CS 100 Lab Five – Spring 2016

WARNING – Not properly submitting your files correctly (a compressed file that contains your directory lab5 with four xxx.c files within it) will result in a penalty of 20 points.

Create a directory called **lab5** on your machine. Move into that directory. Complete the four tasks shown below.

1. Name this program **limits.c** – This program reads in 100,000 numbers (all of which are non-negative) and prints out the largest and smallest values found. The numbers are in the file **NUMS**, which can be retrieved from **troll.cs.ua.edu/cs100/labs** using either **wget** or **curl -O**

2. Name this program **backwards.c** – This program prints out all the command-line arguments (except the program name itself) backwards, printing one argument per line. For example, the command below would generate the output shown:

```
./a.out Alabama Crimson Tide
amabalA
nosmirC
ediT
```

3. Name this program **mtable.c** – This program uses nested loops to build a multiplication table (the tables you saw back in elementary school when you were learning basic math). Your program should generate an output that is incredibly similar to the table shown below (that is, it should be nicely formatted).

```
    1   2   3   4   5   6   7   8   9  10
  +----------------------------------------
 1 |  1   2   3   4   5   6   7   8   9  10
 2 |  2   4   6   8  10  12  14  16  18  20
 3 |  3   6   9  12  15  18  21  24  27  30
 4 |  4   8  12  16  20  24  28  32  36  40
 5 |  5  10  15  20  25  30  35  40  45  50
 6 |  6  12  18  24  30  36  42  48  54  60
 7 |  7  14  21  28  35  42  49  56  63  70
 8 |  8  16  24  32  40  48  56  64  72  80
 9 |  9  18  27  36  45  54  63  72  81  90
10 | 10  20  30  40  50  60  70  80  90 100
```

4. Name this program **drip.c** – This program prints all the command line arguments. Only it prints them vertically rather than horizontally. For example, the output below was generated by executing

```
./drip the quick brown fox jumps over the lazy old dog
        .  t  q  b  f  j  o  t  l  o  d
        /  h  u  r  o  u  v  h  a  l  o
        d  e  i  o  x  m  e  e  z  d  g
        r     c  w     p  r     y
        i     k  n     s
        p
```

This problem uses nested loops. Hint: the first line prints the first character in every command line argument, the second line prints the second character in every command line argument (or a space if there are no more characters in that argument), and so on. The number of lines printed is the length of the longest argument.

Submit your lab

First, on your local machine, bundle the files in your **lab5** directory into a single (compressed) file. To do this:

- PC: Using Windows Explorer, right click on the **lab5** directory and select "Send To" and then "Compressed (zipped) folder"
- Mac: Using Finder, use a secondary click on the **lab5** directory and then select "Compress *foldername*"

Once you have a compressed file that contains your four lab5 programs, submit that file to Blackboard.

Attendance: We will circulate a roster sheet shortly after lab starts and again about half-way through the lab. Not being present to sign the roster sheet will result in a deduction of 25 points for each missed signature.