



Introduction to C++

Training Course Overview



Clear Programming Paradigm LLC

Professional C++ Training

For Industry and Academic Institutions

 cppandfriends.com





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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.

The course is for teams who want to learn the C++ programming language, the C++ Standard Library, and modern C++ standards. No prior experience with C++ is required to attend the course, and the recommended group size should not exceed ten people.

The training day includes a theoretical introduction, live coding and source code examples, and coding exercises. The fifth day is reserved for 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"> • Introduction • Compilers • Types • Declaration, Definition, and Initialization • Operators, Operands, Expressions • Standard Input • Arrays • Pointers • References • Strings • Automatic Type Deduction • Built-in Statements • Constants • Functions • Scope and Lifetime • Q&A and Exercises 	<ul style="list-style-type: none"> • Classes <ul style="list-style-type: none"> ○ Data Member Fields ○ Member Functions ○ Access Specifiers ○ Constructors ○ Default Constructor ○ Member Initialization ○ Copy Constructor ○ Copy Assignment ○ Move Constructor ○ Move Assignment ○ Operator Overloading ○ Destructors ○ Inheritance and Polymorphism • Templates • Enumerations • Code Organization <ul style="list-style-type: none"> ○ Header and Source Files ○ Header Guards ○ Namespaces • Q&A and Exercises



Day 3

- Conversions
- Exceptions
- I/O Streams
- C++ Standard Library
 - Containers
 - `std::vector`
 - `std::array`
 - `std::set`
 - `std::map`
 - `std::pair`
 - Other Containers
 - The Range-Based for Loop
 - Iterators
 - Algorithms and Utilities
 - `std::sort`
 - `std::find`
 - `std::copy`
 - Min and Max Elements
 - Other Functions
- Lambda Expressions
- Q&A and Exercises

Day 4

- C++11 Standard
 - Automatic Type Deduction
 - Range-based Loops
 - _INITIALIZER Lists
 - Move Semantics
 - Lambda Expressions
 - The `constexpr` Specifier
 - Scoped Enumerators
 - Smart Pointers
 - `std::tuple`
 - `static_assert`
 - Introduction to Concurrency
 - Deleted and Defaulted Functions
 - Type Aliases
- C++14 Standard
 - Binary Literals
 - Digits Separators
 - Auto for Functions
 - Generic Lambdas
 - `std::make_unique`
- C++17 Standard
 - Nested Namespaces
 - `constexpr` Lambdas
 - Structured Bindings
 - `std::filesystem`
 - `std::string_view`
 - `std::any`
 - `std::variant`
- Q&A and Exercises

Day 5

- Project
- Q&A and Code Review

On the fifth day, trainees create a project and participate in debugging and code review sessions.

Workflow

A training day can be organized as follows:

Time	Activity
09:00 – 10:00	Live Training
10:00 – 10:45	Exercises
10:45 – 11:00	Coffee Break
11:00 – 11:45	Live Training
11:45 – 12:30	Exercises
12:30 – 13:30	Lunch Break
13:30 – 14:30	Live Training
14:30 – 15:15	Exercises
15:15 – 15:30	Coffee Break
15:30 – 16:15	Live Training
16:15 – 17:00	Exercises and Summary

Live Training includes:

1. Theoretical introduction
2. Practical live coding sessions on Windows, macOS, and Linux
3. Source code examples
4. PDF handouts
5. Q&A sessions with a trainer

Exercises include:

1. C++ source code tasks that increase in complexity
2. Complete C++ source code solutions
3. Q&A sessions with a trainer

Summary

The course provides a professional-grade introduction to the modern C++ programming language and reduces the time needed to learn the C++ programming language. The course follows the latest trends and guidelines and provides the necessary building blocks that make a C++ knowledge backbone. We can customize the training to the client's requirements. In our C++ training, we use Windows, macOS, and Linux machines.



About Us



We are *Clear Programming Paradigm LLC*, a European IT consultancy company from Belgrade, Serbia. We provide professional C and C++ training services for industry and academic institutions.

We help shorten the time needed to learn the C++ programming language, increase productivity, and get your team up to date on the latest C++ standards.

Trainer

Slobodan Dmitrovic is a professional C++ trainer, consultant, and author of several programming books. He is an experienced C++ trainer for the automotive, semiconductor, and automation industries.

Slobodan also holds C++ training courses at several universities and institutes.

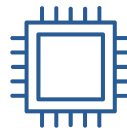


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Thank you for taking the time to read our brochure.



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