1. Print Numbers from 1 to 10

Problem: Write a program to print numbers from 1 to 10 using a `for` loop.

Solution:

```
java
Copy code
public class PrintNumbers {
    public static void main(String[] args) {
        for (int i = 1; i <= 10; i++) {
            System.out.println(i);
        }
    }
}
```

Explanation:
This simple program uses a `for` loop to iterate through numbers 1 to 10 and prints them.

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2. Print Even Numbers between 1 and 20

Problem: Write a program to print all even numbers between 1 and 20 using a `for` loop.

Solution:

```
java
Copy code
public class PrintEvenNumbers {
    public static void main(String[] args) {
        for (int i = 2; i <= 20; i += 2) {
            System.out.println(i);
        }
    }
}
```

Explanation:
The loop starts from 2 and increments by 2 each time, printing even numbers between 1 and 20.

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3. Factorial of a Number

Problem: Write a program to calculate the factorial of a given number using a `for` loop.

Solution:

```
java
```

```
Copy code
import java.util.Scanner;

public class Factorial {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();

        int factorial = 1;

        for (int i = 1; i <= num; i++) {
            factorial *= i;
        }

        System.out.println("Factorial of " + num + " is: " + factorial);
    }
}
```

Explanation:
This program multiplies the numbers from 1 up to `num` to calculate the factorial.

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4. Sum of the First `n` Natural Numbers

Problem: Write a program to find the sum of the first `n` natural numbers using a `for` loop.

Solution:

```
java
Copy code
import java.util.Scanner;

public class SumOfNaturalNumbers {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a positive integer: ");
        int n = scanner.nextInt();

        int sum = 0;

        for (int i = 1; i <= n; i++) {
            sum += i;
        }

        System.out.println("Sum of the first " + n + " natural numbers is: "
+ sum);
    }
}
```

Explanation:
The `for` loop adds up all the numbers from 1 to `n` to compute the sum.

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5. Multiplication Table of a Number

Problem: Write a program to print the multiplication table of a given number using a `for` loop.

Solution:

```
java
Copy code
import java.util.Scanner;

public class MultiplicationTable {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();

        for (int i = 1; i <= 10; i++) {
            System.out.println(num + " x " + i + " = " + (num * i));
        }
    }
}
```

Explanation:
This program generates the multiplication table for the input number by multiplying it by the values 1 through 10.

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6. Sum of Digits of a Number

Problem: Write a program to find the sum of digits of a given number using a `for` loop.

Solution:

```
java
Copy code
import java.util.Scanner;

public class SumOfDigits {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();

        int sum = 0;

        for (; num != 0; num /= 10) {
            int digit = num % 10;
            sum += digit;
        }
```

```
        System.out.println("Sum of digits is: " + sum);
    }
}
```

Explanation:
This program extracts digits of the number one by one and adds them together.

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7. Print Characters of a String

Problem: Write a program to print each character of a string on a new line using a `for` loop.

Solution:

```
java
Copy code
import java.util.Scanner;

public class PrintCharacters {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String str = scanner.nextLine();

        for (int i = 0; i < str.length(); i++) {
            System.out.println(str.charAt(i));
        }
    }
}
```

Explanation:
This program iterates over the string character by character and prints each character on a new line.

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8. Power of a Number

Problem: Write a program to calculate the power of a number (base^exponent) using a `for` loop.

Solution:

```
java
Copy code
import java.util.Scanner;

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

```
        System.out.print("Enter the base: ");
        int base = scanner.nextInt();
        System.out.print("Enter the exponent: ");
        int exponent = scanner.nextInt();

        int result = 1;

        for (int i = 1; i <= exponent; i++) {
            result *= base;
        }

        System.out.println("Result: " + result);
    }
}
```

Explanation:
The program multiplies the base by itself `exponent` times to compute the power.

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9. Find the Largest of `n` Numbers

Problem: Write a program to find the largest number among `n` numbers using a `for` loop.

Solution:

```
java
Copy code
import java.util.Scanner;

public class LargestNumber {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("How many numbers do you want to enter? ");
        int n = scanner.nextInt();

        int largest = Integer.MIN_VALUE;

        for (int i = 1; i <= n; i++) {
            System.out.print("Enter number " + i + ": ");
            int num = scanner.nextInt();
            if (num > largest) {
                largest = num;
            }
        }

        System.out.println("The largest number is: " + largest);
    }
}
```

Explanation:
The program reads `n` numbers from the user and keeps track of the largest number encountered during the loop.