strings, tuples, lists, dictionaries. Using these methods for problem-solving with compound types.
Nov	FY			Practical Exam	

Dec	FY	15	4	1)Working with files and Exception handling	Python File Input-Output: Opening and closing files, various types, modes, reading and writing to files, manipulating directories. Iterables, iterators and their problemsolving applications. Exception handling: What is an exception, various keywords to handle exceptions such try, catch, except, else, finally, raise.
Jan	FY		11 9	1)Regular expressions 2)GUI BASED Concepts 3)Practical from 1 to 4	1) Regular Expressions: Concept of regular expression, various types of regular expressions, using match function. 2) GUI Programming in Python (using Tkinter/wxPython/Qt) What is GUI, Advantages of GUI, Introduction to GUI library. Layout management, events and bindings, fonts, colours, drawing on canvas (line, oval, rectangle, etc.) Widgets such as : frame, label, button, checkbutton, entry, listbox, message, radiobutton, text, spinbox etc
Feb	FY	15	15 9	1)Database in python 2)Practical from 5 to 7	1) Database connectivity in Python: Installing mysql connector, accessing connector module module, using connect, cursor, execute & close functions, reading single & multiple results of query execution, executing different types of statements, executing transactions, understanding exceptions in database connectivity
March	FY	15	15 9	1)Sokets and Creation of Sockets 4) Practical from 8 to 10	Network connectivity: Socket module, creating server-client programs, sending email, reading from URL
April	FY			Practical Exam, Theory exam , Paper Assessment and Result	

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Computer Science Department
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Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Sybal Dias Semester: I,II
Class : FY
Subject : Free open source, Linux

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	Introduction Practical 1-3 Practical 3-5	: Open Source, Free Software, Free Software vs. Open Source software, Public Domain Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project. Methodologies Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licenses and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copy lefts, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization Open source vs. closed source, Open source government, Open source ethics. Social and Financial impacts of open source technology, Shared software, Shared source, Open Source in Government Case Studies Example Projects: Apache web server, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, wordpress, GCC, GDB, github, Open Office. Study: Understanding the developmental models, licensings, mode of funding,commercial/non-commercial use. Open Source Hardware, Open Source Design, Open source Teaching. Open source media. Collaboration, Community and Communication Contributing to Open Source Projects Introduction to github, interacting with.the community on github,
Aug				Practical	Communication and etiquette, testing open source code, reporting issues, contributing code. Introduction to wikipedia, contributing to Wikipedia Or contributing to any prominent open source project of student's choice. Starting and Maintaining own Open Source Project
Sep	FY	15	13		Understanding Open Source Ecosystem Open Source Operating Systems: GNU/Linux, Android, Free BSD. Open Solaris. Open Source Hardware, Virtualization Technologies, Containerization Technologies: Docker. Development tools, IDEs, debuggers.

			9		Programming languages, LAMP, Open Source database technologies
Oct	FY	15	9	EXam	
Nov	FY			Exam	
Dec				1)Advanced Bash shell 1)Linux operating system and Basics 2)Basic Bash shell commands 3)Practical from 1 to 3 commands 2)The Linux environment variable 3)Understanding Linux file permission 4)Linux Security 5)Practical from 4 to 6	History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files. More file attributes
Jan		15	15 9	5)Practical from 1 to 6	Simple Filters, Filters using regular expressions. Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliase Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files. Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh.
Feb		15	15 9	1)Networking 2)Working withEditors 3)Basic script building 4) Practical from 6 to 9	TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS awk, sed and Introduction to vi.Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting Input and Output, Pipes performing math, Exiting the script.
March		15	15 9		
April			Practical Exam, Theory exam , Paper Assessment and Result		

Department of computer science AY 2020-21
Semester wise Plan

Name Of the Teacher: Sybal Dias

Semester: III,IV

Class : SY

Subject : Core java ,Advanced java

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	The Java Language OOPS	5	Features of Java, Java programming format, Java Tokens, Java Statements, Java Data Types, Typecasting, Arrays Introduction, Class, Object, Static Keywords, Constructors, this Key Word, Inheritance, super Key Word, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces String.
July	SY		String Manipulations .	10	String Buffer, String Tokenizer Packages: Introduction to predefined packages (java.lang, java.util, java.io, java.sql, java.swing), User Defined Packages, Access specifiers.
Aug	SY	15	Exception Handling: I/O Streams:	15	Introduction, Pre-Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods ResultSet, Navigating and manipulating data, ResultSetMetaData, Managing Transactions in JDBC, JDBC Exception classes, BLOB & CLOB Introduction, Byte-oriented streams, Character- oriented streams, File, Random access File, Serialization Networking: Introduction, Socket, Server socket, Client –Server Communication
Sep	SY	15	Wrapper Classes AWT	15	: Introduction, Byte, Short, Integer, Long, Float, Double, Character, Boolean classes Collection Framework: Introduction, util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its Inner Classes: Introduction, Member inner class, Static inner class, Local inner class, Anonymous inner class AWT: Introduction, Components, Event-Delegation-Model, Listeners, Layouts, Individual components Label, Button, CheckBox, Radio Button, Choice, List, Menu, Text Field, Text Area
DEC	SY	15	Swing Swing components	8	Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Jlabel, JTextField and JPasswordField, JTextAres, JButton, JCheckBox, JRadioButton, JComboBox and JList JDBC: Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updations, CallableStatement, BLOB & CLOB
Jan	SY	15	Servlets: Session Tracking Mechanisms JSP:	7	Servlets: Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms JSP: Introduction, JSP LifeCycle, JSP Implicit Objects & Scopes, JSP Directives, JSP Scripting Elements, JSP Actions: Standard actions and customized actions,
Feb	SY	15	Java Beans:	15	Introduction, JavaBeans Properties, Examples Struts 2: Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results & Result Types, Value
March	SY	15	Stack/OGNL JSON:	15	Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java.

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Sybal Dias **Semester: V,VI**
Class : TY
Subject : Linux Administration system,Cloud computing

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	**Introduction Single-Host Administration Networking and Security** **Practical 1-3**	Technical Summary of Linux Distributions, Managing Software Managing Users and Groups, Booting and shutting down processes. File Systems, Core System Services, Process of configuring, compiling, Linux Kernel TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security
Aug	FY	15	13 9	**Internet Services** **Practical 4-6**	Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMPT), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network authentication system (Kerberos), Domain Name Service (DNS), Security
Sep	FY	15	9 9	**Internet Services** **Practical 7-8**	Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS
Oct	FY	15	9		Lightweight Directory Access Protocol (LDAP), Dynamic Host configuration Protocol (DHCP), MySQL, LAMP Applications, File Services, Email Services, Chat applications, Virtual Private Networking.
Nov	FY			**Practical Exam**	
Dec				**Exams**	
Jan		15	15 9	**Cloud Computing Basics** **Web Services –** **Virtulization:-** Practical 1-2.	Distributed Computing, Parallel Computing, WSDL structure, SOAP- Structure of SOAP Message (In JAX-WS), SOAP Messaging Architecture, SOAP Header, Client-side SOAP Handler, REST What is REST? HTTP methods, Java API for RESTful Web Services (JAXRS) Characteristics of Virtualized Environments.. Pros and Cons of Virtualization. Virtualization using KVM. Creating virtual machines. oVirt - management toolforvirtualization environment

Feb		15	15 9	**Introduction to Cloud Computing:** **Cloud Computing** **Software Security fundamentals** **Practical 3-4**	Definition, Types of Clouds, Deployment of software solutions and web applications, Types of Cloud Platforms, Essential characteristics – On demand self-service, Broad network access, Location independent resource pooling ,Rapid elasticity , Measured service, Comparing cloud providers with traditional IT service providers Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices, Approaches to Cloud Software Requirement Engineering, Cloud Security Policy Implementation.
March		15	15 9	**Cloud Applications** **CloudSim:** **AWS:** **Practical 6-8**	Introduction to Simulator, understanding CloudSim simulator, CloudSim Architecture(User code, CloudSim, GridSim, SimJava) Understanding Working platform for CloudSim, **OpenStack:** Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat Architecting on AWS, Building complex solutions with Amazon Virtual Private Cloud (Amazon VPC).
April			Practical Exam, Theory exam , Paper Assessment and Result		

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: I,II.**
Class : FY **Subject : COD,GT.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
July	FY	15	Computer Abstractions and Technology:	07	Computer Abstractions and Technology: Basic structure and operation of a computer, functional units and their interaction. Representation of numbers and characters.
Aug	FY	15	Logic circuits and functions:	08	Combinational circuits and functions: Basic logic gates and functions, truth tables; logic circuits and functions. Minimization with Karnaugh maps. Synthesis of logic functions with and-or-not gates, nand gates, nor gates. Fan-in and fan-out requirements; tristate buffers. Half adder, full adder, ripple carry adder. (Flip flops) Gated S-R and D latches, edge-triggered D latch. Shift registers and registers. Decoders, multiplexers. Sequential circuits and functions: State diagram and state table; finite state machines and their synthesis.
Sep	FY	15	Instruction set architectures:	08	Memory organization, addressing and operations; word size, big-endian and little- endian arrangements. Instructions, sequencing. Instruction sets for RISC and CISC (examples Altera NIOS II and Freescale ColdFire). Operand addressing modes; pointers; indexing for arrays. Machine language, assembly language, assembler directives Function calls, processor runtime stack, stack frame. Types of machine instructions: arithmetic, logic, shift, etc. Instruction sets, RISC and CISC examples.
Oct	FY	15	Basic Processor Unit:		Main components of a processor: registers and register files, ALU, control unit, instruction fetch unit, interfaces to instruction and data memories. Datapath. Instruction fetch and execute; executing arithmetic/logic, memory access and branch instructions, hardwired and microprogrammed control for RISC and CISC Basic I/O: Accessing I/O devices, data transfers between processor and I/O devices. Interrupts and exceptions: interrupt requests and processing.

Jan	FY	15	Green IT Overview:		Green IT Overview: Introduction , Environmental Concerns and Sustainable Development, Environmental Impacts of IT, Green I , Holistic Approach to Greening IT, Greening IT, Applying IT for Enhancing Environmental Sustainability, Green IT Standards and Eco-Labelling of IT , Enterprise Green IT Strategy, Green Washing, Green IT: Burden or Opportunity?Green Devices and Hardware: Introduction , Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose Green Software: Introduction , Processor Power States , Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power Sustainable Software Development: Introduction, Current Practices, Sustainable Software, Software Sustainability Attributes, Software Sustainability Metrics, Sustainable Software Methodology, Defining Actions
Feb	FY	15	Green Data Centres:		Green Data Centres: Data Centres and Associated Energy Challenges, Data Centre IT Infrastructure, Data Centre Facility Infrastructure Implications for Energy Efficiency, IT Infrastructure Management, Green Data Centre Metrics Green Data Storage: Introduction , Storage Media Power Characteristics, Energy Management Techniques for Hard Disks, System-Level Energy Management Green Networks and Communications: Introduction, Objectives of Green Network Protocols, Green Network Protocols and Standardsm Enterprise Green IT Strategy: Introduction, Approaching Green IT Strategies, Business Drivers of Green IT Strategy, Business Dimensions for Green IT Transformation,, Organizational Considerations in a Green IT Strategy, Steps in Developing a Green IT Strategy, Metrics and Measurements in Green Strategies.
March	FY	15	Sustainable Information Systems and Green Metrics:		Sustainable Information Systems and Green Metrics: Introduction, Multilevel Sustainable Information, Sustainability Hierarchy Models, Product Level Information, Individual Level Information, Functional Level Information, Organizational Level Information, Measuring Maturity of Sustainable ICT Enterprise Green IT Readiness: Introduction, Readiness and Capability, Development of the G-Readiness Framework, Measuring an Organization's G-Readiness Sustainable IT Services: Creating a Framework for Service Innovation: Introduction, Factors Driving the Development of Sustainable IT, Sustainable IT Services (SITS), SITS Strategic Framework Green Enterprises and the Role of IT: Introduction, Organizational and Enterprise Greening, Information Systems in Greening Enterprises, Greening the Enterprise: IT Usage and Hardware, Inter-organizational Enterprise Activities and Green Issues

Signature Of Teacher

Signature

Co-ordinator

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: III,IV**

Class : SY **Subject : IOT,TOC,CN,Android.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	SoC and Raspberry Pi	5	System on Chip: What is System on chip? Structure of System on Chip SoC products FPGA, GPU, APU, Compute Units. ARM 8 Architecture SoC on ARM 8. ARM 8 Architecture Introduction Introduction to Raspberry Pi. Introduction to Raspberry Pi, Raspberry Pi Hardware. Preparing your raspberry Pi. Raspberry Pi Boot. Learn how this small SoC boots without BIOS. Configuring boot sequences and hardware.
July	SY		Programming Raspberry Pi	10	Raspberry Pi and Linux: About Raspbian, Linux Commands, Configuring Raspberry Pi with Linux Commands Programing interfaces: Introduction to Node.js, Python.
Aug	SY	15	Raspberry Pi Interfaces	15	Raspberry Pi Interfaces: UART, GPIO, I2C, SPI Useful Implementations: Cross Compilation, Pulse Width Modulation, SPI for Camera.
Sep	SY	15	IoT and Protocols	15	Introduction to IoT: What is IoT? IoT examples, Simple IoT LED Program. IoT and Protocols IoT Security: HTTP, UPnp, CoAP, MQTT, XMPP. IoT Service as a Platform: Clayster, Thinger.io, SenseIoT, carriots and Node RED. IoT Security and Interoperability: Risks, Modes of Attacks, Tools for Security and Interoperability.
Dec	SY	15	Introduction Network Models:	05	Introduction to data communication, Components, Data Representation, Data Flow, Networks, Network Criteria, Physical Structures, Network types, Local Area Network, Wide Area Network, Switching, The Internet, Accessing the Internet, standards and administration Internet Standards. Network Models, Protocol layering, Scenarios, Principles of Protocol Layering, Logical Connections, TCP/IP Protocol Suite, Layered Architecture, Layers in the TCP/IP Protocol Suite, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing. Detailed introduction to Physical Layer, Detailed introduction to Data-Link Layer, Detailed introduction to Network Layer, Detailed introduction to Transport Layer, Detailed introduction to Application Layer, Data and Signals, Analog and Digital Data, Analog and Digital Signals, Sine Wave Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth, Digital Signal, Bit Rate, Bit Length, Transmission of Digital Signals, Transmission Impairments, Attenuation, Distortion, Noise, Data Rate Limits, Performance, Bandwidth, Throughput, Latency (Delay)
n	SY		Introduction to Physical Layer and Data-Link Layer:	10	Digital Transmission digital-to-digital conversion, Line Coding, Line Coding Schemes, analog-to-digital conversion, Pulse Code Modulation (PCM), Transmission Modes, Parallel Transmission, Serial Transmission, Analog Transmission, digital-to-analog Conversion, Aspects of Digital-to-Analog Conversion, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, analog-to-analog Conversion, Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), Multiplexing, Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing Transmission Media, Guided Media, Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable. Switching, Three Methods of Switching , Circuit Switched Networks, Packet Switching, Introduction to Data-Link Layer, Nodes and Links, Services, Two Sub-layers, Three Types of addresses, Address Resolution Protocol (ARP). Error Detection and Correction, introduction, Types of Errors, Redundancy, Detection versus Correction,
	SY	15	Network layer, Transport Layer	15	Media Access Control (MAC), random access, CSMA, CSMA/CD, CSMA/CA, controlled access, Reservation, Polling, Token Passing, channelization, FDMA, TDMA, CDMA. Connecting Devices and Virtual LANs, connecting devices, Hubs, Link-Layer Switches, Routers, Introduction to Network Layer, network layer services, Packetizing, Routing and Forwarding, Other Services. IPv4 addresses, Address Space, Classful Addressing

					Unicast Routing, General Idea, Least-Cost Routing, Routing Algorithms, Distance-Vector Routing, Link-State Routing, Path-Vector Routing, Introduction to Transport Layer, Transport-Layer Services, Connectionless and Connection-Oriented Protocols, Transport-Layer Protocols, Service, Port Numbers, User Datagram Protocol, User Datagram, UDP Services, UDP Applications, Transmission Control Protocol, TCP Services, TCP Features, Segment
June	SY	15	Automata Theory	07	Defining Automaton, Finite Automaton, Transitions and Its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines
July	SY		Automata Theory 1) Formal Languages	08	Minimizing Automata, Mealy and Moore Machines, Minimizing Automata. Defining Grammar, Derivations, Languages generated by Grammar, Chomsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on Languages, Languages and Automata,Regular Grammar, Regular Expressions, Finite automata and Regular Expressions
Aug	SY	15	) Regular Sets and Regular Grammar	6	Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar,Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG.
Sep	SY	15	1)Context Free Languages 2) Pushdown Automata 3) Linear Bound Automata 4) Turing Machines, Undecidability	7	Definitions, Acceptance by PDA, PDA and CFG.The Linear Bound Automata Model, Linear Bound Automata and Languages. Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine,The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems.
DEC	SY	15	What is Android?	8	What is Android? Obtaining the required tools, creating first android app, understanding the components of screen, adapting display orientation, action bar, Activities and Intents, Activity Lifecycle and Saving State, Basic Views: TextView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView, TimePicker View, DatePicker View, ListView View, Spinner View
Jan	SY	15	User Input Controls.	7	User Input Controls, Menus, Screen Navigation, RecyclerView, Drawables, Themes and Styles, Material design, Providing resources for adaptive layouts, AsyncTask and AsyncTaskLoader. Connecting to the Internet, Broadcast receivers, Services, Notifications, Alarm managers, Transferring data efficiently
Feb	SY	15	Data	15	Data - saving, retrieving, and loading: Overview to storing data, Shared preferences, SQLite primer, store data using SQLite database, ContentProviders, loaders to load and display data, Permissions, performance and security, Firebase and AdMob, Publish your app

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Islam Yusuf College of
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Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Charul Singh

Class : TY

Semester: V&VI

Subject : INS,EH.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	TY	15	Introduction	05	Introduction: Security Trends, The OSI Security Architecture, Security Attacks, Security Services,
July	TY		Cryptography and RSA.	10	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round 15 Page 10 of 63 details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation. Stream Ciphers Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm
Aug	TY	15	Key Management	15	Key Management: Public-Key Cryptosystems, Key Management, Diffie Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC Digital Signatures and Authentication: Digital Signatures, Authentication Protocols, Digital Signature Standard Authentication Applications: Kerberos, X.509 Authentication, Public-Key Infrastructure
Sep	TY	15	Electronic Mail Security	15	Electronic Mail Security: Pretty Good Privacy, S/MIME IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations. Key Management Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction Intrusion: Intruders, Intrusion Techniques, Intrusion Detection Malicious Software: Viruses and Related Threats, Virus Countermeasures, DDOS Firewalls: Firewall Design Principles, Types of Firewalls

Jan	TY	15	Introduction, Scanning and Enumeration.	15	Introduction Terminology, Hacking Technology Types, Ethical Hacking Phases, Hacktivism, Hacker Classes, Skills Required for an Ethical Hacker, Vulnerability Research, Ways to Conduct Ethical Hacking Footprinting: Definition, Information Gathering Methodology, Competitive Intelligence, DNS Enumeration, Whois and ARIN Lookups, Types of DNS Records, Traceroute in Footprinting, E-Mail Tracking Social Engineering: Common Types Of Attacks Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scanning, CEH Scanning Methodology, Ping Sweep Techniques, Nmap Command Switches, SYN, Stealth, XMAS, NULL, 15 Page 48 of 63 IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration
Feb	TY	15	System Hacking,Hacking Web Servers.	15	System Hacking: Password-Cracking Techniques, Types of Passwords, Keyloggers and Other Spyware Technologies, Escalating Privileges, Rootkits Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniq Sniffing Countermeasures Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures Session Hijacking: Spoofing vs. Hijacking, Types, Sequence Prediction, Steps, Prevention Hacking Web Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening
March					
	TY	15	Web Application Vulnerabilities,Penetration Testing Methodologies.	15	Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures Web-Based Password Cracking Techniques: Authentication Types, Password Crackers, Countermeasures SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques Wireless Hacking: WEP, WPA Authentication Mechanisms, and Cracking Techniques, Wireless Sni... Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables

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Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: I,II**
Class : FY
Subject : Soft Skills,Programming with C,Database System,Green Technologies

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	FY	15+15	14	Introduction to Soft Skills Personality Development Emotional Intelligence	Soft Skills: An Introduction - Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. Personality Development: Knowing Yourself, Positive Thinking, Johari"s Window, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics
July	FY			Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership	Capacity Building: Learn, Unlearn and Relearn Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress
Aug	FY	15+15	13	Basic Skills in Communication	Components of effective communication Communication Skills Job Interviews Group Discussion:
				Introduction to DBMS Data models	Database, DBMS - Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture Data models - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network)
S ep	FY	15+15	20	Academic and Professional Skills	Professional Presentation Creativity at Workplace:
				Entity Relationship Model ER to Table DDL Statements DML Statements	Viewing the structure of a table Insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints - primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables
Oct	FY	15+15		Relational data model Relational Algebra Functions	omains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural joins, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - inner join, outer join (left outer, right outer, full outer)

Name Of the Teacher: Amita Vaid
Class : SY

					Subqueries - subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries 1
Nov	FY	15		Exam & Papar evaluation	
Dec	FY	15+15	12+05	Structure of C program Data Variables Types of operators	Header and body, Use of comments. Interpreters vs compilers, Python vs C. Compilation of a program. Formatted I/O: printf(), scanf(). Data: Variables, Constants, data types like: int, float char, double and void, short and long size qualifiers, signed and unsigned qualifiers. Compare with datatypes in Python. Compare static typing in C vs dynamic typing in Python Variables: Declaring variables, scope of the variables according to block, hierarchy of data types. Compare explicit declarations in C with implicit declarations in Python. Types of operators: Arithmetic, relational, logical, compound assignment, increment and decrement, conditional or ternary, bitwise and comma operators. Precedence and order of evaluation, statements and Expressions. Automatic and explicit type conversion.
				Green IT Fundamentals	Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future.
Jan	FY	15+15	12	Iterations Arrays Data Input and Output functions Manipulating Strings	Control statements for decision making: (i) Branching: if statement, else.. if statement, (does the writer mean if-else or nested ifs)switch statement. (ii) Looping: while loop, do.. while, for loop. (iii) Jump statements: break, continue and goto. declaring array variables, initialization of arrays, accessing array elements. Compare array types of C with list and tuple types of Python. Character I/O format: getch(), getche(), getchar(), getc(), gets(), putchar(), putc(), puts()Declaring and initializing String variables, Character and string handling functions. Compare with Python strings.
				Green Assets and emerging Trends	Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling, Cloud Computing and Data Centers, Networking and CommunicationsInfrastructure, End-User Devices, Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM, Green Mobile Business Process, Digital Library Green Enterprise Architecture: Green IT and organizational Systems, Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture, Green Supply Chain Management, Green Portals in Green Enterprise Architecture, Environmental Intelligence.
Feb	FY	15+15	11	Functions Recursion Pointer	Functions: Function declaration, function definition, Global and local variables, return statement, Calling a function by passing values. Recursion: Definition, Recursive functions. 15L 20 Unit III Pointer: Fundamentals, Pointer variables, Referencing and de-referencing, Pointer Arithmetic, Using Pointers with Arrays, Using Pointers with Strings, Array of Pointers, Pointers as function arguments, Functions returning pointers
				Green Information Systems(GIS)	Green Information Systems(GIS): Design and Development Models: Describing GIS, GIS Requirements. Sociocultural Aspects of Green IT: Green IT's Social Impact, Learning Organization, Green Social Stakeholders, Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT, Green IT Ethics and Code of Conduct, Privacy and Security of Green Information, Green Washing, Communications in Green Transformation Projects, Green HR and Changing Organizational Structures, Green-Collar Workers, Roles and Skill Sets, Green Virtual Communities Green Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Emerging Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technology Trends, Cloud Computing, Nanotechnology, Quantum computing, Renewable energies, eco-design, Collaborative environmental intelligence
March	FY	15+15	06	Pointer Memory Allocation	Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() and sizeof operator. Compare with automatic garbage collection in Python. Structure: Declaration of structure, reading and assignment of structure variables, Array of structures, arrays within structures, structures within structures. Compare C structures with Python tuples. Unions: Defining and working with unions. File handling: Different types of files like text and binary, Different types of functions: fopen(), fclose(), fgetc(), fputc(), fgets(), fputs(), fscanf(), fprintf(), getw(), putw(), fread(), fwrite(), fseek().
April	FY			Exam & paper assessment	

Signature Of Teacher

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Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: III,IV**

Class : SY **Subject :Operating System,Fundamentals of Algorithms**

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Introduction to Operating-Systems Operating-System Structures Processes Threads Process Synchronization **Practical 1-3**	Definition of Operating System, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure
Aug	SY	15	13 9	**Process Synchronization** **Scheduling:** **Deadlocks:** **Practical from 3-6**	General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock
Sep	SY	15	9 9	**Main Memory** **Virtual Memory** **Mass-Storage Structure** **File-System Interface** **File-System Implementation**	Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Overview, Disk Structure, Disk Scheduling, Disk Management File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	**Introduction to algorithm**	Introduction to algorithm, Why to analysis algorithm, Running time analysis, How to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming
Jan	SY	15	15 9	**Tree algorithms** **Graph Algorithms** **Practical from 5-7**	Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees. Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree
Feb	SY	15	15 9	Dynamic Programming Practical 7-9	Introduction, What is a Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence
March &b April	SY		**Practical Exam, Theory exam , Paper Assessment and Result**		

Signature Of Teacher

Coordinator
Department of Computer Science

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[illegible] College of
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Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2020-21
Semester wise Plan

Name Of the Teacher: Amita Vakil Semester: V, VI

Class : SY, TY Subject :Web Service, Datata science

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Web services basicsation Practical 1-3	What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platform
Aug	SY	15	13 9	The REST Architectural style Practical from 3-6	Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services
Sep	SY	15	9 9	Developing Service-Oriented Applications with WCF	What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details, Web Service QoS
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	Introduction to Data Science	What is Data? Different kinds of data, 151. Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, Data Management: Data Collection, Data cleaning/extraction, Data analysis & Modeling
Jan	SY	15	15 9	Data Curation Practical from 5-7	Query languages and Operations to specify and transform data. Structured schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems in the acquisition and structuring of data. Security and ethical considerations in relation to authenticating and authorizing access to data via remote systems. Software development tools. Large scale data systems. Amazon Web Services (AWS).
Feb	SY	15	15 9	Statistical Modelling and Machine Learning Practical 7-9	Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO Data transformations: Dimension reduction, Feature extraction, Smoothing and aggregating Supervised Learning: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, separating hyperplanes, k-NN Unsupervised Learning: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods
March & April	SY		Practical Exam, Theory exam, Paper Assessment and Result		

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Department of Computer Science

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Sybal Dias Semester: I,II
Class : FY
Subject : Free open source, Linux

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	Introduction	Open Source, Free Software, Free Software vs. Open Source software, Public Domain Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project, Methodologies Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licenses and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copy lefts, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization Open source vs. closed source, Open source government, Open source ethics, Social and Financial impacts of open source technology, Shared software, Shared source, Open Source in Government Case Studies Example Projects: Apache web server, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, wordpress, GCC, GDB, github, Open Office. Study: Understanding the developmental models, licensings, mode of funding,commercial/non-commercial use. Open Source Hardware, Open Source Design, Open source Teaching. Open source media. Collaboration, Community and Communication Contributing to Open Source Projects Introduction to github, interacting with the community on github, Communication and etiquette, testing open source code, reporting issues, contributing code. Introduction to wikipedia, contributing to Wikipedia Or contributing to any prominent open source project of student's choice. Starting and Maintaining own Open Source Project. Understanding Open Source Ecosystem Open Source Operating Systems: GNU/Linux, Android, Free BSD, Open Solaris, Open Source Hardware, Virtualization Technologies. Containerization Technologies: Docker, Development tools, IDEs, debuggers, Programming languages, LAMP, Open Source database technologies **History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages** **General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files. More file attributes**
	FY	15	13	1)Advanced Bash shell **1)Linux operating system and Basics**	Simple Filters, Filters using regular expressions Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliase

			9	2)Basic Bash shell commands 3)Practical from 1 to 3 commands 2)The Linux environment variable 3)Understanding Linux file permission 4)Linux Security 5)Practical from 4 to 6	Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files. Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh.
	FY	15	9 9	1)Networking 2)Working withEditors 3)Basic script building 4) Practical from 6 to 9	TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS awk, sed and Introduction to vi.Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting input and Output, Pipes performing math, Exiting the script.
Oct	FY	15	9		
Nov	FY			Practical Exam	
Dec					
Jan		15	15 9	1 5)Practical from 1 to 6	
Feb		15	15 9		
March		15	15 9		
April			Practical Exam, Theory exam , Paper Assessment and Result		

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Sybal Dias **Semester: III,IV**

Class : SY **Subject : Core java ,Advanced java**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	The Java Language OOPS	5	Features of Java, Java programming format, Java Tokens, Java Statements, Java Data Types, Typecasting, Arrays Introduction, Class, Object, Static Keywords, Constructors, this Key Word, Inheritance, super Key Word, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces String.
July	SY		String Manipulations .	10	String Buffer, String Tokenizer Packages: Introduction to predefined packages (java.lang, java.util, java.io, java.sql, java.swing), User Defined Packages, Access specifiers.
Aug	SY	15	Exception Handling: I/O Streams:	15	Introduction, Pre-Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods ResultSet, Navigating and manipulating data, ResultSetMetaData, Managing Transactions in JDBC, JDBC Exception classes, BLOB & CLOB Introduction, Byte-oriented streams, Character-oriented streams, File, Random access File, Serialization Networking: Introduction, Socket, Server socket, Client –Server Communication
Sep	SY	15	Wrapper Classes AWT	15	: Introduction, Byte, Short, Integer, Long, Float, Double, Character, Boolean classes Collection Framework: Introduction, util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its Inner Classes: Introduction, Member inner class, Static inner class, Local inner class, Anonymous inner class AWT: Introduction, Components, Event-Delegation-Model, Listeners, Layouts, Individual components Label, Button, CheckBox, Radio Button, Choice, List, Menu, Text Field, Text Area
DEC	SY	15	Swing Swing components	8	Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Jlabel, JTextField and JPasswordField, JTextAres, JButton, JCheckBox, JRadioButton, JComboBox and JList JDBC: Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updations, CallableStatement, BLOB & CLOB

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Sybal Dias **Semester: III,IV**

Class : SY **Subject : Core java ,Advanced java**

Semester Planning of Teaching

Jan	SY	15	Servlets: Session Tracking Mechanisms JSP:	7	Servlets: Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms JSP: Introduction, JSP LifeCycle, JSP Implicit Objects & Scopes, JSP Directives, JSP Scripting Elements, JSP Actions: Standard actions and customized actions,
Feb	SY	15	Java Beans:	15	Introduction, JavaBeans Properties, Examples Struts 2: Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results & Result Types, Value
March	SY	15	Stack/OGNL JSON:	15	Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java.

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Sybal Dias

Semester: V,VI

Class : TY

Subject : Linux Administration system,Cloud computing

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	**Introduction Single-Host Administration Networking and Security** Practical 1-3	Technical Summary of Linux Distributions, Managing Software Managing Users and Groups, Booting and shutting down processes. File Systems, Core System Services, Process of configuring, compiling, Linux Kernel TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security
Aug	FY	15	13 9	**Internet Services** **Practical 4-6**	Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMPT), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network authentication system (Kerberos), Domain Name Service (DNS), Security
Sep	FY	15	9 9	**Internet Services** **Practical 7-8**	Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS
Oct	FY	15	9		Lightweight Directory Access Protocol (LDAP), Dynamic Host configuration Protocol (DHCP), MySQL, LAMP Applications, File Services, Email Services, Chat applications, Virtual Private Networking.
Nov	FY			**Practical Exam**	
Dec				Exams	

Jan		15	15 9	**Cloud Computing Basics** **Web Services –** **Virtulization:-** Practical 1-2.	Distributed Computing, Parallel Computing, WSDL structure, SOAP- Structure of SOAP Message (In JAX-WS), SOAP Messaging Architecture, SOAP Header, Client-side SOAP Handler, REST What is REST? HTTP methods, Java API for RESTful Web Services (JAXRS) Characteristics of Virtualized Environments.. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management toolforvirtualization environment
Feb		15	15 9	**Introduction to Cloud Computing:** **Cloud Computing Software Security fundamentals** **Practical 3-4**	Definition, Types of Clouds, Deployment of software solutions and web applications, Types of Cloud Platforms, Essential characteristics – On demand self-service, Broad network access, Location independent resource pooling ,Rapid elasticity , Measured service, Comparing cloud providers with traditional IT service providers Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices, Approaches to Cloud Software Requirement Engineering, Cloud Security Policy Implementation.
March		15	15 9	**Cloud Applications** **CloudSim:** **AWS:** **Practical 6-8**	Introduction to Simulator, understanding CloudSim simulator, CloudSim Architecture(User code, CloudSim, GridSim, SimJava) Understanding Working platform for CloudSim, **OpenStack:** Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat Architecting on AWS, Building complex solutions with Amazon Virtual Private Cloud (Amazon VPC).
April			Practical Exam, Theory exam , Paper Assessment and Result		

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Charul Singh
Class : FY

Semester: I,II.
Subject : COD,GT.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
July	FY	15	Computer Abstractions and Technology:	07	Computer Abstractions and Technology: Basic structure and operation of a computer, functional units and their interaction. Representation of numbers and characters.
Aug	FY	15	Logic circuits and functions:	08	Combinational circuits and functions: Basic logic gates and functions, truth tables; logic circuits and functions. Minimization with Karnaugh maps. Synthesis of logic functions with and-or-not gates, nand gates, nor gates. Fan-in and fan-out requirements; tristate buffers. Half adder, full adder, ripple carry adder. (Flip flops) Gated S-R and D latches, edge-triggered D latch. Shift registers and registers. Decoders, multiplexers. Sequential circuits and functions: State diagram and state table; finite state machines and their synthesis.
Sep	FY	15	Instruction set architectures:	08	Memory organization, addressing and operations; word size, big-endian and little- endian arrangements. Instructions, sequencing. Instruction sets for RISC and CISC (examples Altera NIOS II and Freescale ColdFire). Operand addressing modes; pointers; indexing for arrays. Machine language, assembly language, assembler directives. Function calls, processor runtime stack, stack frame. Types of machine instructions: arithmetic, logic, shift, etc. Instruction sets, RISC and CISC examples.
Oct	FY	15	Basic Processor Unit:		Main components of a processor: registers and register files, ALU, control unit, instruction fetch unit, interfaces to instruction and data memories. Datapath. Instruction fetch and execute; executing arithmetic/logic, memory access and branch instructions; hardwired and microprogrammed control for RISC and CISC. Basic I/O: Accessing I/O devices, data transfers between processor and I/O devices. Interrupts and exceptions: interrupt requests and processing.

Jan	FY	15	Green IT Overview:		Green IT Overview. Introduction , Environmental Concerns and Sustainable Development, Environmental Impacts of IT, Green I Holistic Approach to Greening IT, Greening IT, Applying IT for Enhancing Environmental Sustainability, Green IT Standards and Eco-Labelling of IT , Enterprise Green IT Strategy, Green Washing, Green IT: Burden or Opportunity?Green Devices and Hardware: Introduction , Life Cycle of a Device or Hardware, Reuse Recycle and Dispose Green Software: Introduction , Processor Power States , Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power Sustainable Software Development: Introduction, Current Practices, Sustainable Software, Software Sustainability Attributes, Software Sustainability Metrics, Sustainable Software Methodology, Defining Actions
Feb	FY	15	Green Data Centres:		Green Data Centres: Data Centres and Associated Energy Challenges. Data Centre IT Infrastructure, Data Centre Facility Infrastructure, Implications for Energy Efficiency, IT Infrastructure Management. Green Data Centre Metrics Green Data Storage: Introduction , Storage Media Power Characteristics, Energy Management Techniques for Hard Disks, System-Level Energy Management Green Networks and Communications: Introduction, Objectives of Green Network Protocols, Green Network Protocols and Standardsm Enterprise Green IT Strategy: Introduction, Approaching Green IT Strategies, Business Drivers of Green IT Strategy, Business Dimensions for Green IT Transformation,, Organizational Considerations in a Green IT Strategy, Steps in Developing a Green IT Strategy, Metrics and Measurements in Green Strategies.
March	FY	15	Sustainable Information Systems and Green Metrics:		Sustainable Information Systems and Green Metrics: Introduction, Multilevel Sustainable Information, Sustainability Hierarchy Models, Product Level Information, Individual Level Information, Functional Level Information, Organizational Level Information, Measuring the Maturity of Sustainable ICT Enterprise Green IT Readiness Introduction, Readiness and Capability, Development of the G-Readiness Framework, Measuring an Organization's G-Readiness Sustainable IT Services: Creating a Framework for Service Innovation: Introduction, Factors Driving the Development of Sustainable IT, Sustainable IT Services (SITS), SITS Strategic Framework Green Enterprises and the Role of IT: Introduction, Organizational and Enterprise Greening, Information Systems in Greening Enterprises, Greening the Enterprise IT Usage and Hardware, Inter-organizational Enterprise Activities and Green Issues

Signature Of Teacher

Signature

Coordinator
Computer Science Department
Arts, Science & Commerce
Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: III,IV**

Class : SY **Subject : IOT,TOC,CN,Android.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	SoC and Raspberry Pi	5	System on Chip What is System on chip? Structure of System on Chip SoC products FPGA, GPU, APU, Compute Units ARM 8 Architecture SoC on ARM 8 ARM 8 Architecture Introduction Introduction to Raspberry Pi Introduction to Raspberry Pi, Raspberry Pi Hardware, Preparing your raspberry Pi, Raspberry Pi Boot: Learn how this small SoC boots without BIOS Configuring boot sequences and hardware.
July	SY		Programming Raspberry Pi	10	Raspberry Pi and Linux: About Raspbian, Linux Commands, Configuring Raspberry Pi with Linux Commands Programing interfaces: Introduction to Node.js, Python
Aug	SY	15	Raspberry Pi Interfaces	15	Raspberry Pi Interfaces: UART, GPIO, I2C, SPI Useful Implementations: Cross Compilation, Pulse Width Modulation, SPI for Camera
Sep	SY	15	IoT and Protocols	15	Introduction to IoT What is IoT? IoT examples, Simple IoT LED Program. IoT and Protocols IoT Security HTTP, UPnp, CoAP, MQTT, XMPP. IoT Service as a Platform: Clayster, Thinger.io, SenseIoT, carriots and Node RED IoT Security and Interoperability: Risks, Modes of Attacks, Tools for Security and Interoperability
Dec	SY	15	Introduction Network Models:	05	Introduction to data communication, Components, Data Representation, Data Flow, Networks: Network Criteria, Physical Structures, Network types, Local Area Network, Wide Area Network, Switching, The Internet, Accessing the Internet, standards and administration Internet Standards Network Models, Protocol layering, Scenarios, Principles of Protocol Layering, Logical Connections, TCP/IP Protocol Suite, Layered Architecture, Layers in the TCP/IP Protocol Suite, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing, Detailed introduction to Physical Layer, Detailed introduction to Data-Link Layer, Detailed introduction to Network Layer, Detailed introduction to Transport Layer, Detailed introduction to Application Layer, Data and Signals, Analog and Digital Data, Analog and Digital Signals, Sine Wave, Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth, Digital Signal, Bit Rate, Bit Length, Transmission of Digital Signals, Transmission Impairments, Attenuation, Distortion, Noise, Data Rate Limits, Performance, Bandwidth, Throughput, Latency (Delay)
Jan	SY		Introduction to Physical Layer and Data-Link Layer	10	Digital Transmission digital-to-digital conversion, Line Coding, Line Coding Schemes, analog-to-digital conversion, Pulse Code Modulation (PCM), Transmission Modes, Parallel Transmission, Serial Transmission. Analog Transmission, digital-to-analog Conversion, Aspects of Digital-to-Analog Conversion, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, analog-to-analog Conversion, Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), Multiplexing, Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing. Transmission Media Guided Media, Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable. Switching, Three Methods of Switching , Circuit Switched Networks, Packet Switching, Introduction to Data-Link Layer, Nodes and Links, Services, Two Sub-layers, Three Types of addresses, Address Resolution Protocol (ARP). Error Detection and Correction, introduction, Types of Errors, Redundancy, Detection versus Correction,
Feb	SY	15	Network layer, Transport Layer	15	Media Access Control (MAC), random access, CSMA, CSMA/CD, CSMA/CA, controlled access, Reservation, Polling, Token Passing, channelization, FDMA, TDMA, CDMA. Connecting Devices and Virtual LANs, connecting devices, Hubs, Link-Layer Switches, Routers, Introduction to Network Layer, network layer services, Packetizing, Routing and Forwarding, Other Services, IPv4 addresses, Address Space, Classful Addressing

					Unicast Routing: General Idea, Least-Cost Routing, Routing Algorithms, Distance-Vector Routing, Link-State Routing, Path-Vector Routing, Introduction to Transport Layer, Transport-Layer Services, Connectionless and Connection-Oriented Protocols, Transport-Layer Protocols, Service, Port Numbers, User Datagram Protocol, User Datagram, UDP Services, UDP Applications, Transmission Control Protocol, TCP Services, TCP Features, Segment
June	SY	15	Automata Theory	07	Defining Automaton, Finite Automaton, Transitions and its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines
July	SY		Automata Theory 1) Formal Languages	08	Minimizing Automata, Mealy and Moore Machines, Minimizing Automata Defining Grammar, Derivations, Languages generated by Grammar, Chomsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on Languages, Languages and Automata,Regular Grammar, Regular Expressions, Finite automata and Regular Expressions
Aug	SY	15	) Regular Sets and Regular Grammar	6	Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar,Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG
Sep	SY	15	1)Context Free Languages 2) Pushdown Automata 3) Linear Bound Automata 4) Turing Machines, Undecidability	7	Definitions, Acceptance by PDA, PDA and CFG,The Linear Bound Automata Model, Linear Bound Automata and Languages. Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine,The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems.
DEC	SY	15	What is Android?	8	What is Android? Obtaining the required tools, creating first android app, understanding the components of screen, adapting display orientation, action bar, Activities and Intents, Activity Lifecycle and Saving State, Basic Views: TextView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView, TimePicker View, DatePicker View, ListView View, Spinner View
Jan	SY	15	User Input Controls	7	User Input Controls, Menus, Screen Navigation, RecyclerView, Drawables, Themes and Styles, Material design, Providing resources for adaptive layouts. AsyncTask and AsyncTaskLoader, Connecting to the Internet, Broadcast receivers, Services, Notifications, Alarm managers, Transferring data efficiently
Feb	SY	15	Data	15	Data - saving, retrieving, and loading, Overview to storing data, Shared preferences, SQLite primer, store data using SQLite database, ContentProviders, loaders to load and display data, Permissions, performance and security. Firebase and AdMob, Publish your app

Signature Of Teacher

Signature

Head Of Department

Arts, Science & Commerce,

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: V&VI**

Class : TY **Subject : INS,EH.**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	TY	15	Introduction	05	Introduction: Security Trends, The OSI Security Architecture, Security Attacks, Security Services,
July	TY		Cryptography and RSA.	10	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round 15 Page 10 of 63 details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm
Aug	TY	15	Key Management	15	Key Management: Public-Key Cryptosystems, Key Management, Diffie Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC Digital Signatures and Authentication: Digital Signatures, Authentication Protocols, Digital Signature Standard Authentication Applications: Kerberos, X.509 Authentication, Public-Key Infrastructure
Sep	TY	15	Electronic Mail Security	15	Electronic Mail Security: Pretty Good Privacy, S/MIME IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction Intrusion: Intruders, Intrusion Techniques, Intrusion Detection Malicious Software: Viruses and Related Threats, Virus Countermeasures, DDOS Firewalls: Firewall Design Principles, Types of Firewalls

Jan	TY	15	Introduction, Scanning and Enumeration.	15	Introduction: Terminology, Hacking Technology Types, Ethical Hacking Phases, Hacktivism, Hacker Classes, Skills Required for an Ethical Hacker, Vulnerability Research, Ways to Conduct Ethical Hacking Footprinting: Definition, Information Gathering Methodology, Competitive Intelligence, DNS Enumeration, Whois and ARIN Lookups, Types of DNS Records, Traceroute in Footprinting, E-Mail Tracking Social Engineering: Common Types Of Attacks Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scanning, CEH Scanning Methodology, Ping Sweep Techniques, Nmap Command Switches, SYN, Stealth, XMAS, NULL, 15 Page 48 of 63 IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration
Feb	TY	15	System Hacking,Hacking Web Servers.	15	System Hacking: Password-Cracking Techniques, Types of Passwords, Keyloggers and Other Spyware Technologies, Escalating Privileges, Rootkits Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniqu Sniffing Countermeasures Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures Session Hijacking: Spoofing vs. Hijacking, Types, Sequence Prediction, Steps, Prevention Hacking Web Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening
March					
	TY	15	Web Application Vulnerabilities,Penetration Testing Methodologies.	15	Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures Web-Based Password Cracking Techniques: Authentication Types, Password Crackers, Countermeasures SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques Wireless Hacking: WEP, WPA Authentication Mechanisms, and Cracking Techniques, Wireless Sn[illegible]s, Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables

Signature Of Teacher

Coordinator
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Jogeshwari (East), Mumbai - 400 060.

Signature
Head Of Department

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Amita Vakil
Class : FY
Subject : Soft Skills,Programming with C,Database System,Green Technologies

Semester: I,II

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	FY	15+15	14	Introduction to Soft Skills Personality Development Emotional Intelligence	Soft Skills: An Introduction - Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. Personality Development: Knowing Yourself, Positive Thinking, Johari"s Window, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics
July	FY			Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership	Capacity Building: Learn, Unlearn and Relearn Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress
Aug	FY	15+15	13	Basic Skills in Communication	Components of effective communication Communication Skills Job Interviews Group Discussion:
				Introduction to DBMS Data models	Database, DBMS - Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture Data models - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network)
S ep	FY	15+15	20	Academic and Professional Skills	Professional Presentation Creativity at Workplace:
				Entity Relationship Model ER to Table DDL Statements DML Statements	Viewing the structure of a table Insert, update, delete, Select all columns, specific columns, unique records, conditional select, In clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints - primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables
Oct	FY	15+15		Relational data model Relational Algebra Functions	omains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural joins, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - Inner join, outer join (left outer, right outer, full outer)

					Subqueries - subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries 1
[illegible]	[illegible]	15		Exam & Papar evaluation	
Dec	FY	15+15	12+05	Structure of C program Data Variables Types of operators	Header and body, Use of comments. Interpreters vs compilers, Python vs C. Compilation of a program. Formatted I/O: printf(), scanf(). Data: Variables, Constants, data types like: int, float char, double and void, short and long size qualifiers, signed and unsigned qualifiers. Compare with datatypes in Python. Compare static typing in C vs dynamic typing in Python Variables: Declaring variables, scope of the variables according to block, hierarchy of data types. Compare explicit declarations in C with implicit declarations in Python. Types of operators: Arithmetic, relational, logical, compound assignment, increment and decrement, conditional or ternary, bitwise and comma operators. Precedence and order of evaluation, statements and Expressions. Automatic and explicit type conversion.
				Green IT Fundamentals	Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future
Jan	FY	15+15	12	Iterations Arrays Data Input and Output functions Manipulating Strings	Control statements for decision making: (i) Branching: If statement, else.. If statement, (does the writer mean if-else or nested ifs)switch statement. (ii) Looping: while loop, do.. while, for loop. (iii) Jump statements: break, continue and goto. declaring array variables, initialization of arrays, accessing array elements. Compare array types of C with list and tuple types of Python. Character I/O format: getch(), getche(), getchar(), getc(), gets(), putchar(), putc(), puts()Declaring and initializing String variables, Character and string handling functions. Compare with Python strings.
				Green Assets and emerging Trends	Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling, Cloud Computing and Data Centers, Networking and Communications Infrastructure, End-User Devices, Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM, Green Mobile Business Process, Digital Library Green Enterprise Architecture, Green IT and organizational Systems, Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture, Green Supply Chain Management, Green Portals in Green Enterprise Architecture, Environmental Intelligence.
Feb	FY	15+15	11	Functions Recursion Pointer	Functions: Function declaration, function definition, Global and local variables, return statement, Calling a function by passing values. Recursion: Definition, Recursive functions. 15L 20 Unit III Pointer: Fundamentals, Pointer variables, Referencing and de-referencing, Pointer Arithmetic, Using Pointers with Arrays, Using Pointers with Strings, Array of Pointers, Pointers as function arguments, Functions returning pointers
				Green Information Systems(GIS)	Green Information Systems(GIS): Design and Development Models, Describing GIS, GIS Requirements, Sociocultural Aspects of Green IT, Green IT's Social Impact, Locating Organizations, Green Social Stakeholders, Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT, Green IT Ethics and Code of Conduct, Privacy and Security of Green Information, Green Washing, Communications in Green Transformation Projects, Green HR and Changing Organizational Structures, Green-Collar Workers, Roles and Skill Sets, Green Virtual Communities Green Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Emerging Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technology Trends, Cloud Computing, Nanotechnology, Quantum computing, Renewable energies, eco-design, Collaborative environmental intelligence
March	FY	15+15	06	Pointer Memory Allocation	Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() and sizeof operator. Compare with automatic garbage collection in Python. Structure: Declaration of structure, reading and assignment of structure variables, Array of structures, arrays within structures, structures within structures. Compare C structures with Python tuples. Unions: Defining and working with unions. File handling: Different types of files like text and binary, Different types of functions: fopen(), fclose(), fgetc(), fputc(), fgets(), fputs(), fscanf(), fprintf(), getw(), putw(), fread(), fwrite(), fseek().
April	FY			Exam & paper assessment	

Signature Of Teacher

Signature
Head Of Department

Coordinator
Computer Science Department
Government of Maharashtra's
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Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: III,IV**

Class : SY **Subject :Operating System,Fundamentals of Algorithms**

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Introduction to Operating-Systems Operating-System Structures Processes Threads Process Synchronization	Definition of Operating System, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure
Aug	SY	15	13	**Process Synchronization Scheduling: Deadlocks**	General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock
Sep	SY	15	9 9	**Main Memory Virtual Memory Mass-Storage Structure File-System Interface File-System Implementation**	Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Overview, Disk Structure, Disk Scheduling, Disk Management File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	**Introduction to algorithm**	Introduction to algorithm, Why to analysis algorithm, Running time analysis, How to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming
Jan	SY	15	15	**Tree algorithms Graph Algorithms**	Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees, Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree
Feb	SY	15	15	Dynamic Programming	Introduction, What is a Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence
March & April	SY		**Practical Exam, Theory exam, Paper Assessment and Result**		

Signature Of Teacher

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Coordinator
Department of Computer Science

Department of Computer Science A.Y. 2019-20
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: V, VI**

Class : TY **Subject :Web Service, Datata science**

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Web services baticsation **Practical 1-3**	What Are Web Services? Type of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Service across platform
Aug	SY	15	13 9	**The REST Architectural style** **Practical from 3-6**	Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message formats and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services
Sep	SY	15	9 9	**Developing Service-Oriented Applications with WCF**	What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details, Web Service QoS
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	**Introduction to Data Science**	What is Data? Different kinds of data, ISI, Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, Data Management: Data Collection, Data cleaning/extraction, Data analysis & Modeling
Jan	SY	15	15 9	**Data Curation** **Practical from 5-7**	Query languages and Operations to specify and transform data, Structured schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems as the acquisition and structuring of data, Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)
Feb	SY	15	15 9	Statistical Modelling and Machine Learning Practical 7-9	Introduction to model selection: Regularization, bias-variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO Data transformations, Dimension reduction, Feature extraction, Smoothing and aggregating Supervised Learning: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification, classification trees, Logistic regression, separating hyperplanes, k-NN Unsupervised Learning: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods
March &h April	SY		**Practical Exam, Theory exam, Paper Assessment and Result**		

Signature Of Teacher

Coordinator
Computer Science Department
Coordinator
Department ofC Computer Science

Department of Computer Science A.Y. 2018-19
Semester Wise Teachers Plan

Name Of the Teacher: Sybal Dias
Class : FY
Subject : Free open source, Linux

Semester: I,II

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	Introduction	: Open Source, Free Software, Free Software vs. Open Source software. Public Domain Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project. Methodologies Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licenses and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copy lefts, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization Open source vs. closed source, Open source government, Open source ethics. Social and Financial impacts of open source technology, Shared software, Shared source. Open Source in Government Case Studies Example Projects: Apache web server, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, wordpress, GCC, GDB, github, Open Office. Study: Understanding the developmental models, licensings, mode of funding,commercial/non-commercial use. Open Source Hardware, Open Source Design, Open source Teaching. Open source media. Collaboration, Community and Communication Contributing to Open Source Projects Introduction to github, interacting with the community on github, Communication and etiquette, testing open source code, reporting issues, contributing code. Introduction to wikipedia, contributing to Wikipedia Or contributing to any prominent open source project of student's choice. Starting and Maintaining own Open Source Project. Understanding Open Source Ecosystem Open Source Operating Systems: GNU/Linux, Android, Free BSD, Open Solaris. Open Source Hardware, Virtualization Technologies, Containerization Technologies: Docker, Development tools, IDEs, debuggers, Programming languages, LAMP, Open Source database technologies **History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages** **General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files. More file attributes**
	FY	15	13	1)Advanced Bash shell 1)Linux operating	Simple Filters, Filters using regular expressions. Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliase

			9	system and Basics 2)Basic Bash shell commands 3)Practical from 1 to 3 commands 2)The Linux environment variable 3)Understanding Linux file permission 4)Linux Security 5)Practical from 4 to 6	Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files. Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh.
	FY	15	9 9	1)Networking 2)Working withEditors 3)Basic script building 4) Practical from 6 to 9	TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS awk, sed and Introduction to vi.Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting Input and Output, Pipes performing math, Exiting the script.
Oct	FY	15	9		
Nov	FY			Practical Exam	
Dec					
Jan		15	15 9	1 5)Practical from 1 to 6	
Feb		15	15 9		
March		15	15 9		
April			Practical Exam, Theory exam , Paper Assessment and Result		

Department of Computer Science A.Y. 2018-19

Semester wise Plan

Name Of the Teacher: Sybal Dias **Semester:** III,IV

Class : SY **Subject :** Core java ,Advanced java

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	The Java Language OOPS	5	Features of Java, Java programming format, Java Tokens, Java Statements, Java Data Types, Typecasting, Arrays Introduction, Class, Object, Static Keywords, Constructors, this Key Word, Inheritance, super Key Word, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces String,
July	SY		String Manipulations .	10	String Buffer, String Tokenizer Packages: Introduction to predefined packages (java.lang, java.util, java.io, java.sql, java.swing), User Defined Packages, Access specifiers.
Aug	SY	15	Exception Handling: I/O Streams:	15	Introduction, Pre-Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods ResultSet, Navigating and manipulating data, ResultSetMetaData, Managing Transactions in JDBC, JDBC Exception classes, BLOB & CLOB Introduction, Byte-oriented streams, Character- oriented streams, File, Random access File, Serialization Networking: Introduction, Socket, Server socket, Client –Server Communication
Sep	SY	15	Wrapper Classes AWT	15	: Introduction, Byte, Short, Integer, Long, Float, Double, Character, Boolean classes Collection Framework: Introduction, util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its Inner Classes: Introduction, Member inner class, Static inner class, Local inner class, Anonymous inner class AWT: Introduction, Components, Event-Delegation-Model, Listeners, Layouts,

					Individual components Label, Button, CheckBox, Radio But Choice, List, Menu, Text Field, Text Area
DEC	SY	15	Swing Swing components	8	Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Jlabel, JTextField and JPasswordField, JTextAres, JButton, JCheckBox, JRadioButton, JComboBox and JList JDBC: Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updations, CallableStatement, BLOB & CLOB
Jan	SY	15	Servlets: Session Tracking Mechanisms JSP:	7	Servlets: Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms JSP: Introduction, JSP LifeCycle, JSP Implicit Objects & Scopes, JSP Directives, JSP Scripting Elements, JSP Actions: Standard actions and customized actions,
Feb	SY	15	Java Beans:	15	Introduction, JavaBeans Properties, Examples Struts 2: Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results & Result Types, Value
March.	SY	15	Stack/OGNL JSON:	15	Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java.

Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Sybal Dias Semester: V,VI

Class : TY

Subject : Linux Administration system,Cloud computing

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June					
July	FY	15	5 9	**Introduction Single-Host Administration Networking and Security** **Practical 1-3**	Technical Summary of Linux Distributions, Managing Software Managing Users and Groups, Booting and shutting down processes. File Systems, Core System Services, Process of configuring, compiling, Linux Kernel TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security
Aug	FY	15	13 9	**Internet Services** **Practical 4-6**	Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMPT), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network authentication system (Kerberos), Domain Name Service (DNS), Security
Sep	FY	15	9 9	**Internet Services** **Practical 7-8**	Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS
Oct	FY	15	9		Lightweight Directory Access Protocol (LDAP), Dynamic Host configuration Protocol (DHCP), MySQL, LAMP Applications, File Services, Email Services, Chat applications, Virtual Private Networking.
Nov	FY			Practical Exam	
Dec				Exams	

Jan		15	15 9	**Cloud Computing Basics** **Web Services –** **Virtulization:-** Practical 1-2.	Distributed Computing, Parallel Computing, WSDL structure, SOAP- Structure of SOAP Message (In JAX-WS), SOAP Messaging Architecture, SOAP Header, Client-side SOAP Handler, REST What is REST? HTTP methods, Java API for RESTful Web Services (JAXRS) Characteristics of Virtualized Environments.. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management toolforvirtualization environment
Feb		15	15 9	**Introduction to Cloud Computing: Cloud Computing Software Security fundamentals** **Practical 3-4**	Definition, Types of Clouds, Deployment of software solutions and web applications, Types of Cloud Platforms, Essential characteristics – On demand self-service, Broad network access, Location independent resource pooling ,Rapid elasticity , Measured service, Comparing cloud providers with traditional IT service providers Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices, Approaches to Cloud Software Requirement Engineering, Cloud Security Policy Implementation.
March		15	15 9	**Cloud Applications CloudSim:** **AWS:** Practical 6-8	Introduction to Simulator, understanding CloudSim simulator, CloudSim Architecture(User code, CloudSim, GridSim, SimJava) Understanding Working platform for CloudSim, **OpenStack:** Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat Architecting on AWS, Building complex solutions with Amazon Virtual Private Cloud (Amazon VPC).
April			**Practical Exam, Theory exam , Paper Assessment and Result**		

Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Charul Singh

Class : TY

Semester: V&VI

Subject : INS,EH.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	TY	15	Introduction	05	Introduction: Security Trends, The OSI Security Architecture, Security Attacks, Security Services,
July	TY		Cryptography and RSA.	10	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round 15 Page 10 of 63 details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm
Aug	TY	15	Key Management	15	Key Management: Public-Key Cryptosystems, Key Management, Diffie Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC Digital Signatures and Authentication: Digital Signatures, Authentication Protocols, Digital Signature Standard Authentication Applications: Kerberos, X.509 Authentication, Public-Key Infrastructure
Sep	TY	15	Electronic Mail Security	15	Electronic Mail Security: Pretty Good Privacy, S/MIME IP Security Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management Web Security: Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction Intrusion: Intruders, Intrusion Techniques, Intrusion Detection Malicious Software: Viruses and Related Threats, Virus Countermeasures, DDOS Firewalls: Firewall Design Principles, Types of Firewalls

Jan	TY	15	Introduction, Scanning and Enumeration.	15	Introduction: Terminology, Hacking Technology Types, Ethical Hacking Phases, Hacktivism, Hacker Classes, Skills Required for an Ethical Hacker, Vulnerability Research, Ways to Conduct Ethical Hacking Footprinting: Definition, Information Gathering Methodology, Competitive Intelligence, DNS Enumeration, Whois and ARIN Lookups, Types of DNS Records, Traceroute in Footprinting, E-Mail Tracking Social Engineering: Common Types Of Attacks Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scanning, CEH Scanning Methodology, Ping Sweep Techniques, Nmap Command Switches, SYN, Stealth, XMAS, NULL, 15 Page 48 of 63 IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration
Feb	TY	15	System Hacking,Hacking Web Servers.	15	System Hacking: Password-Cracking Techniques, Types of Passwords, Keyloggers and Other Spyware Technologies, Escalating Privileges, Rootkits Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniques, Sniffing Countermeasures Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures Session Hijacking: Spoofing vs. Hijacking, Types, Sequence Prediction, Steps, Prevention Hacking Web Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening
March					
	TY	15	Web Application Vulnerabilities,Penetration Testing Methodologies.	15	Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures Web-Based Password Cracking Techniques: Authentication Types, Password Crackers, Countermeasures SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques Wireless Hacking: WEP, WPA Authentication Mechanisms, and Cracking Techniques, Wireless Sniffers, Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables

Signature Of Teacher

Signature
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Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Charul Singh
Class : FY

Semester: I,II.
Subject : COD,GT.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
July	FY	15	Computer Abstractions and Technology:	07	Computer Abstractions and Technology: Basic structure and operation of a computer, functional units and their interaction. Representation of numbers and characters.
Aug	FY	15	Logic circuits and functions:	08	Combinational circuits and functions: Basic logic gates and functions, truth tables; logic circuits and functions. Minimization with Karnaugh maps. Synthesis of logic functions with and-or-not gates, nand gates, nor gates. Fan-in and fan-out requirements; tristate buffers. Half adder, full adder, ripple carry adder. (Flip flops) Gated S-R and D latches, edge-triggered D latch. Shift registers and registers. Decoders, multiplexers. Sequential circuits and functions: State diagram and state table; finite state machines and their synthesis.
Sep	FY	15	Instruction set architectures:	08	Memory organization, addressing and operations; word size, big-endian and little- endian arrangements. Instructions, sequencing. Instruction sets for RISC and CISC (examples Altera NIOS II and Freescale ColdFire). Operand addressing modes; pointers, indexing for arrays. Machine language, assembly language, assembler directives. Function calls, processor runtime stack, stack frame. Types of machine instructions: arithmetic, logic, shift, etc. Instruction sets, RISC and CISC examples.
Oct	FY	15	Basic Processor Unit:		Main components of a processor: registers and register files, ALU, control unit, instruction fetch unit, interfaces to instruction and data memories. Datapath. Instruction fetch and execute; executing arithmetic/logic, memory access and branch instructions, hardwired and microprogrammed control for RISC and CISC. Basic I/O: Accessing I/O devices, data transfers between processor and I/O devices. Interrupts and exceptions, interrupt requests and processing.

Jan	FY	15	Green IT Overview:		Green IT Overview: Introduction , Environmental Concerns and Sustainable Development, Environmental Impacts of IT, Green I , Holistic Approach to Greening IT, Greening IT, Applying IT for Enhancing Environmental Sustainability, Green IT Standards and Eco-Labelling of IT , Enterprise Green IT Strategy, Green Washing, Green IT: Burden or Opportunity?Green Devices and Hardware: Introduction , Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose Green Software: Introduction , Processor Power States , Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power Sustainable Software Development: Introduction, Current Practices, Sustainable Software, Software Sustainability Attributes, Software Sustainability Metrics, Sustainable Software Methodology, Defining Actions
Feb	FY	15	Green Data Centres:		Green Data Centres: Data Centres and Associated Energy Challen , Data Centre IT Infrastructure, Data Centre Facility Infrastructure: Implications for Energy Efficiency, IT Infrastructure Management, Green Data Centre Metrics Green Data Storage: Introduction , Storage Media Power Characteristics, Energy Management Techniques for Hard Disks, System-Level Energy Management Green Networks and Communications: Introduction, Objectives of Green Network Protocols, Green Network Protocols and Standardsm Enterprise Green IT Strategy: Introduction, Approaching Green IT Strategies, Business Drivers of Green IT Strategy, Business Dimensions for Green IT Transformation,, Organizational Considerations in a Green IT Strategy, Steps in Developing a Green IT Strategy, Metrics and Measurements in Green Strategies.
March	FY	15	Sustainable Information Systems and Green Metrics:		Sustainable Information Systems and Green Metrics: Introduction, Multilevel Sustainable Information, Sustainability Hierarchy Models, Product Level Information, Individual Level Information, Functio Level Information, Organizational Level Information, Measuring the Maturity of Sustainable ICT Enterprise Green IT Readiness: Introduction, Readiness and Capability, Development of the G-Readiness Framework, Measuring an Organization's G-Readiness Sustainable IT Services: Creating a Framework for Service Innovation: Introduction, Factors Driving the Development of Sustainable IT, Sustainable IT Services (SITS), SITS Strategic Framework Green Enterprises and the Role of IT: Introduction, Organizational and Enterprise Greening, Information Systems in Greening Enterprises, Greening the Enterprise: IT Usage and Hardware, Inter-organizational Enterprise Activities and Green Issues

Signature Of Teacher

Signature
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Coordinator
Computer Science Department
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Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Charul Singh **Semester: III,IV**

Class : SY

Subject : IOT,TOC,CN,Android.

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	SoC and Raspberry Pi	5	System on Chip: What is System on chip? Structure of System on Chip. SoC products: FPGA, GPU, APU, Compute Units. ARM 8 Architecture: SoC on ARM 8. ARM 8 Architecture Introduction Introduction to Raspberry Pi: Introduction to Raspberry Pi, Raspberry Pi Hardware, Preparing your raspberry Pi. Raspberry Pi Boot: Learn how this small SoC boots without BIOS. Configuring boot sequences and hardware.
July	SY		Programming Raspberry Pi	10	Raspberry Pi and Linux: About Raspbian, Linux Commands, Configuring Raspberry Pi with Linux Commands Programing interfaces: Introduction to Node.js, Python.
Aug	SY	15	Raspberry Pi Interfaces	15	Raspberry Pi Interfaces: UART, GPIO, I2C, SPI Useful Implementations: Cross Compilation, Pulse Width Modulation, SPI for Camera.
Sep	SY	15	IoT and Protocols	15	Introduction to IoT: What is IoT? IoT examples, Simple IoT LED Program. IoT and Protocols IoT Security: HTTP, UPnp, CoAP, MQTT, XMPP.

					IoT Service as a Platform: Clayster, Thinger.io, SenseIoT, carriots and Node RED. IoT Security and Interoperability: Risks, Modes of Attacks, Tools for Security and Interoperability.
Dec	SY	15	Introduction Network Models:	05	Introduction to data communication, Components, Data Representation, Data Flow, Networks, Network Criteria, Physical Structures, Network types, Local Area Network, Wide Area Network, Switching, The Internet, Accessing the Internet, standards and administration Internet Standards. Network Models, Protocol layering, Scenarios, Principles of Protocol Layering, Logical Connections, TCP/IP Protocol Suite, Layered Architecture, Layers in the TCP/IP Protocol Suite, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing. Detailed introduction to Physical Layer, Detailed introduction to Data-Link Layer, Detailed introduction to Network Layer, Detailed introduction to Transport Layer, Detailed introduction to Application Layer. Data and Signals, Analog and Digital Data, Analog and Digital Signals, Sine Wave Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth, Digital Signal, Bit Rate, Bit Length, Transmission of Digital Signals, Transmission Impairments, Attenuation, Distortion, Noise, Data Rate Limits, Performance, Bandwidth, Throughput, Latency (Delay)
Jan	SY		Introduction to Physical Layer and Data-Link Layer:	10	Digital Transmission digital-to-digital conversion, Line Coding, Line Coding Schemes, analog-to-digital conversion, Pulse Code Modulation (PCM), Transmission Modes, Parallel Transmission, Serial Transmission. Analog Transmission, digital-to-analog Conversion, Aspects of Digital-to-Analog Conversion, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, analog-to-analog Conversion, Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), Multiplexing, Frequency-Division

					Languages, Languages and Automata,Regular Grammar, Regular Expressions, Finite automata and Regular Expressions.
Aug	SY	15	1) Regular Sets and Regular Grammar	6	Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar.Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG.
Sep	SY	15	1)Context Free Languages 2) Pushdown Automata 3) Linear Bound Automata 4) Turing Machines, Undecidability	7	Definitions, Acceptance by PDA, PDA and CFG.The Linear Bound Automata Model, Linear Bound Automata and Languages. Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine,The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems.
DEC	SY	15	What is Android?	8	What is Android? Obtaining the required tools, creating first android app, understanding the components of screen, adapting display orientation, action bar, Activities and Intents, Activity Lifecycle and Saving State, Basic Views: TextView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView, TimePicker View, DatePicker View, ListView View, Spinner View
Jan	SY	15	User Input Controls.	7	User Input Controls, Menus, Screen Navigation, RecyclerView, Drawables, Themes and Styles, Material design, Providing resources for adaptive layouts, AsyncTask and AsyncTaskLoader, Connecting to the Internet, Broadcast receivers, Services, Notifications, Alarm managers, Transferring data efficiently

					Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing. Transmission Media, Guided Media, Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable. Switching, Three Methods of Switching , Circuit Switched Networks, Packet Switching, Introduction to Data-Link Layer, Nodes and Links, Services, Two Sub-layers, Three Types of addresses, Address Resolution Protocol (ARP). Error Detection and Correction, introduction, Types of Errors. Redundancy, Detection versus Correction,
Feb	SY	15	Network layer, Transport Layer	15	Media Access Control (MAC), random access, CSMA, CSMA/CD, CSMA/CA, controlled access, Reservation, Polling, Token Passing, channelization, FDMA, TDMA, CDMA. Connecting Devices and Virtual LANs, connecting devices, Hubs, Link-Layer Switches, Routers, Introduction to Network Layer, network layer services, Packetizing, Routing and Forwarding, Other Services, IPv4 addresses, Address Space, Classful Addressing. Unicast Routing, General Idea, Least-Cost Routing, Routing Algorithms, Distance-Vector Routing, Link-State Routing, Path-Vector Routing, Introduction to Transport Layer, Transport-Layer Services, Connectionless and Connection-Oriented Protocols. Transport-Layer Protocols, Service, Port Numbers, User Datagram Protocol, User Datagram, UDP Services, UDP Applications, Transmission Control Protocol, TCP Services, TCP Features, Segment.
June	SY	15	Automata Theory	07	Defining Automaton, Finite Automaton, Transitions and Its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines
July	SY		Automata Theory 1) Formal Languages	08	Minimizing Automata, Mealy and Moore Machines, Minimizing Automata. Defining Grammar, Derivations, Languages generated by Grammar, Chomsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on

Feb	SY	15	Data	15	Data - saving, retrieving, and loading: Overview to storing data, Shared preferences, SQLite primer, store data using SQLite database, ContentProviders, loaders to load and display data, Permissions, performance and security, Firebase and AdMob, Publish your app

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Head Of Department

Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: I,II**
Class : FY
Subject : Soft Skills,Programming with C,Database System

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	FY	15+15	14	Introduction to Soft Skills Personality Development Emotional Intelligence	Soft Skills: An Introduction - Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. Personality Development: Knowing Yourself, Positive Thinking, Johari"s Window, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics
July	FY			Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership	Capacity Building: Learn, Unlearn and Relearn Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress
Aug	FY	15+15	13	Basic Skills in Communication	Components of effective communication Communication Skills Job Interviews Group Discussion:
				Introduction to DBMS Data models	Database, DBMS - Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture Data models - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network)
S ep	FY	15+15	20	Academic and Professional Skills	Professional Presentation Creativity at Workplace:
				Entity Relationship Model ER to Table DDL Statements DML Statements	Viewing the structure of a table Insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints - primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables
Oct	FY	15+15		Relational data model Relational Algebra Functions	omains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural joins, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - Inner join, outer join (left outer, right outer, full outer)

					Subqueries - subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries 1
Nov	FY	15		Exam & Papar evaluation	
Dec	FY	15	12	Structure of C program Data Variables Types of operators	Header and body, Use of comments. Interpreters vs compilers, Python vs C. Compilation of a program. Formatted I/O: printf(), scanf(). Data: Variables, Constants, data types like: int, float char, double and void, short and long size qualifiers, signed and unsigned qualifiers. Compare with datatypes in Python. Compare static typing in C vs dynamic typing in Python Variables: Declaring variables, scope of the variables according to block, hierarchy of data types. Compare explicit declarations in C with implicit declarations in Python. Types of operators: Arithmetic, relational, logical, compound assignment, increment and decrement, conditional or ternary, bitwise and comma operators. Precedence and order of evaluation, statements and Expressions. Automatic and explicit type conversion.
Jan	FY	15	12	Iterations Arrays Data Input and Output functions Manipulating Strings	Control statements for decision making: (i) Branching: If statement, else.. If statement, (does the writer mean if-else or nested ifs)switch statement. (ii) Looping: while loop, do.. while, for loop. (iii) Jump statements: break, continue and goto. declaring array variables, initialization of arrays, accessing array elements. Compare array types of C with list and tuple types of Python. Character I/O format: getch(), getche(), getchar(), getc(), gets(), putchar(), putc(), puts()Declaring and initializing String variables, Character and string handling functions. Compare with Python strings.
Feb	FY	15	11	Functions Recursion Pointer	Functions: Function declaration, function definition, Global and local variables, return statement, Calling a function by passing values. Recursion: Definition, Recursive functions. 15L 20 Unit III Pointer: Fundamentals, Pointer variables, Referencing and de-referencing. Pointer Arithmetic, Using Pointers with Arrays. Using Pointers with Strings, Array of Pointers, Pointers as function arguments, Functions returning pointers
March	FY	15	06	Pointer Memory Allocation	Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() and sizeof operator. Compare with automatic garbage collection in Python. Structure: Declaration of structure, reading and assignment of structure variables, Array of structures, arrays within structures, structures within structures. Compare C structures with Python tuples. Unions: Defining and working with unions. File handling: Different types of files like text and binary, Different types of functions: fopen(), fclose(), fgetc(), fputc(), fgets(), fputs(), fscanf(), fprintf(), getw(), putw(), fread(), fwrite(), fseek().
April	FY			Exam & paper assessment	

Signature Of Teacher

Signature
Head Of Department

Coordinator
Computer Science Department
Government of Maharashtra's
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Jogeshwari (East), Mumbai - 400 060.

Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester: II,IV**

Class : SY **Subject :Green Tech,Fundamentals of Algo**

Semester Planning of Teaching

Month	Class	No. Of Lectures As Per Syllabus	Title Of Topic to be covered	No. Of Lectures as per TimeTable	Key Points of Topic
June	SY	15	Green IT Fundamentals	05	Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future.
Ju[illegible]	SY		Green IT Strategies	10	Green IT Strategies: Green strategic alignment, Green IT Drivers-Cost, Regulatory and Legal, Sociocultural and Political, Business ecosystem, New market opportunities, Green IT Business Dimensions, KPIs in Green Strategies Environmentally Responsible Business: Developing ERBS, Policies, Practices, and Metrics, Mobility and Environment, Green It Metrics and Measurements, Green IT Readiness and CMM, Context Sensitivity and Automation in Green IT Measures Green Assets: Introduction, Green Assets, Green IT Hardware, Green Data Centers and ICT Equipment, Server and Data Strategy.
Aug	SY	15	Green Assets and emerging Trends	15	Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling, Cloud Computing and Data Centers, Networking and CommunicationsInfrastructure, End-User Devices, Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM, Green Mobile Business Process, Digital Library Green Enterprise Architecture: Green IT and organizational

					Systems, Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture, Green Supply Chain Management, Green Portals in Green Enterprise Architecture, Environmental Intelligence.
Sep	SY	15	Green Information Systems(GIS)	15	Green Information Systems(GIS): Design and Development Models: Describing GIS, GIS Requirements Sociocultural Aspects of Green IT: Green IT's Social Impact, Learning Organization, Green Social Stakeholders, Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT, Green IT Ethics and Code of Conduct, Privacy and Security of Green Information, Green Washing, Communications in Green Transformation Projects, Green HR and Changing Organizational Structures, Green-Collar Workers: Roles and Skill Sets, Green Virtual Communities Green Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Emerging Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technology Trends, Cloud Computing, Nanotechnology, Quantum computing, Renewable energies, eco-design, Collaborative environmental intelligence

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Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Amita Vakil
Class : FY
Subject : Soft Skills,Programming with C,Database System,Green Technologies

Semester: I,II

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
June	FY	15+15	14	Introduction to Soft Skills Personality Development Emotional Intelligence	Soft Skills: An Introduction - Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. Personality Development: Knowing Yourself, Positive Thinking, Johari"s Window, Physical Fitness Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics
July	FY			Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership	Capacity Building: Learn, Unlearn and Relearn Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress
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S ep	FY	15+15	20	Academic and Professional Skills	Professional Presentation Creativity at Workplace:
				Entity Relationship Model ER to Table DDL Statements DML Statements	Viewing the structure of a table Insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints - primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables
Oct	FY	15+15		Relational data model Relational Algebra Functions	omains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins -conditional, equi join and natural join, division) Functions - String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Joining Tables - inner join, outer join (left outer, right outer, full outer)

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Nov	FY	15		Exam & Papar evaluation	
Dec	FY	15+15	12+05	Structure of C program Data Variables Types of operators	Header and body, Use of comments. Interpreters vs compilers, Python vs C. Compilation of a program. Formatted I/O: printf(), scanf(). Data: Variables, Constants, data types like: int, float char, double and void, short and long size qualifiers, signed and unsigned qualifiers. Compare with datatypes in Python. Compare static typing in C vs dynamic typing in Python Variables: Declaring variables, scope of the variables according to block, hierarchy of data types. Compare explicit declarations in C with implicit declarations in Python. Types of operators: Arithmetic, relational, logical, compound assignment, increment and decrement, conditional or ternary, bitwise and comma operators. Precedence and order of evaluation, statements and Expressions. Automatic and explicit type conversion.
				Green IT Fundamentals	Green IT Fundamentals: Information Technology and Environment, Business, Environment, and Green Enterprise Characteristics, Green Vision and Strategic Points, Green Value, Green IT Opportunity, Challenges of a Carbon Economy, Environmental Intelligence, Envisioning the Green Future.
Jan	FY	15+15	12	Iterations Arrays Data Input and Output functions Manipulating Strings	Control statements for decision making: (i) Branching: If statement, else.. If statement, (does the writer mean if-else or nested if's)switch statement. (ii) Looping: while loop, do.. while, for loop. (iii) Jump statements: break, continue and goto. declaring array variables, initialization of arrays, accessing array elements. Compare array types of C with list and tuple types of Python. Character I/O format: getch(), getche(), getchar(), getc(), gets(), putchar(), putc(), puts()Declaring and initializing String variables, Character and string handling functions. Compare with Python strings.
				Green Assets and emerging Trends	Green Assets and emerging Trends: Data Servers Optimization and Virtualization, Physical Data Server Organization and Cooling, Cloud Computing and Data Centers, Networking and Communications Infrastructure, End-User Devices, Smart Meters in Real-Time, Managing Devices for Central Green Services, Devices and Organizational Boundaries for Measurements, Mobile Devices, and Sustainability Green Business Process Management: Introduction, Green Reengineering, Green Process, Green BPM and standards, Green Business Analysis, Green Requirements Modelling, Green IT Governance, Green Business Process and Applications, QoS, Achieving green BPM, Green Mobile Business Process, Digital Library Green Enterprise Architecture: Green IT and organizational Systems, Aspects of Green Solutions Architecture, Contents and Integration with Service-Oriented Architecture, Green Supply Chain Management, Green Portals in Green Enterprise Architecture, Environmental Intelligence.
Feb	FY	15+15	11	Functions Recursion Pointer	Functions: Function declaration, function definition, Global and local variables, return statement, Calling a function by passing values. Recursion: Definition, Recursive functions. 15L 20 Unit III Pointer: Fundamentals, Pointer variables, Referencing and de-referencing, Pointer Arithmetic, Using Pointers with Arrays, Using Pointers with Strings, Array of Pointers, Pointers as function arguments, Functions returning pointers
				Green Information Systems(GIS)	Green Information Systems(GIS): Design and Development Models: Describing GIS, GIS Requirements Sociocultural Aspects of Green IT: Green IT's Social Impact, Learning Organization, Green Social Stakeholders, Role-Based View of Green IT, Green User Practices, Attitude and Subjectivity in Green IT, Green IT Ethics and Code of Conduct, Privacy and Security of Green Information, Green Washing, Communications in Green Transformation Projects, Green HR and Changing Organizational Structures, Green-Collar Workers, Roles and Skill Sets, Green Virtual Communities Green Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Emerging Carbon Issues: Technologies and Future: Future Carbon Landscape, Green ICT and Technology Trends, Cloud Computing, Nanotechnology, Quantum computing, Renewable energies, eco-design, Collaborative environmental intelligence
March	FY	15+15	06	Pointer Memory Allocation	Dynamic Memory Allocation: malloc(), calloc(), realloc(), free() and sizeof operator. Compare with automatic garbage collection in Python. Structure: Declaration of structure, reading and assignment of structure variables, Array of structures, arrays within structures, structures within structures. Compare C structures with Python tuples. Unions: Defining and working with unions. File handling: Different types of files like text and binary, Different types of functions: fopen(), fclose(), fgetc(), fputc(), fgets(), fputs(), fscanf(), fprintf(), getw(), putw(), fread(), fwrite(), fseek().
April	FY			Exam & paper assessment	

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Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Amita Vaidya **Semester: III,IV**

Class : SY **Subject :Operating System,Fundamentals of Algorithms**

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Introductions to Operating-Systems Operating-System Structures Processes Threads Process Synchronization **Practical 1-3**	Definition of Operating System, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls Operating-System Structure ,
Aug	SY	15	13 9	**Process Synchronization** **Scheduling:** **Deadlocks:** **Practical from 3-6**	General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock
Sep	SY	15	9 9	**Main Memory** **Virtual Memory** **Mass-Storage Structure** **File-System Interface** **File-System Implementation**	Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Overview, Disk Structure, Disk Scheduling, Disk Management File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	**Introduction to algorithm**	Introduction to algorithm, Why to analysis algorithm, Running time analysis, How to Compute Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming
Jan	SY	15	15 9	**Tree algorithms** **Graph Algorithms** **Practical from 5-7**	Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees, Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree
Feb	SY	15	15 9	Dynamic Programming Practical 7-9	Introduction, What is a Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence
March & April	SY		**Practical Exam, Theory exam , Paper Assessment and Result**		

Signature Of Teacher

Coordinator

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Department of Computer Science A.Y. 2018-19
Semester wise Plan

Name Of the Teacher: Amita Vakil **Semester:** V, VI

Class : TY **Subject :**Web Service, Datata science

Semester Planning of Teaching

Month	Class	Assigned Lecture	Lectures Taken	Topic to be covered	Key Points of Topic
July	SY	15	5	Web services basicsation Practical 1-3	What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platforms
Aug	SY	15	11 9	The REST Architectural style Practical from 3-6	Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services
Sep	SY	15	9 9	Developing Service-Oriented Applications with WCF	What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details, Web Service QoS
Oct & Nov Exam & Paper Assessment of SY					
Dec	SY	15	11	Introduction to Data Science	What is Data? Different kinds of data, ISI, Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, Data Management: Data Collection, Data cleaning/extraction, Data analysis & Modeling
Jan	SY	15	15 9	Data Curation Practical from 5-7	Query languages and Operations to specify and transform data, Structured scheme based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems in the acquisition and structuring of data, Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)
Feb	SY	15	15 9	Statistical Modelling and Machine Learning Practical 7-9	Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO Data transformations, Dimension reduction, Feature extraction, Smoothing and aggregating Supervised Learning: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, Separating hyperplanes, k-NN Unsupervised Learning: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods
March & April	SY		Practical Exam, Theory exam, Paper Assessment and Result		

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