CS 100 Lab Five – Spring 2018

Create a directory called **lab5** on your machine using **mkdir lab5** and move into that directory with **cd lab5**

Complete the following programs.

1. Name this program **range.c** – This program looks at all the command-line arguments that are valid integers and prints the range of these integers. Recall the range is the difference between the maximum and the minimum. There will always be at least one integer entered on the command line. A sample execution is shown below.

```
./a.out 99 55 11 -6 600 32
The range of these 6 integers is 606
```

2. Name this program **convert.c** – This program takes three command line arguments. The first argument will be either "`lower`" or "`upper`". The second argument is the name of an input file, and the third argument is the name of an output file. The program should first confirm the input file can be opened for reading (exiting with an appropriate error message if it cannot be). Then the program will read the input file, convert all the letters in the file to either lowercase or uppercase ones depending on the first argument, and save the result into the output file. You can assume the input file contains one or more lines, and each line contains up to 100 characters and ends with a newline. To preserve the whitespaces between words, we do not recommend using `scanf` with "`%s`". The following are two sample executions of the program.

```
Contents of myData
The Quick Brown Fox Jumps over the Lazy Old Dog.
   Crimson Tide   ---   Roll Tide Roll!!!
      Was UA founded on April 12, 1831?
```

```
./a.out upper myData outfile1
Contents of outfile1
THE QUICK BROWN FOX JUMPS OVER THE LAZY OLD DOG.
   CRIMSON TIDE   ---   ROLL TIDE ROLL!!!
      WAS UA FOUNDED ON APRIL 12, 1831?
```

```
./a.out lower myData outfile2
Contents of outfile2
the quick brown fox jumps over the lazy old dog.
   crimson tide   ---   roll tide roll!!!
      was ua founded on april 12, 1831?
```

3. Name this program **merge.c** – This program takes three file names as command line arguments. Each of the first two files contains a list of unique integers in ascending order. The program merges these two lists into one list (again consisting of unique integers in ascending order) and saves the merged list into the third file. You can assume that all the files can be opened for either reading or writing respectively. Assume the files **data1** and **data2** contain the integer lists as shown below. Both **./a.out data1 data2 data3** and **./a.out data2 data1 data3** would produce the merged list to be saved in the file **data3**, as shown below.

```
data1: 1 2 5 7 9 10 11 13 15 17 19 20 21 24 25
data2: 3 4 6 8 10 11 12 14 16 18 20
data3: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 24 25
```

Submit your lab

First, on your local machine, compress your **lab5** directory into a single (compressed) file, i.e. **lab5.zip**.

Second, once you have a compressed file named **lab5.zip**, submit that file to Blackboard.