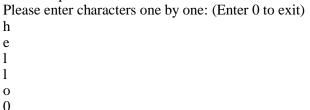# Homework 8
(Arrays)

1. Write a program to read in a sequence of characters one by one. Print out the characters in reverse. You should use a char[]. (Remember single quotes are used for char)

   For example:
   Please enter characters one by one: (Enter 0 to exit)
   h
   e
   l
   l
   o
   0
   You entered: hello.
   The reverse of that is olleh.

2. Write a program that reads in ten numbers and displays distinct numbers. If a number appears multiple times, it is displayed only once.

   For example: if user enters 1,1,2,3,4,4,5,1,0,9. You should output: 1,2,3,4,5,0,9. Order doesn't matter.

   Steps:
   a. Create an int[] to hold all the integers of user input and another int[] to store the distinct numbers.
   b. Make a nested for-loops which the outer loop goes though the first array and inner loop to check if the value is already inside. Store the value to the second array if new number, otherwise do nothing.
   c. Make a for loop to print out the elements of the second array

3. Write a program that generates 100 random integers between 0 and 9 and displays the count for each number. Use rand() % 10 to generate numbers from 0 … 9, and an array to store the count. The count of each random integer means the number of times they appear. Think about how you would count the number of zeros appear then think about counting 10 numbers.
   a. (Optional) i. Create an array[100], initializes the array with rand() % 10.
      ii. Another counter array size of 10, initializes the array with zeros.
   b. Use one for-loop to iterate through the array and increment the values of the array corresponding to the values. (i.e. if the random number is 9, you should do counter[9]++, where counter[0] stores the count for zero, counter[1] stores the count for 1, etc.

4. Eight queens are to be placed on an 8 x 8 chessboard in such a way that one queen is to be in each row. A program will store an array x[] with capacity 8 to represent such a configuration. If x[r] has value c then in row r there is a queen in column c. Write a program that asks a user to enter the columns that contain queens in the 8 rows. The program makes sure there are no queens in the same column.The program then prints the board.

   For example, if the user enters: 0,3,4,0,0,7,6,7 the program should print: No Good

   For example, if the user enters: 1,3,4,5,2,8,6,7 the program should print:

   Q.......
   ..Q.....
   ...Q....
   ....Q...
   .Q......
   ....Q
   .....Q..
   ......Q.

   (Hint: Use nested for loop, if column c == array[r] Print 'Q', otherwise Print '.')