

Lab 5 Exercise (Must Perform in Lab)

Note:

- You are required to perform all lab tasks in Lab.
- There are separate tasks for home which will be uploaded after the end of Lab.

Task 1:

Create a class named Average Purchase that will contain an array of size n, if the user has made 3 orders today then then array size will be 3 for today.

- Write a function to take input of today's purchases.
- Write a function to display the purchased items.

Task 2:

- Create an Array that stores the marks for 5 subjects that you have scored in MID 1.
- Consider that each of them is out of 50.
- Calculate the Maximum marks obtained by You.
- Calculate the Minimum marks obtained by You.
- Calculate the Average marks obtained by You.

Task 3:

Create an Array List of String data type. The list will store different programming languages.

- Add five programming languages using the add method.
- Display the array list.
- Change the array list element at the second index.

Task 4:

Create a class called Student that has attributes name, roll number and a static attribute university name.

- Make a static variable counter and initialize it to 0.
- Make a static set method for roll number that increments the counter and returns the counter.
- Create a parameterized constructor that sets the name as the parameter. To set the roll number call the static set roll number method.
- Create a static method that takes a parameter and sets the university name.
- Create a display method that displays the student's information name, roll number and university.
- In the main, call the set university name method and set it to "FAST University".
- Create three objects of the student class and display their information along with their roll number that should be different for each student.

Task 5:

Create a Java class representing a geometric shape called "Circle." The Circle class should have the following properties and behaviors:

- A final constant field PI with a value of 3.14159.
- A final instance variable radius to store the radius of the circle.
- A constructor that initializes the radius field.
- A method named calculateArea() that calculates and returns the area of the circle using the formula: $\text{area} = \text{PI} * \text{radius} * \text{radius}$.
- A method named calculateCircumference() that calculates and returns the circumference of the circle using the formula: $\text{circumference} = 2 * \text{PI} * \text{radius}$.

Implement the Circle class and demonstrate its usage in a separate main class and main method.