CS 102 – Computing and Algorithms II

Homework 1

1) (10 points) follow the instructions for Inheritance lab.

2) (10 points) follow the instructions for interface lab.

3) (20 points) write a class encapsulating the concept of student grades on a test, assuming student grades are composed of a list of integers between 0 and 100. Writ the following methods:

- A constructor with just one parameter, the number of students; all grades can be randomly generated
- Accessor, mutator, toString, and equals methods
- A method retrunig an array of the grades sorted in ascending order
- A method returning the highest grade
- A method returning the average grade
- A method returning the median grade (Hint: the median grade will be located in the middle of the sorted array of grades.)
- A method returning the mode (the grade that occurs most often) (Hint: create an array of counters; count how many times each grade occurs; then pick the maximum in the array of counters; the array index is the mode).

Write a client class to test all the methods in your class.

Style

Use white space (Indentation, blank lines) to show the program structure. A meaningful class name is an important part of the style. If should describe the purpose of the class. A meaningful name will be supplied as part of the design. Likewise, all variable and constant names will be meaningful and will follow naming conventions.

On top of each program should have the following comments:

```
    /*
     * Name:
     * Date:
     * Question number:
     * Description:
*/
```

Deliverables

You will create a .java file for each of the programming questions and compressed them all in a zip file with your lastname and homework number (Lastname_HW1) and submit the zip file on Blackboard and present to the instructor before the due date.

Grading

The homework will be worth 40 points. If your program does not compile, the grade for that question will be 0. If your program compiles but does not produce the correct output, the score will be at most 5 points, depending on how close the solution is to being correct.

Late submitted and presented assignments will be assessed a 3% penalty (-3 points) for each day of delay.

This is an individual assignment. Working together on a homework assignment is not permitted. Having someone not in the course write the program for you is not permitted. If another student asks for help, the most assistance you should offer is to aid him/her in the discovery of the error. You should not help correct the error. It is also your responsibility to ensure that no one else turns in your work as his or her own. All suspected cases of academic dishonesty would be handled in strict accordance with department and university policy.