

Java Lab Assignment:

Student Information System

Objective: To create a Java simple program that manages student information using classes and methods.

Description: In this lab assignment, your task is to develop a simple student information system that allows users to add new students, display information about all students, and search for a student by ID.

Requirements:

1. Create a class named **Student** with the following attributes:
 - Student ID
 - Name
 - Grade
 - GPA (Grade Point Average)
2. Implement appropriate constructor methods in the **Student** class to perform the following operations:
 - Constructor to initialize the **Student** class attributes
 - Set and get methods for each attribute (optional)
 - Display student information
3. Create a class named **StudentDatabase** to manage student information. This class should contain an array (or list) of **Student** objects.
4. Implement the following methods in the **StudentDatabase** class:
 - Method to add a new student to the database.
 - Method to display information about all students in the database.
 - Method to search for a student by ID and display their information.
5. Create a **Main** class with a **main** method to test the student information system. Instantiate objects of the **Student** and **StudentDatabase** classes and perform various operations to test the functionality of the system.

Instructions:

1. Start by creating a **Student** class with appropriate attributes and methods as described above.

2. Implement the constructor to initialize the student ID and name when a new **Student** object is created.
3. Implement the **setGrades** method to allow users to set the grades for the student.
4. Implement the **calculateAverageGrade** method to calculate the average grade of the student based on the grades entered.
5. Implement the **displayInfo** method to display student information including ID, name, grades, and average grade.
6. In the **Main** class, create instances of the **Student** class and perform operations like setting grades, calculating average grades, and displaying student information to test the functionality.