

Assignment #7

Compiling and Running Programs

Congratulations! You've inherited a program written by someone else. There are two flavors of this program: one written in C, and the other in Fortran. Download the example file `ex7.tgz` into your workspace, then unpack it as follows:

```
tar xvzf ex7.tgz
cd ex7
ls
```

Note that there are two directories in this bundle, one for C and another for Fortran. Pick one of these to work with.

- 1) Try compiling the program by hand. At the command prompt, enter the command for `gcc` or `gfortran`, depending on which flavor you chose to work with:

```
gcc -g plinko.c -o plinko -lm
or
gfortran -g plinko.f -o plinko
```

- 2) Now, run your new program:

```
./plinko
Number of drops?
500
Statistics:
Bucket    1:      1
Bucket    2:      9
Bucket    3:     28
Bucket    4:     77
Bucket    5:    141
Bucket    6:    124
Bucket    7:     75
Bucket    8:     35
Bucket    9:      8
Bucket   10:      2
```

- 3) Create a "make" file that you can use to compile the program automatically. The file should have two targets: one to build the program, and one called "clean" to clean up.
- 4) Test out your new "make" file. Build your program, then run it as follows:

```
make
gcc -g plinko.c -o plinko -lm
./plinko
Number of drops?
500
Statistics:
Bucket    1:      1
Bucket    2:      9
Bucket    3:     28
Bucket    4:     77
Bucket    5:    141
```

```
Bucket      6:    124
Bucket      7:    75
Bucket      8:    35
Bucket      9:     8
Bucket     10:     2
```

- 5) Edit your program to say “How many drops?” instead of “Number of drops?” Save the program and run it again. Did the text change? If it didn’t, then the executable is out of date. Use “make” to compile your program, and run it again.
- 6) Use “make clean” to clean up and remove your executable. Once the executable is gone, can you run your program?

Lessons Learned:

- A program must be compiled before running it, after each change to the source code.
- Makefiles automate the process of compiling and cleaning up, shortening the command to “make” and eliminating mistakes that creep in when you type commands by hand.