Compiling a C++ program

In this lesson, you will learn the basic steps to convert the C++ program into an executable file.

We'll cover the following

Introduction

In C++, creating an executable file involves three steps:

- Preprocessing
- Compilation
- Linking

To create a simple C++ application first, you need to write **source code**. **Source code** is a set of human-readable instructions written in a specific programming language.

> 📝 **Note:** We save the source code of the C++ program in a file with a **cpp** extension.

Preprocessing

Lines that start with `#` are known as **preprocessor directives**. Preprocessor directives tell the compiler to preprocess some information before starting the compilation. For example, `#include <filename>` is a preprocessor directive. When a preprocessor encounters this statement, it takes the content of the `filename` and pastes it into the file that calls the preprocessor directive.

Compilation

The compilation is the process in which we take the source code and translate this code into something that a machine can understand. C++ compiler takes the source code from file with `.cpp` extension. It does the following things:

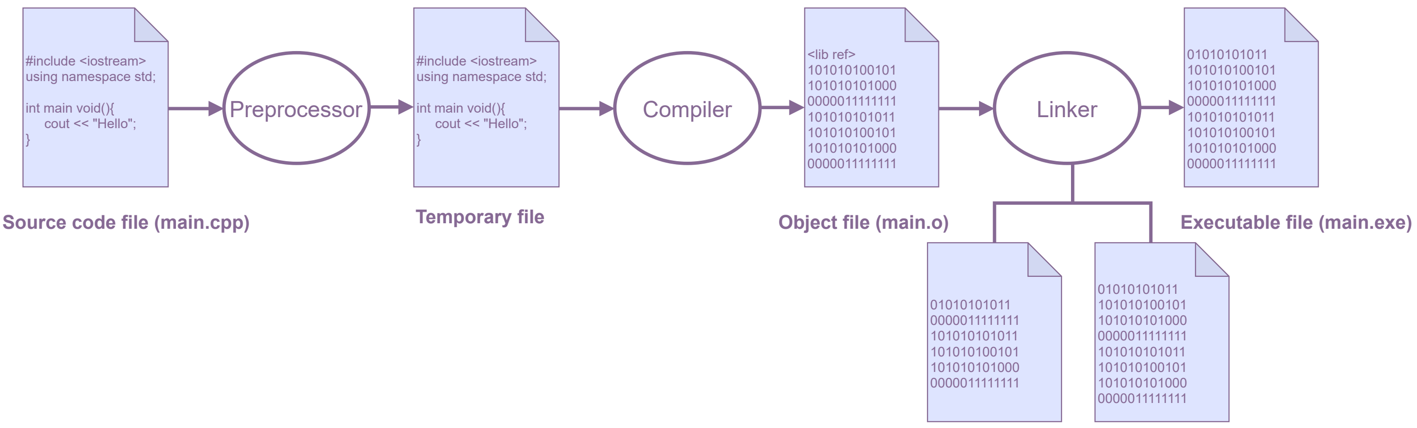
- Checks if an error exists in the source code. If yes, the compiler generates an error and stops the compilation process.
- If the source code is error-free, it converts source code into machine code and generates an object file. Machine code contains binary instructions (sequence of 0's and 1's). Object file has a `.o` extension. It is called an intermediary file because the code is not executable yet. The compiler creates a separate object file for each source file.

Linking

Linker performs the following two tasks:

- The linker takes all the object files created in the compilation process and links them together.
- Then, we link the library files with the object code to make an executable program. A library file is a collection of reusable code, and it is precompiled. For example, the `<iostream>` library allows users to take input from the keyboard and display output on the screen.

The figure given below summarizes the process of creating an executable file.



Process of making .exe file in C++

In the next lesson, you will learn about keywords in C++.