EET2350
HW 3

When the problem asks you to write a function you must also include a call to the function from main to exercise the function.

1) Write a program that fills an array with random integers and then find the **position** of the smallest element in the array. It should also print the **value** of the smallest number.

2) Write a program that fills an array with random integers and then prints the array. The program should then reverse the elements in the array and print it again. Make sure you reverse the array in-place. Don't create a second array and don't just print it in reverse.

3) Write a program that allows the user to enter values into an array. The program should then find the first pair of adjacent elements that are the same. Print out the value of the identical elements and the position of the first element that is a match.

4) Write a program that prompts the user for a password and then prints a welcome message if the typed password matches one that you have coded into your program. If the password does not match the program should continue to prompt until it does. The password can contain letters and numbers so you will want to use a string variable.

5) Write a program that prompts the user for a string and then counts all the vowels in the string. The program should print out the count.

6) Write a program that prompts the user for a string and then tests to see if it is a palindrome. The program should print a message based on the results. (A palindrome is a word or phrase that is spelled the same forwards as backwards. For example "racecar" is a palindrome.)

7) Write a **function** that calculates the hypotenuse of a right triangle given the two legs. The legs should be the parameters of the function and the length of the hypotenuse should be the returned value. Remember: $a^2 + b^2 = c^2$. Use decimal numbers for the values.

8) Write a **function** that calculates the factorial of its integer parameter. Note that $0! = 1$.

9) Write a **function** that accepts an array of integers and an upper limit as its parameters and returns the average of all the elements with values less than or equal to the upper limit. For example: If the array contains {3, 8, 4, 12, 17, 11, 8, 9} and the upper limit is 10 the values that should be included in the average are 3, 8, 4, 8, 9 since they are all less than or equal to 10.