CS 100 Lab Three – Fall 2017

Create a directory called **lab3** on your machine using **mkdir lab3** and move into that directory with **cd lab3**

Complete the following problems. Make sure to prompt the user for any input needed by the program.

1. Name this program **info.c** – This program reads in a series of integers, stopping when the user enters the value zero. The user should print out the number of values read and the maximum and minimum values seen. You can assume there will always be at least one number entered. For example, given the input shown at the right, the program generates:

```
Count of numbers: 11
Maximum value: 1831
Minimum value: -2016
```

```
84
105
37
1831
-2016
-85
412
-407
55
22
873
0
```

2. Name this program **pic.c** – This program reads a single positive integer (**num**) from the user and then prints a box of **O** with an **X** on all borders that is **num** rows high and **num** columns wide. For example, reading the value **5** generates the output below on the left, and reading the value **8** generates the output below on the right.

```
X X X X X
X O O O X
X O O O X
X O O O X
X X X X X
```

```
X X X X X X X X
X O O O O O O X
X O O O O O O X
X O O O O O O X
X O O O O O O X
X O O O O O O X
X O O O O O O X
X X X X X X X X
```

3. Name this program **vowel.c** – The program reads an unknown number of words – strings that are only lowercase letters – stopping when the word **quit** is entered. None of your strings will ever have more than 20 characters. The program counts the number of times that each vowel is seen, and prints the total number of occurrences of each vowel at the end. Using the input:

```
the quick brown fox jumps over the lazy old dog quit
```

The program should generate five lines of output in the format shown below:

```
The vowel a occurred 1 times
The vowel e occurred 3 times
The vowel i occurred 1 times
The vowel o occurred 5 times
The vowel u occurred 2 times
```

Hint: this program uses nested loops, the outer loop reads and processes a string, the inner loop iterates over each character in the string – identifying/counting the vowels in that one string.

4. Name this program **count.c** – The program reads an unknown number of words – strings that all 20 characters or less in length. It simply counts the number of words read. The end of input is signaled when the user enters **control-d** (end-of-file). Your program prints the number of words that the user entered.

Submit your lab

First, on your local machine, compress your **lab3** directory into a single (compressed) file.
Second, once you have a compressed file that contains your **lab3** programs, submit that file to Blackboard.