OOPJ TEST (16/12/25)

Name – Nishant Nahar

Roll Number – 241551078

1. Create a Java class named Student having data members rollNo, name, and marks of three subjects. Using an array of objects (no collection classes allowed), write a program that performs the following tasks:
   Input details of N students
   Calculate and store the percentage of each student
   Assign grades based on the following criteria:
   Percentage ≥ 75 → Grade A
   Percentage ≥ 60 and < 75 → Grade B
   Percentage ≥ 40 and < 60 → Grade C
   Percentage < 40 → Grade F
   Sort the student objects in descending order of percentage without using any built-in sorting methods
   Display the details of the topper and also print the number of students in each grade category

```
import java.util.Scanner;
class Student {
    int rollNo;
    String name;
    int m1, m2, m3;
    double percentage() {
        return ((m1 + m2 + m3) / 300.0) * 100;
    }
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Nishant Nahar -- 241551078");
        System.out.print("Enter number of students: ");
        int n = sc.nextInt();
        Student[] s = new Student[n];
        for (int i = 0; i < n; i++) {
            s[i] = new Student();
            System.out.println("Enter details of student " + (i + 1));
            System.out.print("Enter roll number: ");
            s[i].rollNo = sc.nextInt();
            System.out.print("Enter name: ");
            s[i].name = sc.next();
            System.out.print("Enter marks of 3 subjects: ");
            s[i].m1 = sc.nextInt();
```

```
            s[i].m2 = sc.nextInt();
            s[i].m3 = sc.nextInt();
        }
        for (int i = 0; i < n - 1; i++) {
            for (int j = 0; j < n - i - 1; j++) {
                if (s[j].percentage() > s[j + 1].percentage()) {
                    Student temp = s[j];
                    s[j] = s[j + 1];
                    s[j + 1] = temp;
                }
            }
        }
        int A = 0, B = 0, C = 0, F = 0;
        for (int i = 0; i < n; i++) {
            char grade;
            if (s[i].percentage() >= 75) {
                grade = 'A';
                A++;
            } else if (s[i].percentage() >= 60) {
                grade = 'B';
                B++;
            } else if (s[i].percentage() >= 40) {
                grade = 'C';
                C++;
            } else {
                grade = 'F';
                F++;
            }
            System.out.println(s[i].rollNo + " " + s[i].name + " " +
s[i].percentage() + " " + grade);
        }
        Student top = s[n - 1];
        System.out.println("Topper: " + top.name + " Roll No: " +
top.rollNo);
        System.out.println("Grade A: " + A);
        System.out.println("Grade B: " + B);
        System.out.println("Grade C: " + C);
        System.out.println("Grade F: " + F);
    }
}
```

OUTPUT

```
PS B:\java_lab\test> java .\test_1.java
Nishant Nahar - 241551078
Enter number of students: 4
Enter details of student 1
Enter roll number: 1
Enter name: Ram
Enter marks of 3 subjects: 34 57 40
Enter details of student 2
Enter roll number: 2
Enter name: Rahul
Enter marks of 3 subjects: 23 70 45
Enter details of student 3
Enter roll number: 3
Enter name: Rishu
Enter marks of 3 subjects: 45 60 87
Enter details of student 4
Enter roll number: 4
Enter name: Nishant
Enter marks of 3 subjects: 90 90 89
1 Ram 43.666666666666664 C
2 Rahul 46.0 C
3 Rishu 64.0 B
4 Nishant 89.66666666666666 A
Topper: Nishant Roll No: 4
Grade A: 1
Grade B: 1
Grade C: 2
Grade F: 0
```