Advanced C++ Topics

Level: advanced

Length: 24 – 40 hours, depending on the chosen topics

Course objective: learn and exercise more complex issues related to C++, use of object oriented programming to solving practical problems by using C++ particularities.

What you will learn
- Stereotypes of using C++
- Particular ways to implement several design patterns
- Exercise how the design is mapped to code
- Exercise soft skills of communication and presentation

Who can participate: C++ programmers who want
- to familiarize himself/herself with usually less known aspects of the language
- to exercise the object oriented programming and use of C++ for solving interesting, more complex problems

Prerequisites: practical experience and knowledge of C++ at least at medium level

Required facilities: VGA projector, white board, computers, C++ development tools. It's highly recommended using an IDE, a good (free) example is Microsoft Visual C++ Express Edition or a dedicated distribution of Eclipse for C/C++

Related courses: The C++ Programming Language, Object Oriented Analysis and Design, Design Patterns

Minimal bibliography: The C++ Programming Language, Fourth Edition, Bjarne Stroustrup, Addison-Wesley, ISBN 0-321-56384-0

Description

This course is targeted to C++ programmers who want to deep their knowledge about the language and ways to use it.

There are discussed issues and details related to inheritance, polymorphism, Runtime Type Information, operator overloading, templates implementation, multi-threading programming.

The training is highly interactive, the attendees are implied in discussing the ideas and in designing solutions which are ultimately expressed in C++. The main purpose of this training is to exercise object oriented programming by using C++.

Note: the subjects are adapted to the attendees' profile, their background, experience and goals. We can approach other subjects depending on the context.

Examples of topics

1. Operator overloading: (), [], ->, Smart Pointers, implementations

2. Object Pool implementation – by overloading of new & delete operators

3. Inheritance, polymorphism, polymorphism implementation, virtual functions, Runtime Type Information (RTTI), types of casts, applications

4. Memory management in C++

5. Templates, policy based programming

6. Standard Template Library, algorithms

7. Concurrent programming with threads, specific issues, patterns