

Experiment No. 05
Experiment Name: Experiment with Basic Class

Course title: Programming Language II(Java) Lab
Course code:
Spring 2025

Date of Submission:



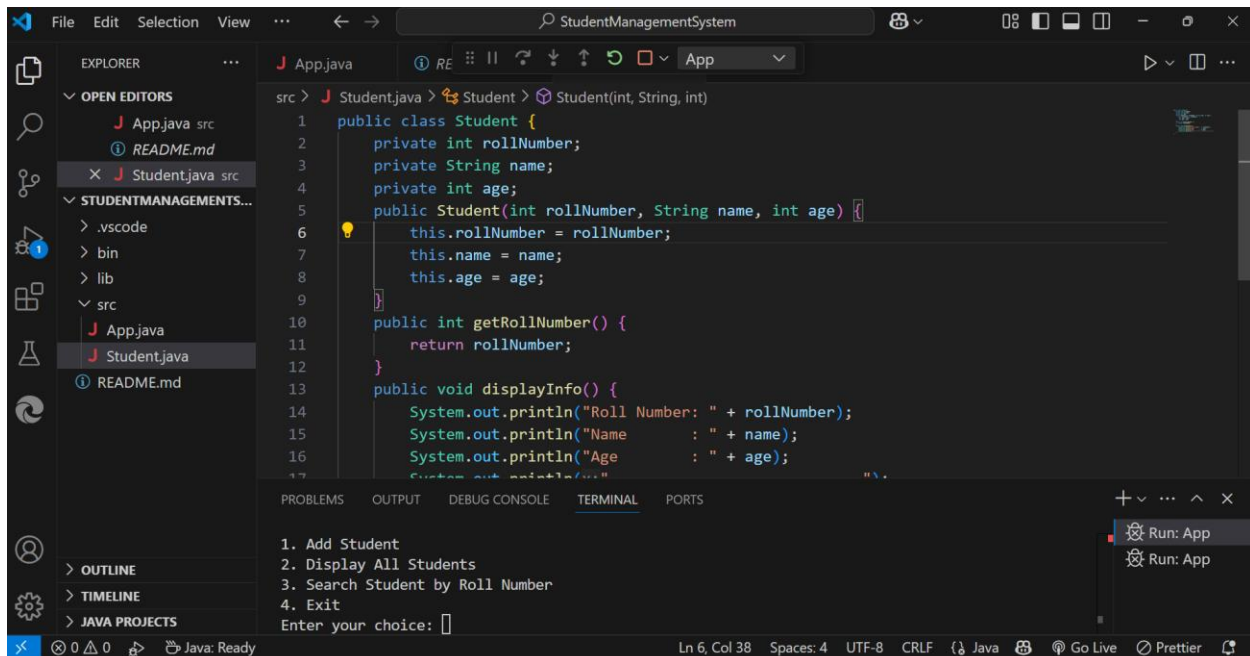
Submitted to-

Md. Rafsan Jani
Assistant Professor
Department of Computer Science and Engineering

Sl	Class Roll	Name
01	2023000010034	Md Arafat Rahman

Hw 1: Create a console-based application to manage student records using Java. The system should allow the user to:

- ✓ Add student records
- ✓ Display all students
- ✓ Search for a student by roll number
- ✓ Exit the program



Main.java

```
import java.util.ArrayList;
import java.util.Scanner;

public class App {
    private static ArrayList<Student> students = new ArrayList<>();
    private static Scanner scanner = new Scanner(System.in);
    public static void main(String[] args) throws Exception {
        int choice;
        do {
            System.out.println("\n===== Student Management System =====");
            System.out.println("1. Add Student");
            System.out.println("2. Display All Students");
            System.out.println("3. Search Student by Roll Number");
            System.out.println("4. Exit");
            System.out.print("Enter your choice: ");
            choice = scanner.nextInt();
            scanner.nextLine();
        } while (choice < 5);
    }
}
```

```

        switch (choice) {
            case 1:
                addStudent();
                break;
            case 2:
                displayAllStudents();
                break;
            case 3:
                searchStudent();
                break;
            case 4:
                System.out.println("Exiting program... Goodbye!");
                break;
            default:
                System.out.println("Invalid choice! Please try again.");
        }
    } while (choice != 4);
}

private static void addStudent() {
    System.out.print("Enter Roll Number: ");
    int rollNumber = scanner.nextInt();
    scanner.nextLine();
    System.out.print("Enter Name: ");
    String name = scanner.nextLine();
    System.out.print("Enter Age: ");
    int age = scanner.nextInt();
    scanner.nextLine();
    students.add(new Student(rollNumber, name, age));
    System.out.println("Student added successfully!");
}

private static void displayAllStudents() {
    if (students.isEmpty()) {
        System.out.println("No student records found.");
    } else {
        System.out.println("\n--- Student Records ---");
        for (Student student : students) {
            student.displayInfo();
        }
    }
}

private static void searchStudent() {
    System.out.print("Enter Roll Number to search: ");

```

```

        int rollNumber = scanner.nextInt();
        scanner.nextLine();

        boolean found = false;
        for (Student student : students) {
            if (student.getRollNumber() == rollNumber) {
                System.out.println("\n--- Student Found ---");
                student.displayInfo();
                found = true;
                break;
            }
        }
        if (!found) {
            System.out.println("Student with roll number " + rollNumber + " not found.");
        }
    }
}

```

Student.java

```

public class Student {
    private int rollNumber;
    private String name;
    private int age;
    public Student(int rollNumber, String name, int age) {
        this.rollNumber = rollNumber;
        this.name = name;
        this.age = age;
    }
    public int getRollNumber() {
        return rollNumber;
    }
    public void displayInfo() {
        System.out.println("Roll Number: " + rollNumber);
        System.out.println("Name      : " + name);
        System.out.println("Age      : " + age);
        System.out.println("-----");
    }
}

```

Hw 2:

Features to Implement:

Class Student

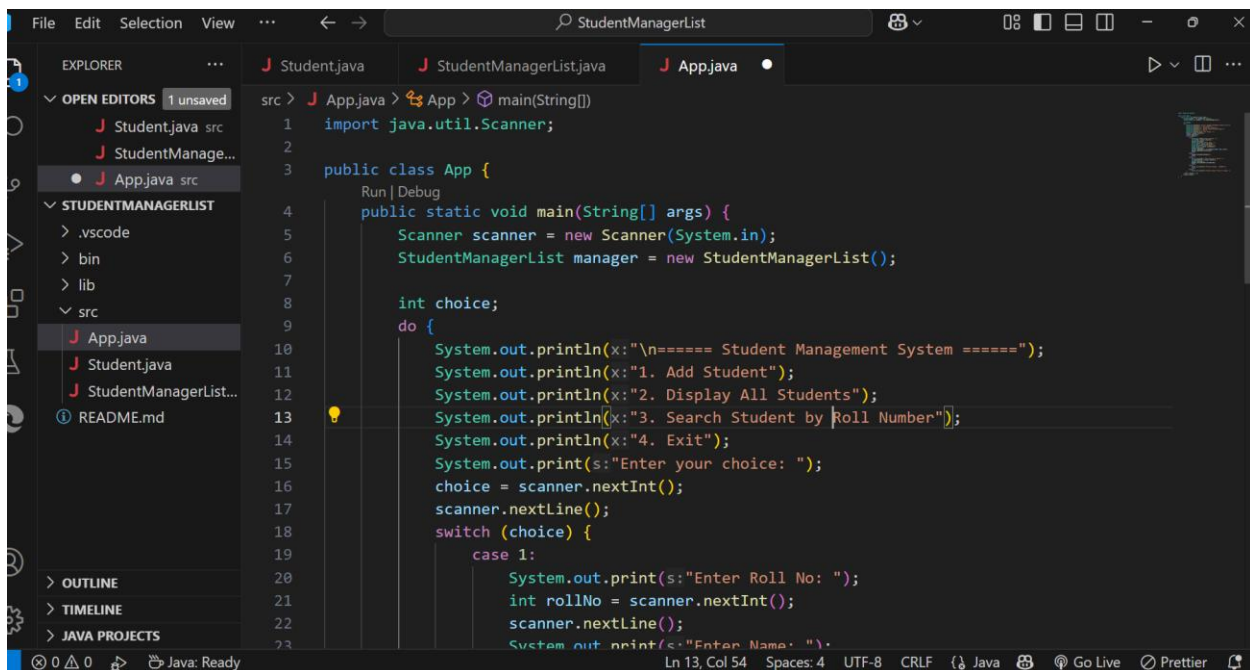
- ✓ Fields: rollNo, name, marks
- ✓ Constructor to initialize values
- ✓ Method displayInfo() to show details

Class StudentManagerList

- ✓ to store Student objects
- ✓ Methods:
 - ✓ addStudent()
 - ✓ displayAllStudents()
 - ✓ searchStudent(int rollNo)

Class Main (with main method)

- ✓ Menu-driven program
- ✓ Use of Scanner for input



```
File Edit Selection View ... StudentManagerList
EXPLORER
  OPEN EDITORS 1 unsaved
    Student.java src
    StudentManage...
    App.java src
  STUDENTMANAGERLIST
    .vscode
    bin
    lib
    src
      App.java
      Student.java
      StudentManagerList...
    README.md
  OUTLINE
  TIMELINE
  JAVA PROJECTS
  0 0 0 Java: Ready Ln 13, Col 54 Spaces: 4 UTF-8 CRLF Java Go Live Prettier

src > J App.java > App > main(String[])
1  import java.util.Scanner;
2
3  public class App {
4      Run | Debug
5      public static void main(String[] args) {
6          Scanner scanner = new Scanner(System.in);
7          StudentManagerList manager = new StudentManagerList();
8
9          int choice;
10         do {
11             System.out.println(x:"\n===== Student Management System =====");
12             System.out.println(x:"1. Add Student");
13             System.out.println(x:"2. Display All Students");
14             System.out.println(x:"3. Search Student by Roll Number");
15             System.out.println(x:"4. Exit");
16             System.out.print(s:"Enter your choice: ");
17             choice = scanner.nextInt();
18             scanner.nextLine();
19             switch (choice) {
20                 case 1:
21                     System.out.print(s:"Enter Roll No: ");
22                     int rollNo = scanner.nextInt();
23                     scanner.nextLine();
24                     System.out.print(s:"Enter Name: ");
```

App.java

```
import java.util.Scanner;

public class App {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

```

StudentManagerList manager = new StudentManagerList();

int choice;
do {
    System.out.println("\n===== Student Management System =====");
    System.out.println("1. Add Student");
    System.out.println("2. Display All Students");
    System.out.println("3. Search Student by Roll Number");
    System.out.println("4. Exit");
    System.out.print("Enter your choice: ");
    choice = scanner.nextInt();
    scanner.nextLine();
    switch (choice) {
        case 1:
            System.out.print("Enter Roll No: ");
            int rollNo = scanner.nextInt();
            scanner.nextLine();
            System.out.print("Enter Name: ");
            String name = scanner.nextLine();
            System.out.print("Enter Marks: ");
            double marks = scanner.nextDouble();
            scanner.nextLine();
            Student newStudent = new Student(rollNo, name, marks);
            manager.addStudent(newStudent);
            break;
        case 2:
            manager.displayAllStudents();
            break;
        case 3:
            System.out.print("Enter Roll No to search: ");
            int searchRollNo = scanner.nextInt();
            scanner.nextLine();
            manager.searchStudent(searchRollNo);
            break;
        case 4:
            System.out.println("Exiting program... Goodbye!");
            break;
        default:
            System.out.println("Invalid choice! Please try again.");
    }
} while (choice != 4);
scanner.close();
}
}

```

Student.java

```
public class Student {
    private int rollNo;
    private String name;
    private double marks;
    public Student(int rollNo, String name, double marks) {
        this.rollNo = rollNo;
        this.name = name;
        this.marks = marks;
    }
    public void displayInfo() {
        System.out.println("Roll No : " + rollNo);
        System.out.println("Name      : " + name);
        System.out.println("Marks      : " + marks);
        System.out.println("-----");
    }

    public int getRollNo() {
        return rollNo;
    }
}
```

StudentManagerList.java

```
import java.util.ArrayList;

public class StudentManagerList {
    private ArrayList<Student> students = new ArrayList<>();
    public void addStudent(Student student) {
        students.add(student);
        System.out.println("Student added successfully!\n");
    }
    public void displayAllStudents() {
        if (students.isEmpty()) {
            System.out.println("No student records available.\n");
        } else {
            System.out.println("=== All Student Records ===");
            for (Student student : students) {
                student.displayInfo();
            }
        }
    }
}
```

```
public void searchStudent(int rollNo) {
    boolean found = false;
    for (Student student : students) {
        if (student.getRollNo() == rollNo) {
            System.out.println("=== Student Found ===");
            student.displayInfo();
            found = true;
            break;
        }
    }
    if (!found) {
        System.out.println("Student with Roll No " + rollNo + " not
found.\n");
    }
}
}
```