Task 1: Print Sum, Difference, Product, and Quotient from user input

```
import java.util.Scanner; // Program import the Scanner class
public class Week1 {
    public static void main(String[] args) {
        Scanner userInput1 = new Scanner(System.in); // Scanner userInput = new Scanner(System.in);
        System.out.print("Enter the first number: "); // Program ask for First number
        int firstNumber = userInput1.nextInt();
        System.out.print("Enter the second number: "); // Program ask for Second number
        int secondNumber = userInput1.nextInt();
        userInput1.close();
        int sum = firstNumber + secondNumber; // Program calculate the sum of the two numbers
        int product = firstNumber * secondNumber; // Program calculate the product of the two numbers
        int difference = firstNumber - secondNumber; // Program calculate the difference of the two numbers
        int quotient = firstNumber / secondNumber; // Program calculate the quotient of the two numbers
        // Program display the answers of the two numbers
        System.out.println("The sum of the two numbers is: " + sum);
        System.out.println("The product of the two numbers is: " + product);
        System.out.println("The difference of the two numbers is: " + difference);
        System.out.println("The quotient of the two numbers is: " + quotient);
    }
}
```

- I import first the ***Scanner*** class from java for user input
- In the ***main*** method, I create a ***Scanner*** object to read user input
- The program will prompt the user to input two numbers and stores them as int.
- After storing the user input on variables, the program will perform two basic arithmetic: ***addition, multiplication, subtraction, and division.***
- The program will print the results of the operations to the console and close the Scanner.

The program demonstrates basic input and output operations and simple arithmetic calculations in Java.

```
Enter the first number: 34
Enter the second number: 12
The sum of the two numbers is: 46
The product of the two numbers is: 408
The difference of the two numbers is: 22
The quotient of the two numbers is: 2
```

Task 2: Check the user input number if it is odd or even

```
import java.util.Scanner; // Program import the Scanner class
public class OddEven {
   public static void main(String[] args) {
      Scanner userInput = new Scanner(System.in);
      System.out.print("Enter a number: "); // Program ask for a number
      int number = userInput.nextInt();
      if (number % 2 == 0) { // Program determine if the number is odd or even
         System.out.println("The number is even.");
      } else {
         System.out.println("The number is odd.");
      }
      userInput.close(); // Program close the scanner
   }
}
```

- Same with the first problem, I import ***Scanner*** to get the user input
- The program will prompt the user to enter a number.
- After that, the program will read the input as ***integer***.
- I user if-else statement to check if the number is even or add.
- If the number if divisible by 2 { ***number % 2 == 0*** }, the number if ***even***.
- Otherwise, the number is ***odd.***
- The program will print whether the number is ***even*** or ***odd.***
- Finally, I close the Scanner to prevent resources leaks.

The program demonstrates basic input handling, conditional statements, and the modulus operator in Java to determine if a number is odd or even.

```
Enter a number: 12
The number is even.
PS C:\Users\Charles Laurence\Documents\Java-Assessments> java OddEven
Enter a number: 7
The number is odd.
```

Task 3: Factorial of the given number

```
import java.util.Scanner; // Program import the Scanner class
import java.math.BigInteger; // Program import the BigInteger class
public class Factorial {
   public static void main(String[] args) {
      Scanner userInput = new Scanner(System.in); // Program ask for a number
      System.out.print("Enter a number: "); // Program ask for a number
      int number = userInput.nextInt();
      BigInteger factorial = BigInteger.ONE;
      for (int i = 1; i <= number; i++) {
         factorial = factorial.multiply(BigInteger.valueOf(i)); // Program calculate the factorial of the number
      }
      System.out.println("The factorial of " + number + " is " + factorial); // Program display the factorial of the number
      userInput.close();
   }
}
```

- Same with the first and second problem, I also input ***Scanner*** for user input and ***BigInteger*** Classes.
- The program prompts the user to enter a number and reads it as an integer.
- The program uses ***BigInteger*** for the factorial calculation.
- I use a ***for loop*** to calculate the factorial.
- Iterates from 1 to the input number.

- Multiplies each number in this range to the factorial.
- The program will print the calculated factorial of the input number.

The program demonstrates user input handling loop usage, and basic arithmetic operations to compute the factorial of a number.

```
Enter a number: 5
The factorial of 5 is 120
```