CS 213, Spring 2000
Homework Assignment H3
Handed Out: March 21
Practice Only!

Prof. Mowry (`tcm@cs.cmu.edu`) is the lead person for this assignment. This assignment is *practice only*—there is nothing to hand in. However, it is still important that you complete this assignment because it will help prepare you for Lab 5 and for the exams.

1. Description

This is a simple exercise to help you think about concurrency and exceptional flow control. We'll revisit concurrency in more detail when we study network servers.

Your job is to write a C *timebomb* that explodes in 5 seconds unless you type control-c.

Running in the foreground, your time bomb should fork a child process and then wait for the child to terminate. The child terminates in one of two ways. If you type control-c within 5 seconds, then the child is defused and exits with a status of 0. If you fail to type control-c within 5 seconds, then the child explodes by exiting with a status of 1.

After waiting for the child to terminate, the parent prints exactly one line of output to stdout: either "`Boom!`" if the child exploded, or "`Whew!`" if the child was defused. Terminate each line with a newline character. The child should not produce any output in your final handin, and the parent should produce exactly one line of output.

You'll want to look at the man pages for `fork`, `signal`, `alarm`, `wait`, and `exit`. The lecture notes provide some examples of these functions.

Careful: Typing control-c while your timebomb is running in the foreground sends a SIGINT signal to both the parent and the child. The parent should trap and ignore SIGINT.

You can write your timebomb by adding only about 20 lines of code to the `timebomb.c` template.

Logistics

Create a (protected) directory to work in, `cd` to that directory, and then copy the following 2 files:

```
cp /afs/cs.cmu.edu/academic/class/15213-s00/H3/{Makefile,timebomb.c} .
```

`Makefile` : Use this to compile your time bomb and to hand in your finished work.

`timebomb.c` : The template that you will modify to create your time bomb.