Brainware Computer Academy

Object Oriented Programming using C++

(Specially Designed for WBCHSE, CBSE, ICSE & ISC)

Duration : 26 Sessions / 52 Hours / 9 Weeks

Class logistics: 3 Sessions (6 Classes) a week.

(6 Hours each week. A "Session" comprises of 1 theory class & 1 practical class of 1 hour each)

Session-wise Syllabus:

Session 1: Introduction to C++
C++ as a superset of C
Basic program construction: main ()
Keywords, Comments, Compilation
Data type, Variables and Constants

Session 2: C++ Basics
Function Prototyping
Reference variable
Call by reference

Session 3: C++ Basics Continued
Return by reference
Inline functions
Default arguments

Session 4: C++ Basics Continued
Function overloading
Const arguments
Scope Resolutions

Session 5 : 2 Hours Revision Practice

Session 6: Introduction to OOPS : 'C' to 'C++'
Basic concept of OOP
Comparison of procedural programming and OOP
Advantages of OOP
OOP Language
Structure revisited in the Light of C++

Session 7: Evolution From Structure to Class
Specifying a class
Defining member functions
Private and Public members
A C++ program with class

Session 8: C++ class in Details
Making an Outside function inline
Nesting of Member Functions
Private Member Functions
Overloading of Member Function

Session 10: Class & Object : Constructor
Memory allocation for Objects : Default Implicit & Explicit Constructor
Parameterized Constructors
Multiple Constructors in a Class
Constructors with default arguments

Session 11: Constructor Revisited and Destructor
Copy constructors
Destructor

Session 12: Array & Pointers in C++
Arrays & Pointers within a Class
Arrays of Objects
Pointer to Object

Session 13: Array & Pointers in C++ Contd…
Objects as function arguments
Returning Objects

Session 14: Miscellaneous Class Related Issues
Friend function
Friend Classes

Session 15: Miscellaneous Issues Contd…
Nested Classes
Static data members
Static member functions

Session 16 : 2 Hours Revision Practice

Session 17: Operator Overloading
Defining Operator Overloading
Rules for Overloading Operators
Overloading Unary Operators

Session 18: Operator Overloading Contd…
Overloading Binary Operators
Overloading Insertion & Extraction Operators using Friends

Session 19: Inheritance
Defining derived Classes
Single Inheritance
Constructor & Destructor in Derived Classes

Session 20: Inheritance Continued
Multilevel Inheritance
Multiple Inheritance
Hierarchical Inheritance

Session 21: Inheritance Continued
Hybrid Inheritance
Resolving ambiguity by virtual base class
Difference between Derived Class & Member Class

Session 22: Polymorphism
Pointers to Base Class Objects
'This' Pointer
Pointers to Derived Class Objects
Virtual function

Session 23: Polymorphism continued
Pure Virtual function
Abstract Class

Session 24: Stream Handling
Classes for file stream operations
Opening and closing of file
Detecting end-of-file
File modes
Sequential Reading and writing of file

Session 25: Stream Handling Continued
Reading and writing a class object
Random access of a file

Session 26: Exception Handling
Concept of runtime exception
Creating exception class
Throwing exception
Try – catch construct