



Project Creation and Structure

Basics – C++ Fundamentals

```
▼ hello_world
  > cmake-build-debug
  docs
  ▼ include
    hello_world
  ▼ src
    CMakeLists.txt
    main.cpp
    CMakeLists.txt
    M↓ README.md
```

Agenda

- Compiling a C++ Executable
 - Basic Hello-world Executable
 - Compiling Manually
 - Makefiles
- Project Organization

Compiling a C++ Executable

Let's Start with Some Code



hello_world

Let's Start with Some Code



main.cpp



hello_world

Let's Start with Some Code



main.cpp

```
#include <cstdlib>
#include <iostream>

int main() {
    std::cout << "Hello, world!" << std::endl;
    return EXIT_SUCCESS;
}
```

Compiling and Running

```
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a.out



hello_world

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a.out



hello_world

```
hello_world % ./a.out  
Hello, world!  
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```

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- This is where makefiles come in!

Makefiles

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- Our makefile might need to change throughout the development of a project
- CMake automates the writing of makefiles from a high level

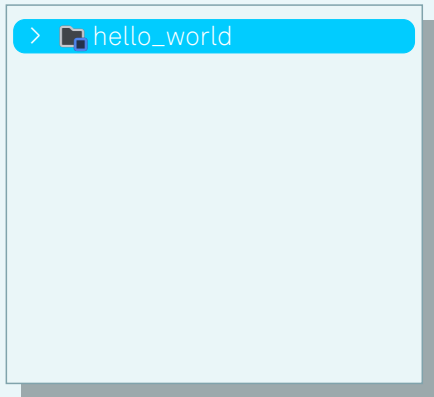
Project Organization

Project Organization

- Keeping our files organized will make compiling a bit simpler, and it will standardize our projects

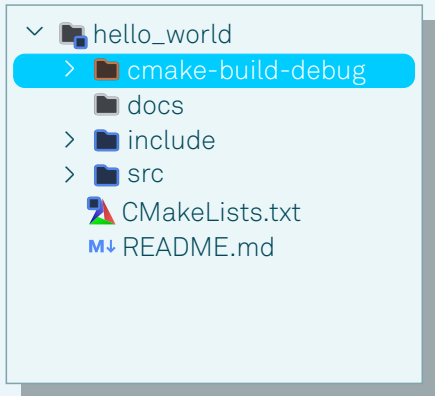
Project Organization

- The project directory where everything for a project is stored



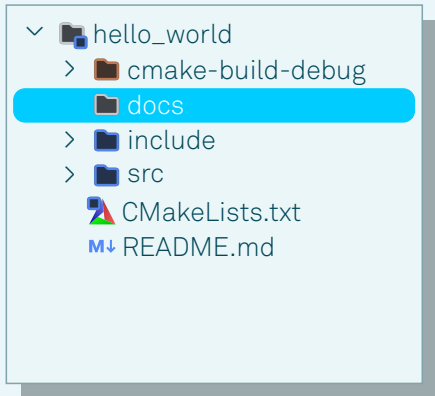
Project Organization

- The build directory where the build files are stored



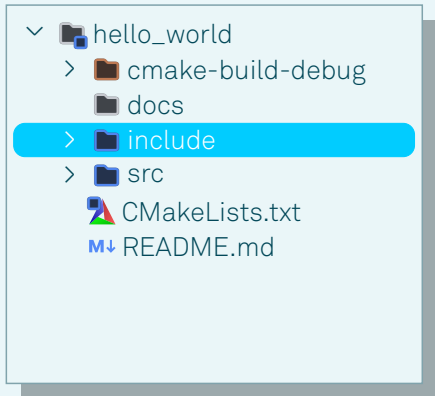
Project Organization

- The documentation directory where all files related to documentation are stored



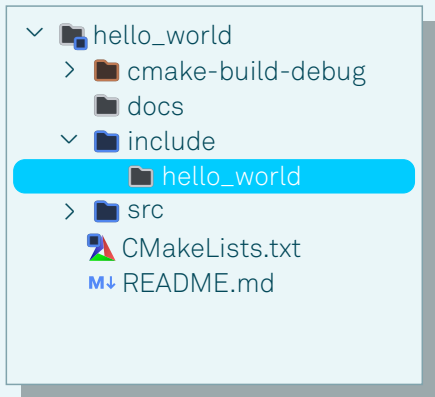
Project Organization

- The include directory where all files we want to include will go



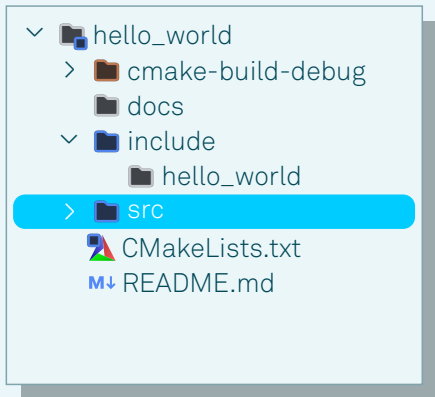
Project Organization

- The include project directory where the files we need to include for our project will go



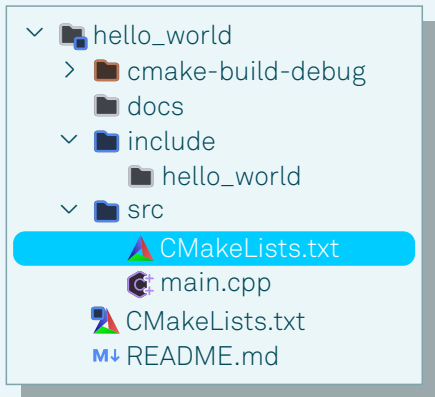
Project Organization

- The source directory where all source files go



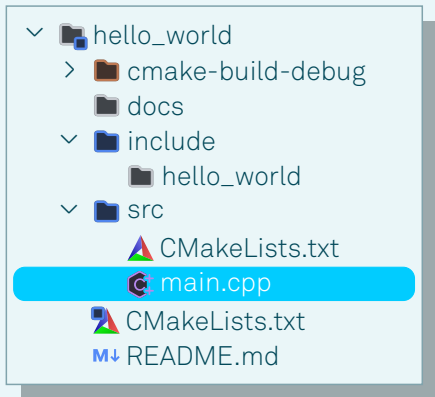
Project Organization

- The source CMake file which dictates how to compile the source files and the include files



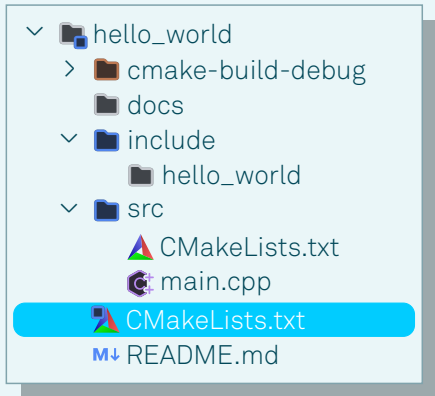
Project Organization

- The main file where our executable will start



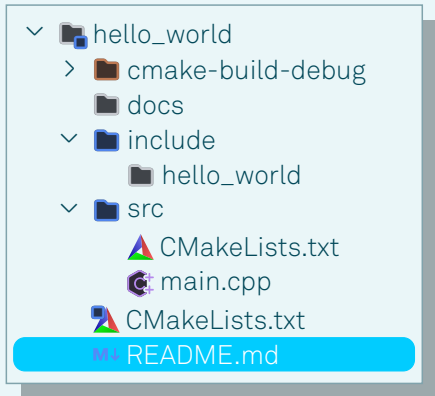
Project Organization

- The global CMake file which dictates project information, compiler settings, and external dependencies



Project Organization

- The read-me file which holds instructions for how to use our project



Creating Projects

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- By default, our IDE won't create new projects this way
- Different ways to set up a C++ project depending on use
- We'll use a makefile to create new projects with the proper structure and the proper CMake to configure them

Any Questions?