The following program, which we'll name `pun.c`, displays this message each time it is run.

pun.c

```
#include <stdio.h>

int main(void)
{
  printf("To C, or not to C: that is the question.\n");
  return 0;
}
```

Section 2.2 explains the form of this program in some detail. For now, I'll just make a few brief observations. The line

```
#include <stdio.h>
```

is necessary to "include" information about C's standard I/O (input/output) library. The program's executable code goes inside `main`, which represents the "main" program. The only line inside `main` is a command to display the desired message. `printf` is a function from the standard I/O library that can produce nicely formatted output. The `\n` code tells `printf` to advance to the next line after printing the message. The line

```
return 0;
```

indicates that the program "returns" the value 0 to the operating system when it terminates.

Compiling and Linking

Despite its brevity, getting `pun.c` to run is more involved than you might expect. First, we need to create a file named `pun.c` containing the program (any text editor will do). The name of the file doesn't matter, but the `.c` extension is often required by compilers.

Next, we've got to convert the program to a form that the machine can execute. For a C program, that usually involves three steps:

- ***Preprocessing.*** The program is first given to a ***preprocessor***, which obeys commands that begin with # (known as ***directives***). A preprocessor is a bit like an editor; it can add things to the program and make modifications.
- ***Compiling.*** The modified program now goes to a ***compiler***, which translates it into machine instructions (***object code***). The program isn't quite ready to run yet, however.
- ***Linking.*** In the final step, a ***linker*** combines the object code produced by the compiler with any additional code needed to yield a complete executable program. This additional code includes library functions (like `printf`) that are used in the program.