

Compiling C++ programs with g++

The base command for the Gnu C compiler is "gcc"
 The base command for the Gnu C++ compiler is "g++"

Single File Programs

To compile a program that is in a single file, the easiest compilation uses the command format:

```
g++ <filename>
```

(where the filename ends with ".cpp").

Example:

```
g++ prog1.cpp
```

This command will create an executable program called "a.out" (the default executable target name when one is not specified).

Multiple File Programs

To invoke the Compile stage, which translates source code (.cpp files) into object code (.o files), use the -c flag. Format:

```
g++ -c <filename>
```

When the -c option is NOT used, the compiler will expect the command to give everything necessary to compile AND link -- to make the executable.

To name a target (something other than the default filename, use the -o flag. Format:

```
g++ -o <target_name> <remainder of command>
```

A few examples:

```
g++ -o yadda.o -c fraction.cpp
```

This command invokes just the compile stage on fraction.cpp, but names the object code file "yadda.o" (instead of the default "fraction.o").

```
g++ -o bob.exe circle.o main.o
```

This command links the two object code files ("circle.o" and "main.o") into an executable, called "bob.exe" (instead of the default "a.out").

```
g++ -o myProgram thing.cpp main.cpp
```

This command compiles and links (since -c not used) the code files "thing.cpp" and "main.cpp" together into the executable program called "myProgram".

There are other command formats, flags, and shortcuts, which are not listed here. The above commands are sufficient for basic compilation needs.

Example:

The following example is the step by step compilation of the files for the fraction class example.

To compile the cpp files into object code:

```
g++ -c frac.cpp
g++ -c main.cpp
```

Now, the object code files frac.o and main.o have been created.

To link the object code: `g++ -o frac frac.o main.o`

This creates the executable "frac"

run the program: `frac`