



भारतीय सूचना प्रौद्योगिकी संस्थान गुवाहाटी  
**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY GUWAHATI**  
**IT Workshop I, B.Tech 3rd Semester**

**Instructions**

1. Deadline to submit is 11th September 2023.

**Assignment 6**  
**Total Marks: 40**

1. Write a Java program that takes user input to add, remove, or search for elements in an ArrayList. Implement a function to replace all elements with a specific element exists in an ArrayList. Make it user-menu-driven. (5)
2. Consider the details as follows:

Class Student:

**Attributes:**

studentID (int)  
studentName (String)  
studentAge (int)  
studentMajor (String)  
studentGPA (float)  
totalStudentsEnrolled (int, static)

**Constructor**

Implement a constructor to initialize the attributes of the student.

**Methods:**

setDetails(): A method to set the details of the student.  
getDetails(studentID: int): A method that takes a student ID as a parameter and returns the student details as a formatted string.  
updateDetails(studentID: int): A method to update the details of a student identified by the student ID.  
getGPA(studentID: int): A method that takes a student ID as a parameter and returns the student's GPA.  
updateGPA(studentID: int, newGPA: float): A method to update a student's GPA.  
totalStudents(): A static method that returns the total number of students enrolled.  
compare(student1: Student, student2: Student): A static method that compares the GPAs of two student objects and displays the details of the student with the higher GPA.

Your task is to create a Java program to develop a Student Information System. The variable/method names indicate their usual meanings. The methods (getGPA, updateGPA,

etc.) will be invoked for one object at a time. This will be identified by the studentID passed as a parameter or taken from the user

- (a) Design the above class and create an ArrayList for keeping information about the students.
- (b) Design a menu-driven interface for the user. Keep options for i) Creating a new record, ii) Deleting a record (along with other options).

Notes:

- 1. Marks: Proper class definition: 5, Each correct working method: 5
- 2. Additional 5 marks for good programming practice