

Introduction to C++

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- Course Git repository at
https://github.com/martinjrobinson/infomm_cpp_course
 - Contains lecture notes and exercises
- Combination of lectures and practical sessions
 - Practical exercises (practical*.pdf) give you practice on the material covered in the lectures

This training course covers the following topics:

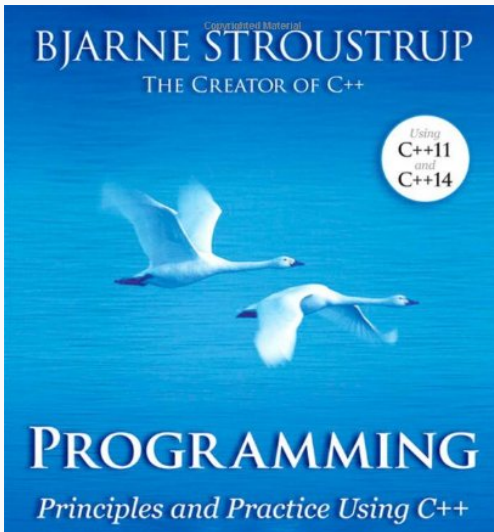
1. basic types, flow control, `std::array`, input/output
2. pointers, references, functions, templates, `std::vector`
3. classes and object-oriented programming

This course gives you a practical toolbox of C++ programming up to C++14. *This is a small part of C++ as a whole!*

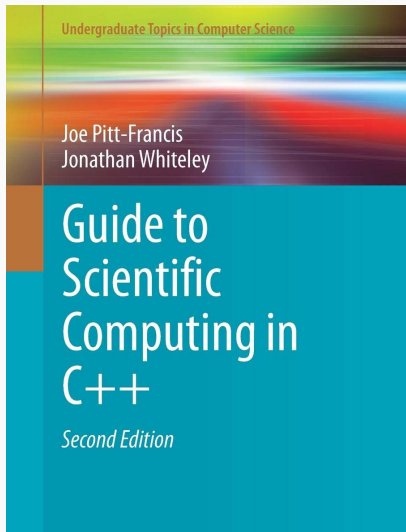
Tuesday to Friday:

- 09:30-11:00 Lecture & practical session
- 11:30-13:00 Lecture & practical session
- 13:00-14:00 Lunch
- 14:00-17:30 Practical session

- Programming: Principles and Practice Using C++



- Guide to Scientific Computing in C++



Software for the course

■ Compiler explorer

The screenshot shows the Compiler Explorer interface in a Mozilla Firefox browser. The address bar shows the URL <https://gcc.godbolt.org>. The main interface is divided into several panels:

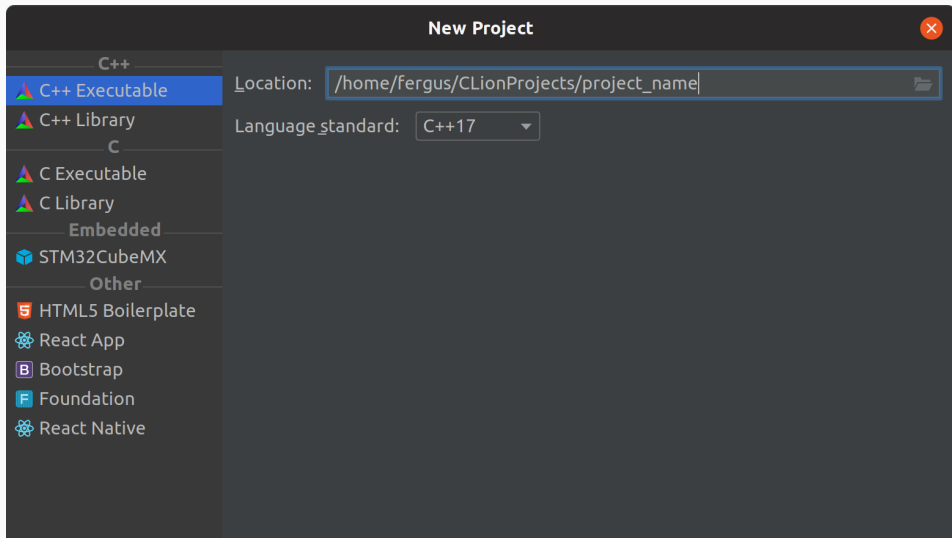
- Top Bar:** Contains the Compiler Explorer logo, "Add..." and "More" buttons, and "Share", "Other", and "Policies" dropdown menus.
- Left Panel (C++ source #1):** Displays the source code of a C++ program:

```
1 #include <iostream>
2
3 int main() {
4     std::cout << "Hello, World!" << std::endl;
5     return 0;
6 }
```
- Right Panel (x86-64 gcc (trunk) (Editor #1, Compiler #1) C++):** Contains compiler options and a table of compiler flags.

Compiler	Options
x86-64 gcc (trunk)	<input checked="" type="checkbox"/> 11010 <input checked="" type="checkbox"/> ./a.out <input checked="" type="checkbox"/> .LX0: <input type="checkbox"/> lib.f: <input checked="" type="checkbox"/> .text <input checked="" type="checkbox"/> // <input type="checkbox"/> \s+ <input checked="" type="checkbox"/> Intel <input checked="" type="checkbox"/> Demangle
- Libraries:** A section for adding libraries, currently showing `.LC0:` and `.string "Hello, World!"`.
- Output:** Shows the output of the compiler and the program. The compiler output is empty (0/0). The program output is "Hello, World!".

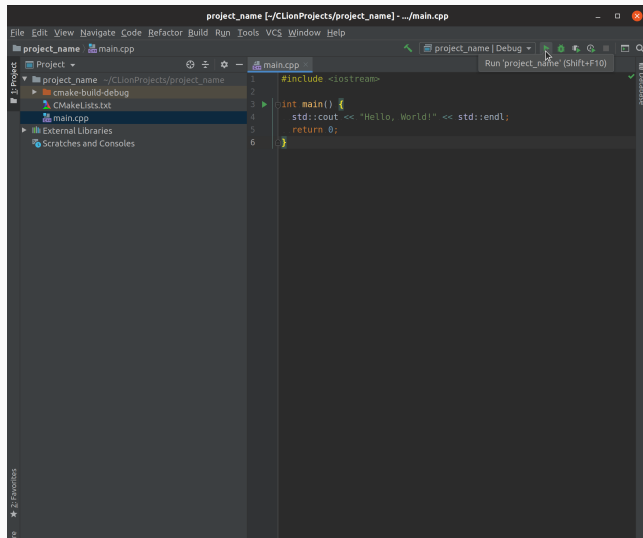
Software for the course

- CLion



Software for the course

- CLion



Acknowledgements

Material for this course adapted from:

- Pitt–Francis & Whiteley: Guide to Scientific Computing in C++
- C++ for Scientific Computing course by Joe Pitt–Francis:
<http://www.cs.ox.ac.uk/people/joe.pitt-francis/C++ScientificComputing/>