Compiling and linking a program with multiple source files using the g++ compiler (MinGW g++ compiler on a Windows platform)

If the source code is in several files, say "file1.cpp" and "file2.cpp", then they can be compiled into an executable program named "myprog" using the following command:

```
g++ -std=c++11 file1.cpp file2.cpp -o myprog
```

Note the **-std** and **-o** switches being used. The **-std** switch is for the standard being used, the **-o** switch specifies the name of the executable program to be created. On a Windows platform, the extension for the program will be ".exe". The statement above compiles the source files and (if successful) creates object files and links them to produce an executable file.

The same result can be achieved using the following three commands:

```
g++ -c -std=c++11 file1.cpp
g++ -c -std=c++11 file2.cpp
g++ file1.o file2.o -o myprog
```

The **-c** switch specifies that the source files should be compiled (producing object files if successful) but not linked together.

The advantage of the second method is that it compiles each of the source files separately. If, for instance, the above commands were used to create "myprog", and "file1.cpp" was subsequently modified, then the following commands would correctly update "myprog".

```
g++ -c -std=c++11 file1.cpp
g++ file1.o file2.o -o myprog
```

Note that file2.cpp does not need to be recompiled so the time required to rebuild myprog is shorter than if the first method for compiling myprog were used.

When there are numerous source files and a change is only made to one of them, the time savings can be significant. This process, though somewhat complicated, is generally handled automatically by a makefile (Unix / Linux).

Most IDE's (integrated development environments) such as Visual Studio, Eclipse, and NetBeans allow you to create a project that includes source files and header files. In an IDE, the process of compiling and linking can be performed as separate actions or as an integrated process. The process of compiling and linking is often referred to as "building" in an IDE instead of "linking".