

CUET 2022

Computer Syllabus



Exception and File Handling in Python	Exception Handling: syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, catching exceptions, Try - except - else clause, Try - finally clause, recovering and continuing with finally, built-in exception classes.
	File Handling: text file and binary file, file types, open and close files, reading and writing text files, reading and writing binary files using pickle module, file access modes.
Database Concepts	Introduction to database concepts, difference between database and file system, relational data model: concept of domain, tuple, relation, keys - candidate key, primary key, alternate key, foreign key;
	Relational algebra: selection, projection, union, set difference and cartesian product;
Structured Query Language	Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, Creating a database using MySQL, Data Types
	Data Definition: CREATE TABLE, DROP TABLE, ALTER TABLE, Data Query: SELECT, FROM, WHERE
	Data Manipulation: INSERT, UPDATE, DELETE Math functions: POWER (), ROUND (), MOD ().
	Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
	Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
	Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.
	Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN
Computer Networks	Introduction to computer networks, Evolution of networking,
	Network types: LAN, WAN, MAN
	Network devices: Modem, Ethernet Card, Repeater, Hub, Switch, Router, Gateway. Network Topologies: Mesh, Ring, Bus, Star, and Tree topologies
	Basic concept of MAC and IP Address Difference between Internet and web
Section-B1	
Chapter 1: Exception and File Handling in Python	Exception Handling: syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, catching exceptions, Try - except - else clause, Try - finally clause, recovering and continuing with finally, built-in exception classes.
	File Handling: text file and binary file, file types, open and close files, reading and writing text files, reading and writing binary files using pickle module, file access modes.
Chapter 2: Stack	Stack (List Implementation): Introduction to stack (LIFO Operations), operations on stack (PUSH and POP) and its implementation in python. Expressions in Prefix, Infix and postfix notations, evaluating arithmetic expressions using stack, conversion of Infix expression to postfix expression
Chapter 3: Queue	Queue (List Implementation): Introduction to Queue (FIFO), Operations on Queue (INSERT and DELETE) and its implementation in Python.
Chapter 4: Searching	Searching: Sequential search, Binary search, Analysis of Sequential and Binary Search. Dry run to identify best, worst and average cases. Implementation of searching techniques in Python.
Chapter 5: Sorting	Overview of sorting techniques, Bubble Sort, Selection Sort and Insertion Sort. Dry run to identify best, worst and average cases. Implementation of sorting techniques in Python.



Chapter 6: Understanding Data	Data and its purpose, collection and organization; understanding data using statistical methods: mean, median, standard deviation, variance; data interpretation; visualization of data.
Chapter 7: Database Concepts	Introduction to database concepts, difference between database and file system, relational data model: concept of domain, tuple, relation, keys - candidate key, primary key, alternate key, foreign key;
Chapter 8: Structured Query Language	Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, Creating a database using MySQL, Data Types
	Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
	Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
	Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.
	Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN
Chapter 9: Computer Networks	Introduction to computer networks, Evolution of networking,
	Network types: LAN, WAN, MAN
	Network devices: Modem, Ethernet Card, Repeater, Hub, Switch, Router, Gateway. Network Topologies: Mesh, Ring, Bus, Star, and Tree topologies
	Basic concept of MAC and IP Address Difference between Internet and web
Section-B2	
Chapter 1: Database Query using SQL	Math functions: POWER (), ROUND (), MOD ().
	Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
	Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
	Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by.
	Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN
Chapter 2: Data Handling using Pandas - I	Introduction to Python libraries- Pandas, NumPy, Matplotlib. Data structures in Pandas - Series and Data Frames.
	Series: Creation of Series from - and array, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing, and Slicing.
	Data Frames: creation - from the dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on Rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing; Styling & Formatting data, Head and Tail functions; Joining, Merging and Concatenations.
	Importing/Exporting Data between CSV files and Data Frames.
Chapter 3: Data Handling using Pandas - II	Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, Standard deviation, variance.
	DataFrame operations: Aggregation, group by, Sorting, Deleting and Renaming Index, Pivoting. Handling missing values - dropping and filling.



	Importing/Exporting Data between MySQL database and Pandas.
Chapter 4: Plotting Data using Matplotlib	Purpose of plotting; drawing and saving the following types of plots using Matplotlib – line plot, bar graph, histogram, pie chart, frequency polygon, box plot, and scatter plot.
	Customizing plots: color, style (dashed, dotted), width; adding label, title, and legend in plots.
Chapter 5: Introduction to Computer Networks	Introduction to Networks, Types of networks: LAN, MAN, WAN. Network Devices: modem, hub, switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh.
	Introduction to Internet, URL, WWW, and its applications- Web, email, Chat, VoIP.
	Website: Introduction, the difference between a website and webpage, static vs dynamic web page, web server, and hosting of a website.
	Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.
Chapter 6: Societal Impacts	Digital footprint, Etiquettes for Net surfing and for communicating through social media, data protection, Intellectual Property Rights (IPR) and their violation, plagiarism licensing and copyrights, Free and Open Source Software (FOSS), Cybercrime and cyber laws, hacking, phishing, cyberbullying, Overview of Indian IT Act, preventing cybercrime.
	E-waste its a hazard and management
Chapter 10: Data Communication	Awareness about health concerns related to the usage of technology like effect on eyesight, physiological issues, and ergonomic aspects.
	Concept of communication, Types of Data Communication, switching techniques
	Communication Media: Wired Technologies – Twisted pair cable, Co-axial cable, Ethernet Cable, Optical Fibre;
	Introduction to mobile telecommunication technologies Wireless Technologies – Bluetooth, WLAN, Infrared, Microwave
	Network Protocol: Need for Protocol, Categorization and Examples of protocol, HTTP, FTP, IP, PPP; electronic mail protocol
Chapter 11: Security Aspects	Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data Transfer rate (bps, Kbps, Mbps, Gbps, Tbps)
	Threats and prevention: Viruses, Worms, Trojan horse, Spam, Cookies, Adware, Firewall, http vs https
	Network Security Concepts: Firewall, Cookies, Hackers and Crackers Antivirus and their workings
	Network security threats: Denial of service, Intrusion problems, Snooping, Eavesdropping



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