Programming in C++11 : Advanced Topics

COURSE DESCRIPTION

This **course** will **present** the **additional capabilities** of the **ISO Standard C++11** programming language. **Intermediate** and **advanced techniques** will be shown. **All features shown are applicable to all C++11 variants (on Windows, Unix, and Linux systems).**

COURSE OBJECTIVES

The overall **course objective** is to **provide additional C++11** language **features** in each of the **coverage areas** from **Part 1**.

COURSE TOPICS

Namespaces
- namespace issues
  - collisions
  - pollutions
- namespace aliases
- inlined namespaces

Advanced I/O (Operations) in C++
- **I/O** extractors
- **I/O** inserters
- object oriented file **I/O**

Defining and using classes
- constructors
  - **default** keyword
  - **delete** keyword
- template classes
  - template aliases
  - variadic templates

Programming in C++11 : Advanced Topics

COURSE TOPICS

Pointers and references in C++11
- smart pointers
  - **unique_ptr**
  - **shared_ptr**
  - **weak_ptr**
- references
  - move semantics
  - move reference (operations)
  - move constructor

Exception Handling
- using **noexcept**
- using **std::set_terminate( )**

Data Operations in C++11
- **const_cast**
- **static_cast**
- brace initialization
- passing objects to functions
  - by value (copy)
  - by reference
  - by move reference

Inheritance
- using **override**
- using **final**

Functions
- lambdas (anonymous functions)
  - closures
  - captures
  - trailing return type

Programming in C++11 : Advanced Topics

COURSE TOPICS

The Standard Template Library

- **begin( )** and **end( )** methods
- **tuple** container
- regular expressions
- thread operations
- random number operations
- clock and timing capabilities

Miscellaneous Features

- type aliases
- **decltype**
- type traits
- static assert

COURSE DURATION

This course normally requires **two** (2) days, approximately 50 % lecture and 50 % programming lab time.

COURSE PREREQUISITES

It is **assumed** that the **participant** has **attended** the **Programming in C++11 for C Programmers: Part 1** course, or has **production** level **coding experience** with (any version standard) of **C++.**