

**LIT**

Susant K Rout's  
Center of Excellence

# ADV.C++

LATEST C++11 STANDARD

By-Chandan sir

2015

**AN UNIQUE SYLLABUS FOR CORE 2 ADVANCE LEARNER.**

## ❖ ADVANCE C++

**time:-100hr**

### ❖ **CHAPTER 1 (basic of OS, editors, compilers, installation process)**

- ❖ Different editor like VI, QT, visual C++, Notepad, TC++.
- ❖ Basic Linux command with vi editor
- ❖ Compilation and Linking process in TC++ and G++ environment.
- ❖ Something about Operating Systems, Microprocessors and motherboard.
- ❖ Why C and C++.
- ❖ Different application area.
- ❖ Demo GUI applications
- ❖ Lab exercise.

### ❖ **CHAPTER 2 (Syntax and Semantics)**

- ❖ Programming Paradigms.
- ❖ Basic Features OOP and their advantages.
- ❖ Input and Output streams in C++.
- ❖ Manipulators and uses.
- ❖ How to design own manipulators.
- ❖ Key words and Data types.
- ❖ Available Operators.
- ❖ Control Structure.
- ❖ Unit test.
- ❖ Lab exercise.

### ❖ **CHAPTER 3 (Function concepts)**

- ❖ Why function.
- ❖ Parts of User defined function.
- ❖ Value passing/returning technique.
- ❖ Inline function
- ❖ Function Overloading
- ❖ Lambda function.
- ❖ Pointers to function
- ❖ Designing Library.
- ❖ Unit test.
- ❖ Lab exercise.

### ❖ **CHAPTER 4(structure, union, pointer)**

- ❖ Basic of structure and union
- ❖ Application of structure and union.
- ❖ Basic of pointers.
- ❖ Different kinds of pointer.
- ❖ Pointer arithmetic's.
- ❖ Dynamic memory management.
- ❖ Learning data structure using pointer.
- ❖ About smart pointer, this pointer and virtual pointer.

- ❖ Unit test.
- ❖ Lab exercise.
- ❖ **CHAPTER 5(class and namespaces)**
- ❖ OOPS and UML.
- ❖ Object model.
- ❖ Different UML diagram.
- ❖ Class, object and instances.
- ❖ What is namespace and difference between class and namespace?
- ❖ Different accessing modes.
- ❖ Working with static and const keywords.
- ❖ Data hiding and encapsulation.
- ❖ Objects, static objects, Array of objects.
- ❖ Friend function., friend class and more
- ❖ Unit test.
- ❖ Lab exercise.

### ❖ **CHAPTER 6(ctor and dtor)**

- ❖ About constructor and its properties
- ❖ Types of constructor
- ❖ Copy constructor
- ❖ Overloading of constructor
- ❖ Delegation.
- ❖ Anonymous object.
- ❖ Private ctor and dtor.
- ❖ Recursive ctor.
- ❖ Local vs Global object.
- ❖ Variety of classes.
- ❖ Unit test.
- ❖ Lab exercise.

### ❖ **CHAPTER 7(Inheritance)**

- ❖ Why Inheritance
- ❖ Category of Inheritance.
- ❖ Ctor and dtor in Inheritance.
- ❖ Common constructor.
- ❖ Delegation.
- ❖ Unit test.
- ❖ Lab exercise.

### ❖ **CHAPTER 8(polymorphism)**

- ❖ About polymorphism
- ❖ Compile time and runtime polymorphism.
- ❖ Operator overloading.
- ❖ All types of operator overloading.
- ❖ Virtual functions.
- ❖ Pure virtual function and abstract base class.
- ❖ VPTR and VTABLE.
- ❖ Object slicing.
- ❖ Constructor and virtual function.
- ❖ Virtual destructor.
- ❖ Dtor with virtual function.
- ❖ Unit test
- ❖ Lab exercise.

### ❖ **CHAPTER 9(STL)**

- ❖ Towards generic programming using template.
- ❖ Class template.

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- ❖ class template with more function.
- ❖ Function template.
- ❖ Function template with more arguments.
- ❖ Towards **STL** (standard template library).
- ❖ Details about containers.
- ❖ Details about algorithm.
- ❖ Details about iterator.
- ❖ Lab exercise.
- ❖ **CHAPTER 10(Exception handling)**
- ❖ Exception handling.
- ❖ Single and multiple catch statements.
- ❖ Exception in inheritances.
- ❖ Exception in ctor and dtor.
- ❖ Standard exception handling.
- ❖ Unit test.
- ❖ Lab exercise.
- ❖ **CHAPTER 11(string handling)**
- ❖ String handling.
- ❖ Different C string handling library.
- ❖ String handling using relational operator.
- ❖ Different string handling function.
- ❖ Regular Expression
- ❖ Unit test.
- ❖ Lab exercise.
- ❖ **CHAPTER 12(file handling)**
- ❖ File handling.
- ❖ Using Linux system call method.
- ❖ Using constructor method.
- ❖ Using open and close member function method.
- ❖ Both sequential and random file accessing mechanism.
- ❖ Different error handling mechanism in files.
- ❖ Object as file stream reader and writer.
- ❖ Unit test
- ❖ Lab exercise
- ❖ **CHAPTER 13(database operation)**
- ❖ What is database?
- ❖ SQL for relational database.
- ❖ About API connect to database.
- ❖ Database connectivity Sqlite, MySQL.
- ❖ Database manipulation using c++.
- ❖ Unit test.
- ❖ **CHAPTER 14(Process and Threads)**
- ❖ About process.
- ❖ Process stages.
- ❖ Process creation using fork() and vfork().
- ❖ Daemon process.
- ❖ Process ID and about priority.
- ❖ About thread.
- ❖ Different thread manipulation stage.
- ❖ Thread locking using mutex.
- ❖ Conditional variable and deadlock.
- ❖ Lab exercise.
- ❖ **CHAPTER 15(Networking)**

- ❖ Introduction to networking.
- ❖ About TCP/UDP protocol.
- ❖ Different programming on TCP.
- ❖ Different programming on UDP.
- ❖ Lab exercise.
- ❖ **CHAPTER 16(Graphics, OpenGL, QT and visual C++)**
- ❖ Graphics programming.
- ❖ Different design approach.
- ❖ OpenGL programming.
- ❖ Idea about game design.
- ❖ GUI designing using **QT**.
- ❖ Signal and slots.
- ❖ Introduction to different modules.
- ❖ Introduction towards **Visual C++**.
- ❖ Lab exercise.
- ❖ **CHAPTER 17(WEB development using C++)**
- ❖ Web basics.(HTML, java script, CSS).
- ❖ CGI services.
- ❖ GET and POST methods.
- ❖ Web designing.
- ❖ Lab exercise.
- ❖ **CHAPTER 19(Internationalization)**
- ❖ Locale and internationalization
- ❖ Different types Facet.
- ❖ Lab exercise.

## -: Project Works (excludes syllabus):-

- ❖ Any kind of academic project.
- ❖ Research based project.

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