



## Clear Programming Paradigm C and C++ Training and Outsourcing



### C++ Training Course

This brochure is an overview of a C++ training course offered by  
*Clear Programming Paradigm LLC*



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## About Us



We are Clear Programming Paradigm LLC, an IT consultancy company from Belgrade, Serbia. We provide high-quality, professional-grade C and C++ training and outsourcing services for teams and corporate clients.

We aim to provide quality, professional-grade C and C++ training, educate the employees, and solve the challenge of finding C and C++ developers on the market. Contact us at [info@cpcsrc.com](mailto:info@cpcsrc.com) or visit us at [www.cpcsrc.com](http://www.cpcsrc.com).

## The Trainer

Slobodan Dmitrovic is a professional C++ trainer and consultant for some of the major automotive and telecommunications companies worldwide. He is an experienced conference speaker and author of a couple of programming books on C and C++.



Slobodan's ability to clearly explain complex topics and provide insightful training made him a sought-after trainer for the automotive, telecommunications, fintech, and other industries.

## Overview



The five-day C++ training course is an introduction to the C++ programming language, the C++ Standard Library, and modern C++11 to C++17 standards. The training is offered both remotely and on-site. No prior experience with C++ is required to attend the course.

The course is intended for teams who wish to learn the C++ programming language, the C++ Standard Library, and modern C++ standards. The recommended group size should not exceed ten people.

The training day consists of a theoretical introduction, source code examples, and coding exercises. During the training, there is an ongoing Q&A session between the trainer and participants. The final day is dedicated to creating a C++ project, debugging the code, and doing code review sessions.

## Topics

The following is a breakdown of all the C++ topics by day:

Day 1	Day 2
<ul style="list-style-type: none"><li>• Introduction</li><li>• Compilers</li><li>• Types</li><li>• Declaration, Definition, and Initialization</li><li>• Operators, Operands, Expressions</li><li>• Standard Input</li><li>• Arrays</li><li>• Pointers</li><li>• References</li><li>• Strings</li><li>• Automatic Type Deduction</li><li>• Built-in Statements</li><li>• Constants</li><li>• Functions</li><li>• Scope and Lifetime</li><li>• Q&amp;A and Exercises</li></ul>	<ul style="list-style-type: none"><li>• Classes<ul style="list-style-type: none"><li>○ Data Member Fields</li><li>○ Member Functions</li><li>○ Access Specifiers</li><li>○ Constructors</li><li>○ Default Constructor</li><li>○ Member Initialization</li><li>○ Copy Constructor</li><li>○ Copy Assignment</li><li>○ Move Constructor</li><li>○ Move Assignment</li><li>○ Operator Overloading</li><li>○ Destructors</li><li>○ Inheritance and Polymorphism</li></ul></li><li>• Templates</li><li>• Enumerations</li><li>• Code Organization<ul style="list-style-type: none"><li>○ Header and Source Files</li><li>○ Header Guards</li><li>○ Namespaces</li></ul></li><li>• Q&amp;A and Exercises</li></ul>

Day 3	Day 4
<ul style="list-style-type: none"> <li>• Conversions</li> <li>• Exceptions</li> <li>• I/O Streams</li> <li>• C++ Standard Library <ul style="list-style-type: none"> <li>○ Containers <ul style="list-style-type: none"> <li>▪ <code>std::vector</code></li> <li>▪ <code>std::array</code></li> <li>▪ <code>std::set</code></li> <li>▪ <code>std::map</code></li> <li>▪ <code>std::pair</code></li> <li>▪ Other Containers</li> </ul> </li> <li>○ The Range-Based for Loop</li> <li>○ Iterators</li> <li>○ Algorithms and Utilities <ul style="list-style-type: none"> <li>▪ <code>std::sort</code></li> <li>▪ <code>std::find</code></li> <li>▪ <code>std::copy</code></li> <li>▪ Min and Max Elements</li> <li>▪ Other Functions</li> </ul> </li> <li>○ Lambda Expressions</li> </ul> </li> <li>• Q&amp;A and Exercises</li> </ul>	<ul style="list-style-type: none"> <li>• C++ 11 Standard <ul style="list-style-type: none"> <li>○ Automatic Type Deduction</li> <li>○ Range-based Loops</li> <li>○ Initializer Lists</li> <li>○ Move Semantics</li> <li>○ Lambda Expressions</li> <li>○ The <code>constexpr</code> Specifier</li> <li>○ Scoped Enumerators</li> <li>○ Smart Pointers</li> <li>○ <code>std::tuple</code></li> <li>○ <code>static_assert</code></li> <li>○ Introduction to Concurrency</li> <li>○ Deleted and Defaulted Functions</li> <li>○ Type Aliases</li> </ul> </li> <li>• C++14 Standard <ul style="list-style-type: none"> <li>○ Binary Literals</li> <li>○ Digits Separators</li> <li>○ Auto for Functions</li> <li>○ Generic Lambdas</li> <li>○ <code>std::make_unique</code></li> </ul> </li> <li>• C++ 17 Standard <ul style="list-style-type: none"> <li>○ Nested Namespaces</li> <li>○ <code>constexpr</code> Lambdas</li> <li>○ Structured Bindings</li> <li>○ <code>std::filesystem</code></li> <li>○ <code>std::string_view</code></li> <li>○ <code>std::any</code></li> <li>○ <code>std::variant</code></li> </ul> </li> <li>• Q&amp;A and Exercises</li> </ul>

Day 5
<ul style="list-style-type: none"> <li>• Project</li> <li>• Q&amp;A and Code Review</li> </ul>

## Workflow

A training day can be organized as follows:

Time	Activity
09:00 – 11:00	Live training
11:00 – 12:30	Exercises
12:30 – 13:30	Lunch break
13:30 – 15:30	Live training
15:30 – 17:00	Exercises

**Live training** includes:

- Theoretical introduction
- Source code examples
- PDF handouts

**Exercises** include:

- Solved source code tasks
- Q&A sessions with a trainer

The workflow can be modified according to the client's needs.

## Summary

This course provides a professional-grade introduction to the modern C++ programming language, establishes a solid base, and enables further learning progress.

The course follows the latest trends in the C++ programming community, the C++ guidelines and provides the necessary building blocks that make a C++ knowledge backbone. Each training day can be customized to meet the client's requirements.

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