CS3377 Assignment 5

In this assignment, use the C++ API for dynamic memory allocation.

Part 1:
In statistics, the mode of a set of values is the value that occurs most often.
Write a function that finds the mode of a set of values. This will be the value with the greatest frequency. If none of the data is repeats more than once, it should return -1. Use a dynamically allocated memory for the data. The function should accept the data array passed by reference.

Part 2:

Another statistics function is called median. The median of a set of values is the value that lies in the middle when the values are arranged in sorted order. If the set has an even number of values, then the median is taken to be the average of the two middle values.
Write a function that determines the median of a sorted array. The function should take an array of numbers and an integer indicating the size of the array and return the median of the values in the array. You may assume the array is already sorted. Use pointer notation, and data passed by reference.

Part 3
Write a program that can be used to gather statistical data about the number of movies college students see in a month. The program should ask the user how many students were surveyed and dynamically allocate an array of that size. The program should then allow the user to enter the number of movies each student has seen. The program should then calculate the average, median, and mode of the values entered, using the two functions you developed in part 1 and 2.

Submission guidelines:

- Each function should be implemented in its own source file, and have it own separate header.
- In the submission zip file, include the all your source and header files, but no executable
- Make sure that you compile your code with –Wall. Remove all warnings.
- Make sure that each source will compile by itself then all the resulting objects are be linked together to generate executable.
- Grader will grade your code on cs1. Make sure your code build and runs there with no problem.
- For all requirements not clearly spelled out in the above instructions, you can make a reasonable assumption.