**ASSIGNMENT 1**

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Qs1 Write a Java program to define a Student class with instance variables name, id, homework, midterm, and final. Name is a string whereas others are all integers. Also, add a static variable nextId, which is an integer and statically initialized to 1. Have some overloaded constructors. In each of them, the id should be assigned to the next available id given by nextId. The default constructor should set the name of the student object to “StudentX” where X is the next id. Add a calculateGrade() method which returns a string for the letter grade of the student, like “A”, “B”, “C”, “D” or “F”, based on the overall score. Overall score should be calculated as (40% homeworks, + 30% midterm + 30% final).

Write TestDriver to test your program. It should create 5 student objects with default constructor and invoke the setter methods for homeworks, midterm, and final with random numbers ranging from 50 to 100 inclusive. Then it should print the student information via the toString() method. Student information provided by toString() should include name, midterm, project, and final and the letter grade given by the calculateGrade() method.

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A whiteboard with writing on it

Description automatically generated with low confidence

A whiteboard with writing

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Text

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A page of a book with writing

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Qs 4 Why Algorithm Analysis is important both in terms of Running Times and Space complexity?

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Qs 3. What is the difference between Permutation and Combination, give examples of each