Q.1Write a java program to design a calculator using switch statement .

```
import java.util.Scanner;

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

		// Taking user input
		System.out.print("Enter first number: ");
		double num1 = scanner.nextDouble();

		System.out.print("Enter an operator (+, -, *, /): ");
		char operator = scanner.next().charAt(0);

		System.out.print("Enter second number: ");
		double num2 = scanner.nextDouble();

		double result;

		// Switch statement for calculator operations
		switch (operator) {
			case '+':
				result = num1 + num2;
				System.out.println("Result: " + result);
				break;
			case '-':
				result = num1 - num2;
				System.out.println("Result: " + result);
				break;
			case '*':
				result = num1 * num2;
				System.out.println("Result: " + result);
				break;
			case '/':
				if (num2 != 0) {
					result = num1 / num2;
					System.out.println("Result: " + result);
				} else {
					System.out.println("Error: Division by zero is not allowed.");
				}
				break;
			default:
				System.out.println("Error: Invalid operator.");
				break;
		}

		scanner.close();
	}
}
```

Q.2 Write a java program to display 1-10 fibonacci numbers .

```
public class Fibonacci {
	public static void main(String[] args) {
		int n = 10; // Number of Fibonacci numbers to display
		int first = 0, second = 1;

		System.out.println("First " + n + " Fibonacci numbers:");

		for (int i = 1; i <= n; i++) {
			System.out.print(first + " ");
			int next = first + second;
			first = second;
			second = next;
		}
	}
}
```

Q.3 Write a java program to do multiplication of matrices .

```
import java.util.Scanner;

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

		// Get matrix dimensions
		System.out.print("Enter number of rows of first matrix: ");
		int rows1 = scanner.nextInt();
		System.out.print("Enter number of columns of first matrix / rows of second matrix: ");
		int cols1 = scanner.nextInt();
		System.out.print("Enter number of columns of second matrix: ");
		int cols2 = scanner.nextInt();

		int[][] matrix1 = new int[rows1][cols1];
		int[][] matrix2 = new int[cols1][cols2];
		int[][] result = new int[rows1][cols2];

		// Input first matrix
		System.out.println("Enter elements of first matrix:");
		for (int i = 0; i < rows1; i++) {
			for (int j = 0; j < cols1; j++) {
				matrix1[i][j] = scanner.nextInt();
			}
		}

		// Input second matrix
		System.out.println("Enter elements of second matrix:");
		for (int i = 0; i < cols1; i++) {
			for (int j = 0; j < cols2; j++) {
				matrix2[i][j] = scanner.nextInt();
			}
		}
```

```
        // Multiply matrices
        for (int i = 0; i < rows1; i++) {
            for (int j = 0; j < cols2; j++) {
                for (int k = 0; k < cols1; k++) {
                    result[i][j] += matrix1[i][k] * matrix2[k][j];
                }
            }
        }

        // Display result matrix
        System.out.println("Resultant matrix after multiplication:");
        for (int i = 0; i < rows1; i++) {
            for (int j = 0; j < cols2; j++) {
                System.out.print(result[i][j] + " ");
            }
            System.out.println();
        }

        scanner.close();
    }
}
```

Q.4 Write a java to compute multiplication and division without using operators.

```
import java.util.Scanner;

public class MultiplyDivideWithoutOperators {

    // Method to multiply two numbers without using '*' operator
    public static int multiply(int a, int b) {
        int result = 0;
        boolean negative = false;

        if (a < 0) {
            a = -a;
            negative = !negative;
        }
        if (b < 0) {
            b = -b;
            negative = !negative;
        }

        for (int i = 0; i < b; i++) {
            result += a;
        }

        return negative ? -result : result;
    }

    // Method to divide two numbers without using '/' operator
    public static int divide(int dividend, int divisor) {
        if (divisor == 0) {
            throw new ArithmeticException("Division by zero is not allowed.");
        }
```

```
        boolean negative = (dividend < 0) ^ (divisor < 0);
        dividend = Math.abs(dividend);
        divisor = Math.abs(divisor);

        int quotient = 0;
        while (dividend >= divisor) {
            dividend -= divisor;
            quotient++;
        }

        return negative ? -quotient : quotient;
    }

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

        System.out.print("Enter first number: ");
        int num1 = scanner.nextInt();

        System.out.print("Enter second number: ");
        int num2 = scanner.nextInt();

        System.out.println("Multiplication: " + multiply(num1, num2));

        try {
            System.out.println("Division: " + divide(num1, num2));
        } catch (ArithmeticException e) {
            System.out.println(e.getMessage());
        }

        scanner.close();
    }
}
```

Q.5 Write a java program to create a Person class having attributes and methods . Create two objects and initialize them using constructors .

```
class Person {
    // Attributes
    private String name;
    private int age;
    private String address;

    // Constructor
    public Person(String name, int age, String address) {
        this.name = name;
        this.age = age;
        this.address = address;
    }

    // Method to display person details
    public void displayDetails() {
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Address: " + address);
```

```
    }

    public static void main(String[] args) {
        // Creating two Person objects using constructor
        Person person1 = new Person("Alice", 25, "New York");
        Person person2 = new Person("Bob", 30, "Los Angeles");

        // Displaying details
        System.out.println("Person 1 Details:");
        person1.displayDetails();

        System.out.println("\nPerson 2 Details:");
        person2.displayDetails();
    }
}
```

Q.6 Write a java program to accept two subjects marks and check whether the candidate pass or fail .

```
import java.util.Scanner;

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

        // Accept marks for two subjects
        System.out.print("Enter marks for Subject 1: ");
        int subject1 = scanner.nextInt();

        System.out.print("Enter marks for Subject 2: ");
        int subject2 = scanner.nextInt();

        // Define passing criteria
        int passingMarks = 40;

        // Check pass or fail
        if (subject1 >= passingMarks && subject2 >= passingMarks) {
            System.out.println("Candidate Passed.");
        } else {
            System.out.println("Candidate Failed.");
        }

        scanner.close();
    }
}
```