The Make File

For the homework your instructor provides a project or <mark>make file</mark>. For this lesson, though, you'll get to build one on your own. Create a new file named `makefile`. It has no extension. Then, add the following code:

```
1   EXE=digit-tester
2   OBJS=client.o digits.o
3
4   $(EXE): $(OBJS)
5       $(CXX) $(CXXFLAGS) $(OBJS) -o $(EXE)
6
7   run: $(EXE)
8       ./$(EXE)
```

Here are what these three sections mean:

1. <mark>Macros</mark>: these are like variables that can be **expanded** later. `EXE` is the name of the executable, and `OBJS` contains the names of the object files. Since you have two `.cpp` files in your project, you'll have two object files.

2. Both of the next two sections contain <mark>targets</mark>, <mark>dependencies</mark> and <mark>actions</mark>.

   →Line 4 **expands** the macros `EXE` and `OBJS`, producing a line that says: `digit-tester : client.o digits.o`

   →Interpret this line as meaning : "to build `digit-tester`, make sure that `client.o` and `digits.o` are both up to date."

   →`digit-tester` is a **target** (what we are trying to build), while `client.o` and `digits.o` are **dependencies**

   →Line 5 is the action to perform to produce `digit-tester`. Each action line must start with a <mark>tab character</mark>, not spaces. Your editor may do this already, but if not, you'll need to configure it. Line 5 expands a few other macros meaning "run the compiler with these object files and produce t his executable".

3. Line 7 is called a **pseudo target**. When you type `make run`, the action line is executed. If you just type `make`, only the first target is built.

Once you've saved your make file, type `make` and the linker errors should disappear. If they don't then go over the previous steps (or reach out on the Discussion Board). Type `make run`, and the client program should run (even if you have some warnings about unused parameters).

Even though all of your tests fail, <mark>that's OK</mark>. The purpose of the stub is to get the mechanical details out of the way, so that you can <mark>use all of your brainpower</mark> to concentrate on solving the problems.