CS 100 Exam Two – Coding – Fall 2018

You are not allowed to use the Internet while coding the two problems below.
You can log into the cs-intro server to test your programs if you wish.
When you have finished coding your problems, submit your exam via Blackboard

Create a directory called **exam2** using **mkdir exam2** and move into that directory with **cd exam2**

Complete the two programs shown below.

1. Name this program **one.c** – This program reads in a string from standard input and reports all the unique characters in the string. A unique character is a character that appears only once in the string. If there are no unique characters in the string, the program reports NONE. The order of the unique characters in the report does not matter as long as all the unique characters are listed. Assume that the string entered has no more than 50 characters and consists of uppercase and lowercase letters only. The following are two sample executions of the program.

```
Enter a string: aaabrbbQxxyysqzz
Unique characters include: r Q s q

Enter a string: iJkiJk
Unique characters include: NONE
```

2. Name this program **two.c** – **You can download the starting two.c from Blackboard**. This program reads in an array of integers, each ranging 0 through 100. Assume there are at least two integers in the array and there are no duplicate integers in the array. The program then calls the `average` function to find the average of these integers in the array, the largest integer in the array that is less than the average, and the smallest integer in the array that is greater than the average. The function will return the average, but the other two values will be reported using two pointer parameters of the function. The `average` function has the following signature.

```
double average(int n, int x[], int *pMaxBelow, int *pMinAbove);
```

Your job is to implement the `average` function. You shall not modify the `average` function signature. You shall not modify anything in the `main` function either. **A heavy penalty will be assessed for not following the above instruction.** The following is a sample execution of the program.

```
How many integers? 6
Enter 6 unique integers (0 through 100):
56 34 12 21 98 69
The average is 48.3333
The largest below the average is 34
The smallest above the average is 56
```

Submit your exam

- First, on your machine, compress your **exam2** directory into a single (compressed) file, i.e. **exam2.zip**. **Please make sure exam2.zip contains the exam2 directory as well as one.c and two.c under it.**
- Second, once you have a compressed file named **exam2.zip**, submit that file to Blackboard.