

DAV PUBLIC SCHOOLS, RANCHI ZONE
COMPUTER SCIENCE (083)
CLASS XII
Syllabus (Session- 2019-20)

Month	Contents	No. of period required	
		Theory	Practical
April	<p>UNIT 1: PROGRAMMING IN C++ REVIEW: C++ covered In Class –XI. Defining a symbol name using typedef keyword and defining a macro using #define directive; Need for User defined data type;</p> <p>Structures: Defining a Structure, Declaring structure variables, Accessing structure elements, Passing structure to Functions as value and reference argument/parameter, Function returning structure, Array of structures, passing an array of structure as an argument/ a parameter to a function.</p> <p>Object Oriented Programming: Concept of Object Oriented Programming – Data hiding, Data encapsulation, Class and Object, Abstract class and Concrete class, Polymorphism (Implementation of polymorphism using Function overloading as an example in C++); Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies.</p>	25	06
May & June	<p>Implementation of Object Oriented Programming concepts in C++: Definition of a class, Members of a class - Data Members and Member Functions (methods), Using Private and Public visibility modes, default visibility mode (private); Member function definition: inside class definition and outside class definition using scope resolution operator(::); Declaration of objects as instances of a class; accessing members from object(s), Array of type class, Objects as function arguments - pass by value and pass by reference;</p>	8	5
July	<p>Constructor and Destructor: Constructor: Special Characteristics, Declaration and Definition of a constructor, Default Constructor, Overloaded Constructors, Copy Constructor, Constructor with default arguments;</p>	16	16

	<p>Destructor: Special Characteristics, Declaration and definition of destructor;</p> <p>Inheritance (Extending Classes): Concept of Inheritance, Base Class, Derived Class, Defining derived classes, protected visibility mode; Single level inheritance, Multilevel inheritance and Multiple inheritance, Privately derived, Publicly derived and Protectedly derived class, accessibility of members from objects and within derived class (es);</p> <p>Data File Handling: Need for a data file, Types of data files – Text file and Binary file;</p> <p>Basic file operations on text file: Creating/Writing text into file, Reading and Manipulation of text from an already existing text File (accessing sequentially);</p> <p>Binary File: Creation of file, Writing data into file, Searching for required data from file, Appending data to a file, Insertion of data in sorted file, Deletion of data from file, Modification of data in a file;</p>		
<p>August</p>	<p>Implementation of above mentioned data file handling in C++.</p> <p>Components of C++ to be used with file handling:</p> <p>Header file: fstream.h; ifstream, ofstream, fstream classes;</p> <p>Opening a text file in in, out, and app modes;</p> <p>Using cascading operators for writing text to the file and reading text from the file; open(), get(), put(), getline() and close() functions; Detecting end-of-file (with or without using eof() function);</p> <p>Opening a binary file using in, out, and app modes;</p> <p>open(), read(), write() and close() functions; Detecting end-of-file (with or without using eof() function); tellg(), tellp(), seekg(), seekp() functions</p> <p>Pointers: Declaration and Initialization of Pointers; Dynamic memory allocation/deallocation operators: new, delete; Pointers and Arrays: Array of Pointers, Pointer to an array (one dimensional array), Function returning a pointer, Reference variables and use of alias; Function call by reference. Pointer to structures: Deference operator: *, ->; self referencial structures;</p> <p>UNIT 2: DATA STRUCTURES</p> <p>Arrays: One and two Dimensional arrays: Sequential allocation and address calculation; One dimensional array: Traversal, Searching (Linear, Binary Search), Insertion of an</p>	<p>20</p>	<p>13</p>

	<p>element in an array, deletion of an element from an array, Sorting (Insertion, Selection, Bubble sort), concatenation of two linear arrays, merging of two sorted arrays;</p> <p>Two-dimensional arrays: Traversal, Finding sum/difference of two NxM arrays containing numeric values, Interchanging Row and Column elements in a two dimensional array.</p>		
September (FIRST WEEK)	<p>Stack (Array and Linked implementation of Stack): Operations on Stack (PUSH and POP) and its Implementation in C++, Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression;</p> <p>Queue: (Circular Array and Linked Implementation): Operations on Queue (Insert and Delete) and its Implementation in C++.</p> <p>-----Half Yearly Examination-----</p>	10	08
October	<p>UNIT 3: DATABASES AND SQL</p> <p>Database Concepts: Relational data model: Concept of domain, tuple, relation, key, primary key, alternate key, Candidate key; Relational algebra: Selection, Projection, Union and Cartesian product;</p> <p>Structured Query Language: General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language;</p> <p>Data types: NUMBER, CHARACTER, DATE;</p> <p>SQL commands: CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATE...SET..., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, GROUP BY, HAVING, ORDER BY;</p> <p>SQL functions: SUM, AVG, COUNT, MAX and MIN;</p>	20	13
November	<p>UNIT 4: BOOLEAN ALGEBRA</p> <p>Binary-valued Quantities, Boolean Variable, Boolean Constant and Boolean Operators: AND, OR, NOT; Truth Tables; Closure Property, Commutative Law, Associative Law, Identity law, Inverse law, Principle of Duality, Idem potent Law, Distributive Law, Absorption Law, Involution law, DeMorgan's Law and their applications;</p> <p>Obtaining Sum of Product (SOP) and Product of Sum (POS) form from the Truth Table, Reducing Boolean Expression (SOP and POS) to its minimal form, Use of</p>	20	05

	<p>Karnaugh Map for minimization of Boolean expressions (up to 4 variables); Basic Logic Gates (NOT, AND, OR, NAND, NOR) and their use in circuits.</p> <p>UNIT 5: COMMUNICATION AND NETWORK CONCEPTS</p> <p>Evolution of Networking: ARPANET, Internet, Interspace; Different ways of sending data across the network with reference to switching techniques; Data Communication terminologies: Concept of Channel, Baud, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, kbps, Mbps, Gbps, Tbps); Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link. Network devices: Modem, RJ45 connector, Ethernet Card, Hub, Switch, Gateway; Different Topologies- Bus, Star, Tree; Concepts of LAN, WAN, MAN; Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, Level-Remote Login (Telnet), Internet, Wireless/Mobile Communication, GSM, CDMA, WLL, 3G, SMS, Voice mail, Application, Electronic Mail, Chat, Video Conferencing; Network Security Concepts: Cyber Law, Virus threats and prevention, Firewall, Cookies, Hacking; WebPages; Hyper Text Markup Language (HTML), eXtensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Protocol Address; Website, Web browser, Web Servers; Web Hosting.</p>		
December	Revision, Project Work Preparation & I pre Board		
January	Revision and II Pre Board		
February	Revision		