K.R. Mangalam University

School of Engineering & Technology

Fundamentals Of Java Programming Lab

(ENCA203) Assignment 1

Student Record Manager

Submitted by:

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Course: BCA (AI & DS)

Section: B

CODE:

```java
J StudentRecordManager.java ×

J StudentRecordManager.java
 1    import java.util.ArrayList;
 2    import java.util.Scanner;
 3
 4    // Base Class
 5    class Person {
 6        String name;
 7
 8        Person() {
 9            this.name = "";
10        }
11
12        Person(String name) {
13            this.name = name;
14        }
15    }
16
17    // Derived Class: Student
18    class Student extends Person {
19        int rollNo;
20        String course;
21        double marks;
22        char grade;
23
24        // Default Constructor
25        Student() {
26            super();
27            this.rollNo = 0;
28            this.course = "";
29            this.marks = 0.0;
30            this.grade = 'F';
31        }
32
```

```java
33        // Parameterized Constructor (Not used in the main logic, but included)
34        Student(int rollNo, String name, String course, double marks) {
35            super(name);
36            this.rollNo = rollNo;
37            this.course = course;
38            this.marks = marks;
39            calculateGrade();
40        }
41
42        // Method to take input from user
43        void inputDetails(Scanner sc) {
44            System.out.print(s: "Enter Roll No: ");
45            rollNo = sc.nextInt();
46            sc.nextLine(); // consume newline
47
48            System.out.print(s: "Enter Name: ");
49            name = sc.nextLine();
50
51            System.out.print(s: "Enter Course: ");
52            course = sc.nextLine();
53
54            // Validate marks
55            double inputMarks;
56            do {
57                System.out.print(s: "Enter Marks (0-100): ");
58                inputMarks = sc.nextDouble();
59                if (inputMarks < 0 || inputMarks > 100) {
60                    System.out.print(s: "Invalid Marks! Enter again (0-100): ");
61                }
62            } while (inputMarks < 0 || inputMarks > 100);
63
```

```java
64            marks = inputMarks;
65            calculateGrade();
66        }
67
68        // Method to calculate grade
69        void calculateGrade() {
70            if (marks >= 85) {
71                grade = 'A';
72            } else if (marks >= 70) {
73                grade = 'B';
74            } else if (marks >= 50) {
75                grade = 'C';
76            } else {
77                grade = 'D';
78            }
79        }
80
81        // Method to display details
82        void displayDetails() {
83            System.out.println("Roll No: " + rollNo);
84            System.out.println("Name: " + name);
85            System.out.println("Course: " + course);
86            System.out.println("Marks: " + marks);
87            System.out.println("Grade: " + grade);
88            System.out.println(x: "-------------------------");
89        }
90    } // Closes Student class
91
92    // Main Class with Menu
93    public class StudentRecordManager {
```

```java
123
124                    case 2:
125                        if (students.isEmpty()) {
126                            System.out.println(x: "No student records available.\n");
127                        } else {
128                            System.out.println(x: "\n===== Student Records =====");
129                            for (Student st : students) {
130                                st.displayDetails();
131                            }
132                        }
133                        break;
134
135                    case 3:
136                        System.out.println(x: "Exiting the application. Goodbye!");
137                        break;
138
139                    default:
140                        System.out.println(x: "Invalid choice. Please try again.\n");
141                        break;
142                }
143            } while (choice != 3);
144
145            sc.close();
146        }
147 }
```

OUTPUT:

```
===== Student Record Menu =====
1. Add Student
2. Display All Students
3. Exit
Enter your choice: 1
Enter Roll No: 1102
Enter Name: Khushi
Enter Course: BCA
Enter Marks (0-100): 99
Student Added Successfully!


===== Student Record Menu =====
1. Add Student
2. Display All Students
3. Exit
Enter your choice: 2

===== Student Records =====
Roll No: 1102
Name: Khushi
Course: BCA
Marks: 99.0
Grade: A
------------------------

===== Student Record Menu =====
1. Add Student
2. Display All Students
3. Exit
Enter your choice: 3
Exiting the application. Goodbye!
```