Lab 4 08-03-2022

Lab-Object Oriented Programming

Learning Objectives

1. The students will be able to
   - Apply the concept of **static** variables to store class-wide data
   - Use **static** methods to manipulate static data
   - Demonstrate the usage of **arrays**
   - Description and demonstration of the **toString** method

Lab Walkthrough/Demo

Lab Demo 5.1.

- A **Student** class.
  - Fields are
    - name
    - Courses (a list of string)
    - marks (a list of double for storing marks in all courses).
      - Test the above 2 fields as both **final** and non-final.
    - passLimit (a **static** field specifiying how many marks are needed to pass the course).
  - A set of constructors (no-argument, fully-parameterized, and others as required). Constructors should have shadowing parameters names.
  - Getter/setter methods of all the class fields.
  - Static setter/getter method setPassLimit to update the **passLimit**.
  - A public method displayCoursesInfo
    - Student "Ali" has registered the following courses: "OOP", "PF", "DSA". The sum of obtained marks in these subjects are 250.
  - Create a special method **toString** to get the student object's string representation.
    - Ali (OOP, PF, DSA)
- Test class
  - 1.
    - Set the student pass limit by user input.
    - Create a student object with 3 courses.
    - Input marks of each course from the user.
    - Check whether the student passed in each course or not? (use the passLimit field)
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    In the Test class main function, do the following:
    - Create students array (3 elements) with appropriate data values (2 courses).
      - Hint: create each student object separately.

        - Display each average marks of all the students in each course.
    - Create another method StudentAverage in the test class. It should receive the students array as parameter and return another array containing the average of each student's marks in all courses.
    - Call the StudentAverage method in main method.
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