Math 3300 - Homework 4

1. Create a boolean **function** which can tell if a user has created a proper password. You consider a proper password to be between 8 and 16 characters long, contains at least one number, at least one lower case letter, at least one upper case letter, and no special characters.

2. Create function declaration statements for the following situations:

   (a) A function named **calc** which has 3 inputs: 2 doubles and an int, and 3 outputs: one double and 2 ints.

   (b) A function whose input is an ofstream and has no return value.

   (c) A function whose input is a character array of variable length and whose return value is a string.

3. Create a single function which "returns" the average of 2 integer inputs and the product of the inputs.

4. Suppose that double $d1 = 2.7, d2 = 3.1$. And double $*p = \&d1$. Complete the following questions in order, assuming that any line continues to the next question.

   (a) Do we know the value of $*p =$? If so, what is it?

   (b) Do we know the value of $p =$? If so, what is it?

   (c) If now $p = \&d2$ then $*p =$?

   (d) If $*p = 5.5$ then $d2 =$ and $d1 =$?

   (e) If we change the value of p, do either of the d's change?

5. Suppose that: char $c =' T', d =' S'$ and char $*p1 = \&c;$, char $*p2 = \&d;$, and char $*p3$. Assume that the address of c is 6940, the address of d is 9772, and the address of e is 2224. What will be displayed when the following statements are executed sequentially? (DO NOT USE YOUR COMPILER, THINK ABOUT IT)

   $p3 = \&d;$

   cout << "$*p3 =$" << $*p3$ << endl;

   $p3 = p1;$

   cout << "$*p3 =$" << $*p3$ <<", $p3 =$" << $p3$ << endl;

   $*p1 = *p2;$

   cout << "$*p1 =$"<< $*p1$ <<", $p1 =$"<< $p1$ << endl;

6. If int $a[] = \{2, 3, 5, 7, 11, 13\}$; and int $*p$; and $p = \&a[1];$, then

   (a) $p[2] =$?

   (b) $*p =$?

   (c) $*(p + 3) =$?

(d) If $p++$, then $*p =$?

7. Explain the error:

   int $c = 5$;

   double $*p = \&c$;

8. I create a pointer: **double* d**.

   (a) Show how to make d represent an array with 100 doubles.

   (b) Now show how to resize d to represent an array with 200 doubles.

9. The following problem deals with vectors.

   (a) Show how to create a vector named list, containing 12 characters.

   (b) Suppose list has been given values. If you want to add the characters: 'r', 'Q', and '8' to the end of the vector, show how that would be done.

   (c) How could you display the current number of entries of list to the monitor?

   (d) How would you remove the last item from list?

   (e) How could you remove characters 3-7 from list?

10. A file named "scores.txt" contains an unknown number of doubles. Create a program that uses a vector to calculate and display to the monitor the average of the doubles in "scores.txt", the maximum double, and the minimum double.