Assignment – 1

1) Introduction to JAVA, JVM, JDK, JRE

JAVA: Java is a high-level, class-based, object-oriented programming language developed by Sun Microsystems (now Oracle). It follows the principle “Write Once, Run Anywhere” since Java programs can run on any platform that has a JVM.

JVM (Java Virtual Machine): JVM is the runtime environment where Java bytecode is executed. It converts bytecode into machine code. It also provides memory management (Garbage Collection).

JDK (Java Development Kit): JDK is the software development kit that contains tools required to develop Java programs. It includes JRE + compiler (javac) + debugging tools.

JRE (Java Runtime Environment): JRE is used to run Java applications. It contains the JVM and class libraries required to execute Java programs. It does not include development tools like a compiler.

2) Design a Brochure (HTML + CSS)

```
<!DOCTYPE html>
<html>
<head>
  <title>College TechFest ’25 – Brochure</title>
  <style>
    body{font-family:Arial, sans-serif;margin:0;padding:0;background:#f8fafc;color:#111}
    header{background:#4f46e5;color:white;padding:40px 20px;text-align:center}
    header h1{margin:0;font-size:42px}
    header p{font-size:18px;margin-top:10px}
    .btn{background:white;color:#111;padding:10px 20px;border-radius:6px;text-decoration:none;font-w
    section{padding:30px 20px;max-width:900px;margin:auto}
    .card{background:white;padding:20px;margin:10px 0;border-radius:8px;box-shadow:0 3px 6px rgba(0,
    footer{background:#f1f5f9;text-align:center;padding:20px;margin-top:20px}
  </style>
</head>
<body>
  <header>
    <h1>TechFest ’25</h1>
    <p>Organized by Department of CSE – Sri XYZ College</p>
    <a class="btn" href="#">Register Now</a>
  </header>
</body>
</html>
```

3) Java Program (Marks of Students)

```
import java.util.Scanner;

public class MarksCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[][] marks = new int[5][5];

        for (int i = 0; i < 5; i++) {
            System.out.println("Enter marks of 5 subjects for Student " + (i + 1) + ":");
            for (int j = 0; j < 5; j++) {
                marks[i][j] = sc.nextInt();
            }
        }

        for (int i = 0; i < 5; i++) {
            int total = 0;
            for (int j = 0; j < 5; j++) {
                total += marks[i][j];
```

```
            }
            System.out.println("Total marks of Student " + (i + 1) + " = " + total);
        }
    }
}
```

4) Java Program – String Operations

```
public class StringOps {
    public static void main(String[] args) {
        String name = "Sudharsan";

        System.out.println("Length: " + name.length());

        String other = "SUDHARSAN";
        System.out.println("Equals (case-sensitive): " + name.equals(other));
        System.out.println("Equals (ignore case): " + name.equalsIgnoreCase(other));

        String result = name + " - Welcome to Java!";
        System.out.println("Concatenated: " + result);
    }
}
```

5) Java Program – Student Class

```
class Student {
    String name;
    int age;
    int grade;

    Student() {
        this.name = "Unknown";
        this.age = 0;
        this.grade = 0;
    }

    Student(String name, int age, int grade) {
        this.name = name;
        this.age = age;
        this.grade = grade;
    }

    void displayStudentInfo() {
        System.out.println("Name : " + name);
        System.out.println("Age  : " + age);
        System.out.println("Grade/Marks : " + grade);
    }
}

public class StudentDemo {
    public static void main(String[] args) {
        Student s1 = new Student();
        System.out.println("== Default Constructor ==");
        s1.displayStudentInfo();

        Student s2 = new Student("Sudharsan", 20, 82);
        System.out.println("\n== Parameterized Constructor (Your Data) ==");
        s2.displayStudentInfo();
    }
}
```