Problem 1: (adapted from Ch9 problem 4 in text) Write a function that takes a C string (that is, an array of characters, terminated with '\0') as an input parameter and reverses the string. The function should use two pointers, front and rear. The front pointer should initially reference the first character in the string, and the rear pointer should initially reference the last character in the string (the one before '\0'). Reverse the string by swapping characters referenced by front and rear then increment front to point to the next character and decrement rear to point to the preceding character, and so on, until the entire string is reversed. Make sure to test your function with both odd and even sized arrays.

Problem 2: Given a sorted array of integers created on the heap, its size and a new integer, design a function which will enlarge the array and place the new item in the appropriate position in the array, so that it remains sorted.

Problem 3: (taken from ch9 problem 8 in text) Write a problem that outputs a histogram of student grades for an assignment. The program should input each student's grade as an integer and store the grade in a vector. Grades should be entered until the user enters a -1 for a grade. The program should then scan through the vector and compute the histogram. In computing the histogram, the minimum value of a grade is 0 but your program should determine the maximum value entered by the user. Use a dynamic array to store the histogram. Output the histogram to the console. For example, if the input is:

20
30
4
20
30
30
-1

Then the output should be:
Number of 4's: 1
Number of 20's: 2
Number of 30's: 3