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PAPER-II: Object Oriented Programming using C++

Unit I

Principles of Object Oriented Programming (OOP): Object oriented programming paradigm, basic concepts of object oriented programming, benefits of OOP.

Beginning with C++: What is C++? Applications of C++. A simple C++ program. More C++ statements. An example with class, structure of C++ program.

Unit II

Expressions and Control Structures: Operators in C++, scope resolution operator, member dereferencing operators, memory management operators, manipulators, type cast operator. Expressions and implicit conversions, operator overloading, operator precedence, control structures.
Functions in C++: The main function, function prototyping, call by reference, return by reference, inline functions, default arguments, const argument, function overloading, friend and virtual functions.

Unit III

Classes and Objects: Specifying a class, defining member functions. A C++ program with class, making an outside function inline, nesting of member functions, private member functions, arrays within a \class, memory allocation for objects. Static data members, static member functions. Arrays of objects, objects as a function argument, friendly functions, returning objects, const member functions, pointers to members.

Unit IV

Constructors and Destructors: Constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing two-dimensional arrays, destructors.

Inheritance: Extending Classes: Defining derived classes, single inheritance, making a private member, inheritable, multi level inheritance, multiple inheritance, hierarchical inheritance, and hybrid inheritance. Virtual base classes, abstract classes, constructors in derived classes, member classes, nesting of classes.

Unit V

Pointers, Virtual Functions and Polymorphism: Pointers to objects, pointers to derived classes, virtual functions, pure virtual functions.

Suggested Book

1. Balaguruswamy E., Object Oriented Programming with C++, Tata Mc-Graw Hill New Delhi.