Sum of Digits:

Input: A number.
Output: Sum of the digits of the number.

Example:

- Input: 123
- Output: "Sum of digits: 6"
- Input: 4567
- Output: "Sum of digits: 22"

Solution 1: Sum of Digits using a While Loop

Code:

```
import java.util.Scanner;

public class SumOfDigits {
    // Method to calculate the sum of digits using a while loop
    public static int calculateSum(int number) {
        int sum = 0;

        // Loop until the number becomes 0
        while (number != 0) {
            sum += number % 10;  // Add the last digit to sum
            number = number / 10;  // Remove the last digit
        }

        return sum;
    }

    // Main method to take user input and display the sum of digits
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Taking user input
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Calculating and displaying the sum of digits
```

```
        int sum = calculateSum(number);
        System.out.println("Sum of digits: " + sum);

        scanner.close();
    }
}
```

Output:

```
Enter
Sum of
```

```
Enter
Sum of
```

Explanat

- Inpu
- Proc
  adds
- Outp

Solution

Code:

```
import java.util.Scanner;

public class RecursiveSumOfDigits {
    // Recursive method to calculate sum of digits
    public static int calculateSum(int number) {
        // Base case: If number is 0, return 0
        if (number == 0) {
            return 0;
        }
        // Recursive case: Add the last digit and call the method with the
        return number % 10 + calculateSum(number / 10);
    }

    // Main method to take user input and display the sum of digits
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);

        // Taking user input
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        // Calculating and displaying the sum of digits
        int sum = calculateSum(number);
        System.out.println("Sum of digits: " + sum);

        scanner.close();
    }
}
```

Output:

```
Enter a number:  23423
Sum of digits: 14
```

```
Enter a number:  000000000
Sum of digits: 0
```

Explanation:

- Input: User inputs a number.
- Processing: Uses recursion to add the last digit to the result of the recursive call, which processes the remaining digits.
- Output: The program prints the sum of the digits.