K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

School of Engineering & Technology

Fundamentals of java programming

Course Code: ENCA203

BCA (AI & Data Science)

(2025-26)

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Submitted

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Java Lab Assignment 1

- **Student Class Design & Basic Operations .**

Problem Statement :-

Create a Student Record Management system that allows the user to input, display, and calculate grades for students. Implement a class-based structure using Object- Oriented Programming principles to manage student data such as roll number, name, course, marks, and grade. The program should also allow the display of student records and calculate the grade based on marks.

Objective :-

Introduce object-oriented concepts, control structures, input/output operations, and arrays/strings in Java.

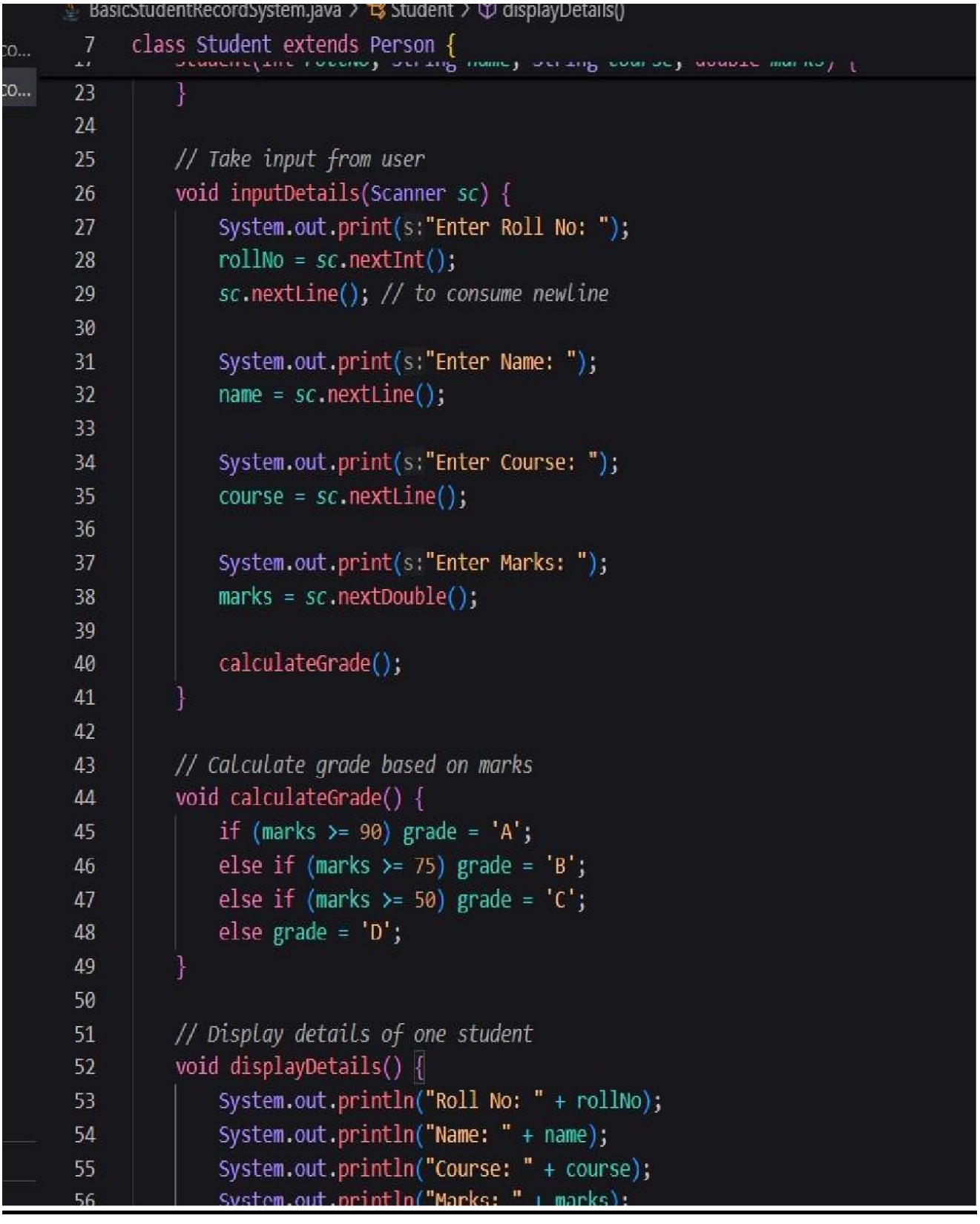
Learning Outcomes :-

Upon completion of this assignment, the student will be able to: 1. Understand the fundamentals of object-oriented programming in Java. 2. Implement constructors, methods, and basic operations (input, output). 3. Work with arrays and strings in Java. 4. Use conditional statements and loops to control program flow.

BasicStudentRecordSystem.java X BasicStudentRecordSystem.class

BasicStudentRecordSystem.java > Student > displayDetails()

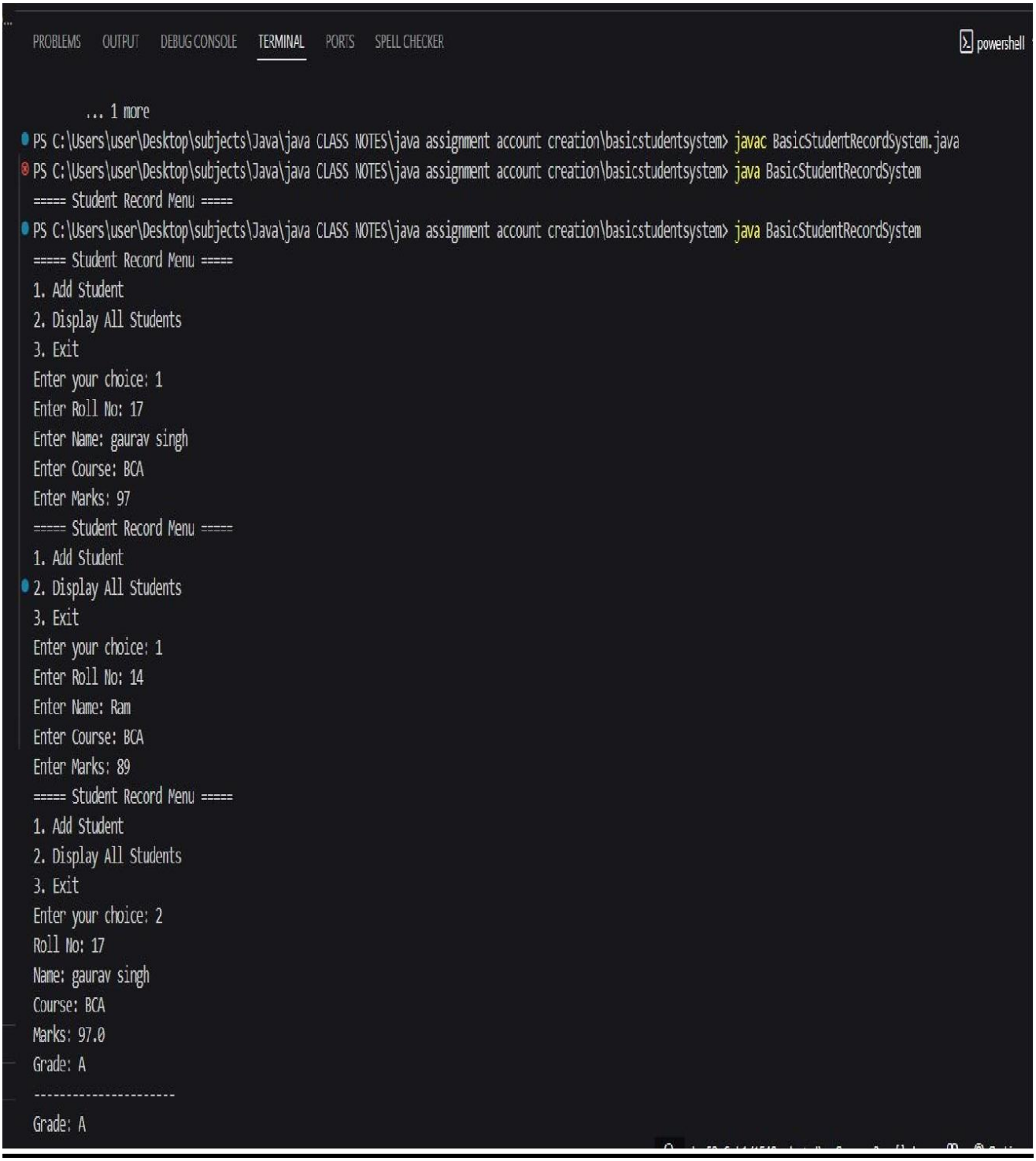
```java
import java.util.Scanner;

class Person {
    String name;
}

class Student extends Person {
    int rollNo;
    String course;
    double marks;
    char grade;

    // Default constructor
    Student() {}

    // Parameterized constructor
    Student(int rollNo, String name, String course, double marks) {
        this.rollNo = rollNo;
        this.name = name;
        this.course = course;
        this.marks = marks;
        calculateGrade();
    }

    // Take input from user
    void inputDetails(Scanner sc) {
        System.out.print(s:"Enter Roll No: ");
        rollNo = sc.nextInt();
        sc.nextLine(); // to consume newline

        System.out.print(s:"Enter Name: ");
        name = sc.nextLine();

        System.out.print(s:"Enter Course: ");
        course = sc.nextLine();

```


BasicStudentRecordSystem.java > Student > displayDetails()
7 class Student extends Person {
23 }
24
25 // Take input from user
26 void inputDetails(Scanner sc) {
27 System.out.print(s:"Enter Roll No: ");
28 rollNo = sc.nextInt();
29 sc.nextLine(); // to consume newline
30
31 System.out.print(s:"Enter Name: ");
32 name = sc.nextLine();
33
34 System.out.print(s:"Enter Course: ");
35 course = sc.nextLine();
36
37 System.out.print(s:"Enter Marks: ");
38 marks = sc.nextDouble();
39
40 calculateGrade();
41 }
42
43 // Calculate grade based on marks
44 void calculateGrade() {
45 if (marks >= 90) grade = 'A';
46 else if (marks >= 75) grade = 'B';
47 else if (marks >= 50) grade = 'C';
48 else grade = 'D';
49 }
50
51 // Display details of one student
52 void displayDetails() {
53 System.out.println("Roll No: " + rollNo);
54 System.out.println("Name: " + name);
55 System.out.println("Course: " + course);

```
41      }
42
43      // Calculate grade based on marks
44      void calculateGrade() {
45          if (marks >= 90) grade = 'A';
46          else if (marks >= 75) grade = 'B';
47          else if (marks >= 50) grade = 'C';
48          else grade = 'D';
49      }
50
51      // Display details of one student
52      void displayDetails() {
53          System.out.println("Roll No: " + rollNo);
54          System.out.println("Name: " + name);
55          System.out.println("Course: " + course);
56          System.out.println("Marks: " + marks);
57          System.out.println("Grade: " + grade);
58          System.out.println(x:"----------------------");
59      }
60  }
61
62  public class BasicStudentRecordSystem {
        Run | Debug
63      public static void main(String[] args) {
64          Scanner sc = new Scanner(System.in);
65          Student[] students = new Student[100]; // can store up to 100 students
66          int count = 0;
67
68          while (true) {
69              System.out.println(x:"===== Student Record Menu =====");
70              System.out.println(x:"1. Add Student");
71              System.out.println(x:"2. Display All Students");
72              System.out.println(x:"3. Exit");
73              System.out.print(s:"Enter your choice: ");
74              int choice = sc.nextInt();
```

```
        int count = 0;

        while (true) {
            System.out.println(x:"===== Student Record Menu =====");
            System.out.println(x:"1. Add Student");
            System.out.println(x:"2. Display All Students");
            System.out.println(x:"3. Exit");
            System.out.print(s:"Enter your choice: ");
            int choice = sc.nextInt();

            switch (choice) {
                case 1:
                    // Add new student
                    students[count] = new Student();
                    students[count].inputDetails(sc);
                    count++;
                    break;

                case 2:
                    // Display all students
                    if (count == 0) {
                        System.out.println(x:"No student records found.");
                    } else {
                        for (int i = 0; i < count; i++) {
                            students[i].displayDetails();
                        }
                    }
                    break;

                case 3:
                    // Exit program
                    System.out.println(x:"Exiting the application. Goodbye!");
                    sc.close();
                    return;

                default:
                    System.out.println(x:"Invalid choice. Please try again.");
            }
        }
    }
}
```

Output of the code :-




PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
SPELL CHECKER
Enter Course: BCA
Enter Marks: 89
===== Student Record Menu =====
1. Add Student
2. Display All Students
3. Exit
Enter your choice: 2
Roll No: 17
Name: gaurav singh
Course: BCA
Marks: 97.0
Grade: A

Grade: A

Roll No: 14
Roll No: 14
Name: Ram
Course: BCA
Marks: 89.0
Course: BCA
Marks: 89.0
Marks: 89.0
Grade: B
Grade: B

===== Student Record Menu =====
1. Add Student
2. Display All Students
3. Exit
Enter your choice: 3
Exiting the application. Goodbye!
PS C:\Users\user\Desktop\subjects\Java\java CLASS NOTES\java assignment account