

# Introduction to C++

---

Martin Robinson

Dec 2019

- Course Git repository at  
**[https://github.com/martinjrobinson/infomm\\_cpp\\_course](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:

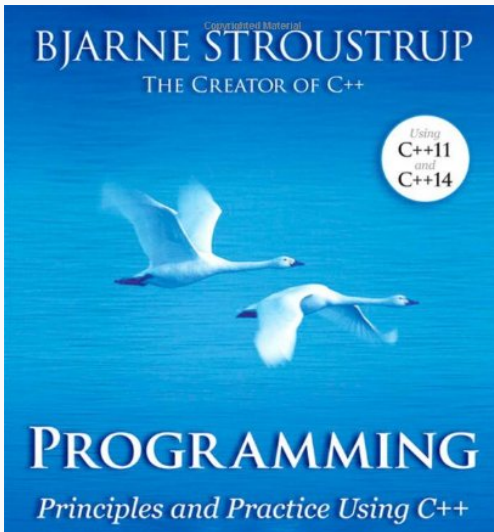
1. basic types, flow control, `std::array`, input/output
2. pointers, references, functions, templates, `std::vector`
3. classes and object-oriented programming

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

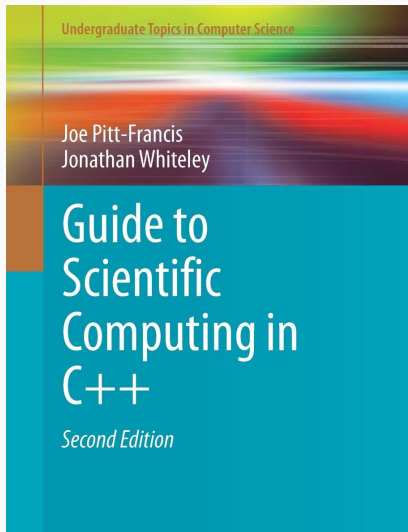
Tuesday to Friday:

- 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:** Features the Compiler Explorer logo, "Add..." and "More" buttons, and "Share", "Other", and "Policies" dropdown menus.
- Left Panel (C++ source #1):** Contains a C++ source code editor with the following code:

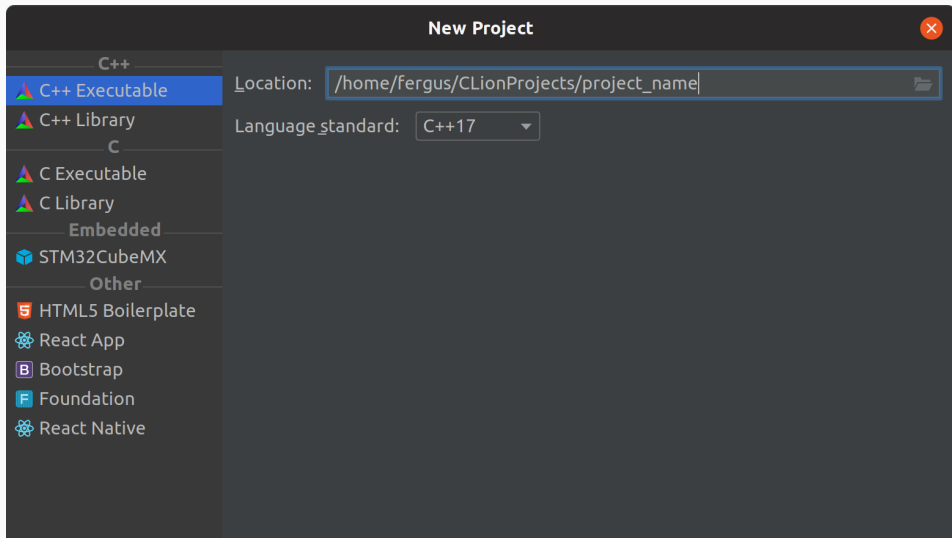
```
1 #include <iostream>
2
3 int main() {
4     std::cout << "Hello, World!" << std::endl;
5     return 0;
6 }
```
- Right Panel (x86-64 gcc (trunk) (Editor #1, Compiler #1) C++):** Contains compiler options and output sections.
  - Compiler Options:** A dropdown menu set to "x86-64 gcc (trunk)" with a green checkmark icon. Below it are checkboxes for various options: 11010, .a.out, .LX0:, lib.f, .text, //, \s+, Intel, and Demangle.
  - Libraries:** A dropdown menu set to "Libraries" with a plus icon and "Add new..." button.
  - Assembly Output:** A section showing the generated assembly code:

```
1 .LC0:
2     .string "Hello, World!"
```
  - Output:** A section showing the program's output:

```
Output (0/0) x86-64 gcc (trunk) - 3130ms (110537B)
Hello, World!
```

# Software for the course

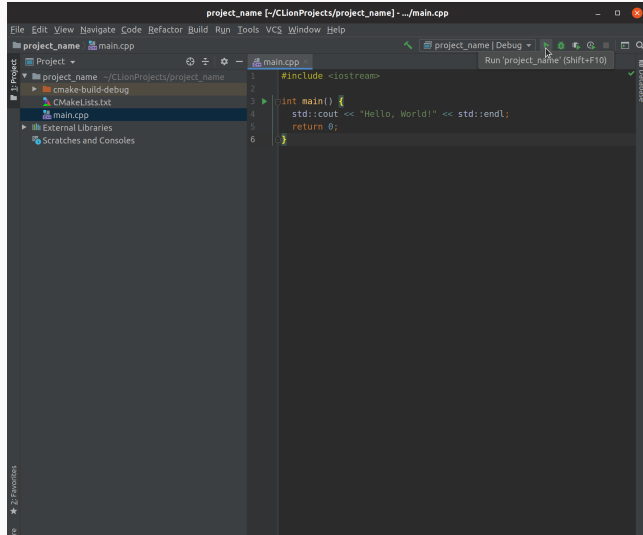
- CLion





# 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/>