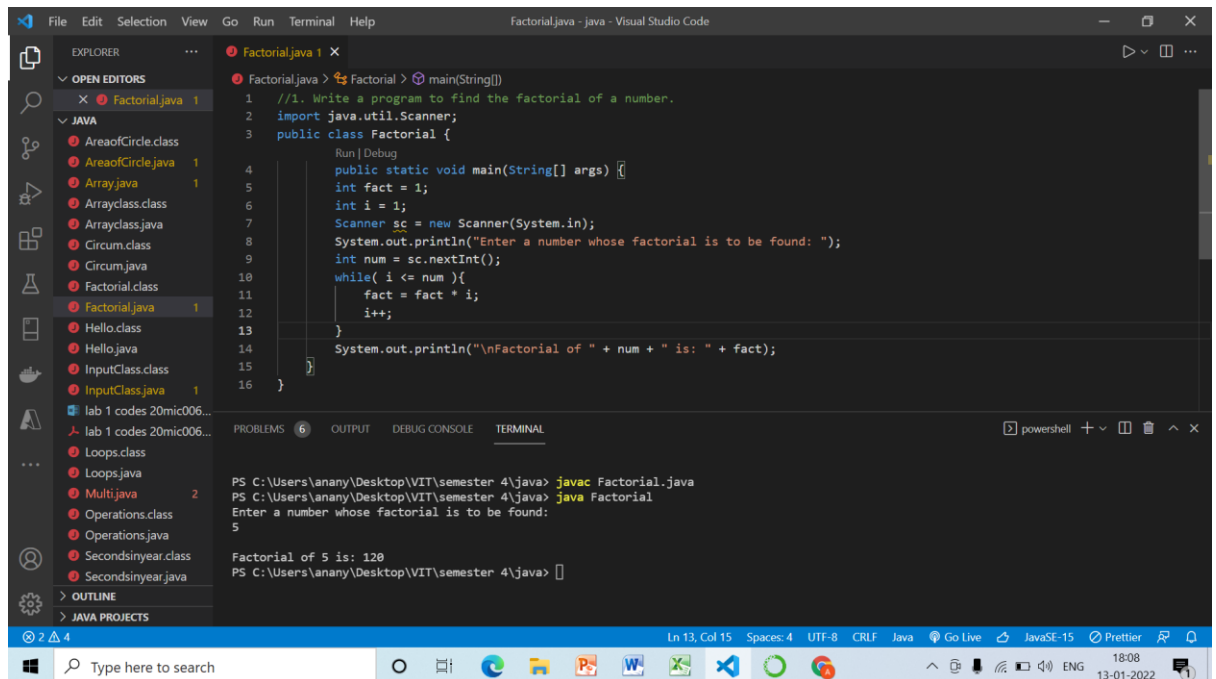


1. Write a program to find the factorial of a number.

```
import java.util.Scanner;
public class Factorial {
    public static void main(String[] args) {
        int fact = 1;
        int i = 1;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a number whose factorial is to be found: ");
        int num = sc.nextInt();
        while( i <= num ){
            fact = fact * i;
            i++;
        }
        System.out.println("\nFactorial of " + num + " is: " + fact);
    }
}
```



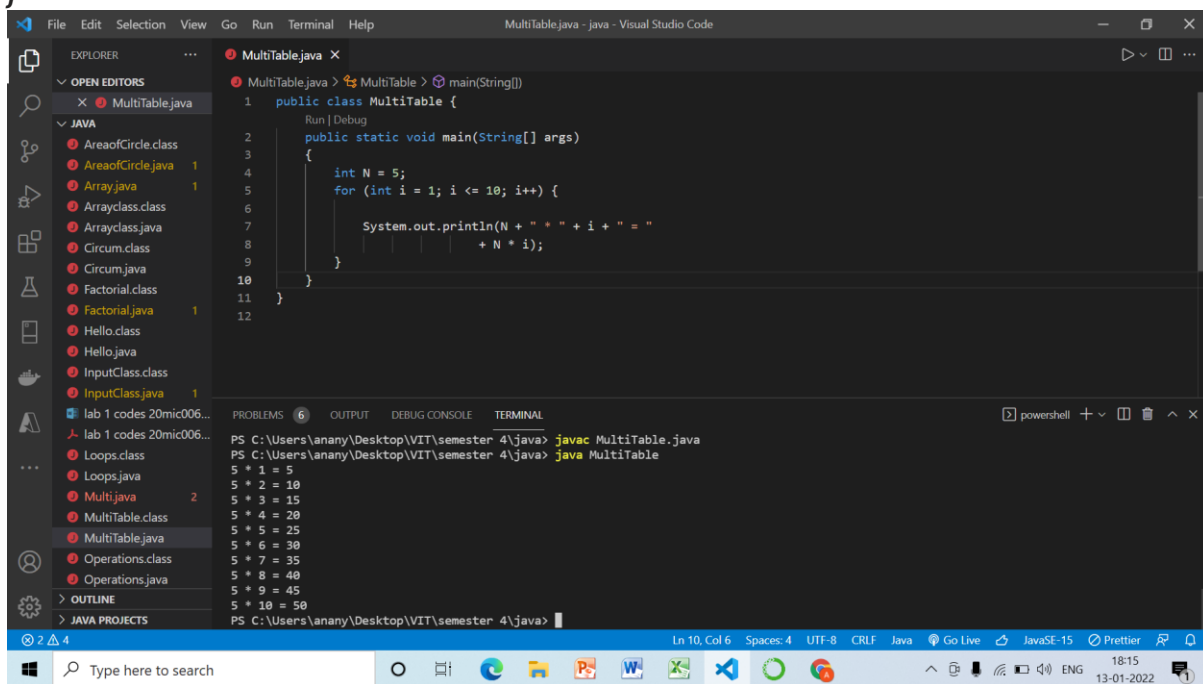
The screenshot displays the Visual Studio Code editor with the 'Factorial.java' file open. The code is as follows:

```
1 //1. Write a program to find the factorial of a number.
2 import java.util.Scanner;
3 public class Factorial {
4     public static void main(String[] args) {
5         int fact = 1;
6         int i = 1;
7         Scanner sc = new Scanner(System.in);
8         System.out.println("Enter a number whose factorial is to be found: ");
9         int num = sc.nextInt();
10        while( i <= num ){
11            fact = fact * i;
12            i++;
13        }
14        System.out.println("\nFactorial of " + num + " is: " + fact);
15    }
16 }
```

The Explorer sidebar on the left shows a list of Java files, with 'Factorial.java' selected. The Output window at the bottom shows the command 'javac Factorial.java' and the execution of 'java Factorial', which prompts the user to enter a number (5) and outputs 'Factorial of 5 is: 120'.

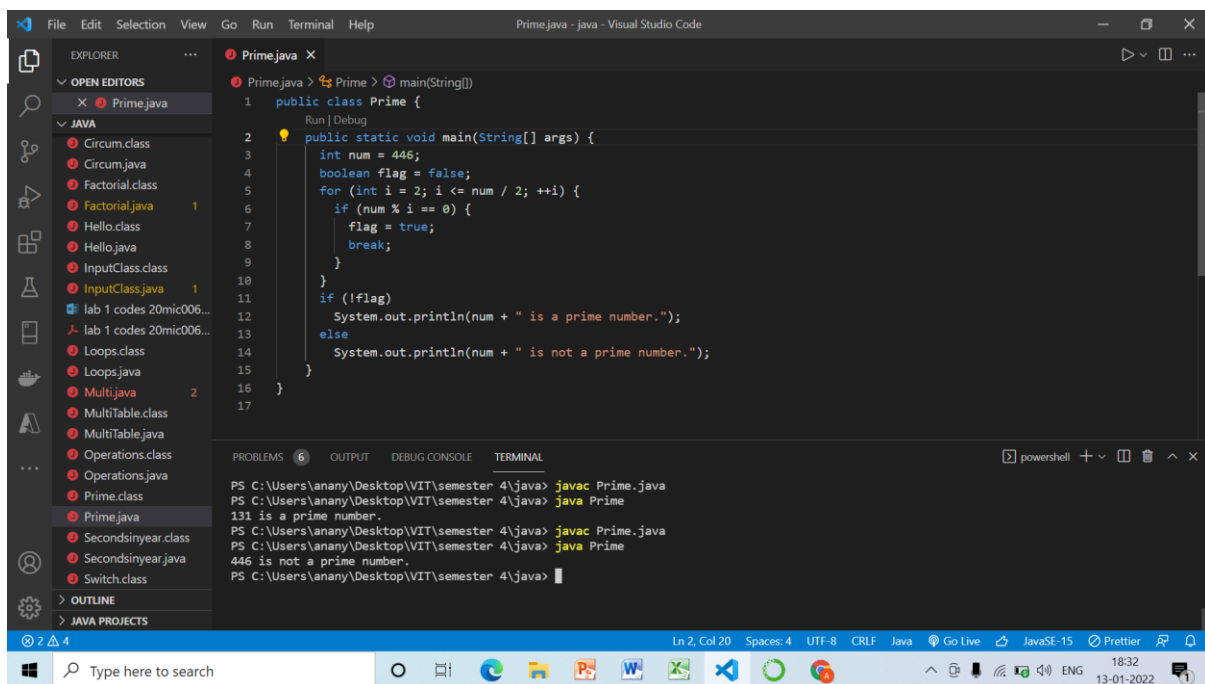
2. Write a program to print the multiplication table of a number.

```
public class MultiTable {  
    public static void main(String[] args)  
    {  
        int N = 5;  
        for (int i = 1; i <= 10; i++) {  
            System.out.println(N + " * " + i + " = "  
                                + N * i);  
        }  
    }  
}
```



3. Write a program to check whether the given number is a prime number or not

```
public class Prime {  
    public static void main(String[] args) {  
        int num = 446;  
        boolean flag = false;  
        for (int i = 2; i <= num / 2; ++i) {  
            if (num % i == 0) {  
                flag = true;  
                break;  
            }  
        }  
        if (!flag)  
            System.out.println(num + " is a prime number.");  
        else  
            System.out.println(num + " is not a prime number.");  
    }  
}
```



The screenshot shows the Visual Studio Code editor with the file `Prime.java` open. The code is as follows:

```
1 public class Prime {  
2     public static void main(String[] args) {  
3         int num = 446;  
4         boolean flag = false;  
5         for (int i = 2; i <= num / 2; ++i) {  
6             if (num % i == 0) {  
7                 flag = true;  
8                 break;  
9             }  
10        }  
11        if (!flag)  
12            System.out.println(num + " is a prime number.");  
13        else  
14            System.out.println(num + " is not a prime number.");  
15        }  
16    }  
17 }
```

The terminal output shows the following commands and results:

```
PS C:\Users\anany\Desktop\VIT\semester 4\java> javac Prime.java  
PS C:\Users\anany\Desktop\VIT\semester 4\java> java Prime  
131 is a prime number.  
PS C:\Users\anany\Desktop\VIT\semester 4\java> javac Prime.java  
PS C:\Users\anany\Desktop\VIT\semester 4\java> java Prime  
446 is not a prime number.  
PS C:\Users\anany\Desktop\VIT\semester 4\java>
```

4. Write a program to generate the following patterns.

i)

```
1
1 2
1 2 3
1 2
1
```

ii)

```
*
* *
* * *
* * * *
```

```
public class Patterb {
```

```
    public static void main(String[] args) {  
        int rows = 4;
```

```
        for (int i = 1; i <= rows; ++i) {  
            for (int j = 1; j <= i; ++j) {  
                System.out.print("* ");  
            }  
            System.out.println();  
        }  
    }  
}
```

The screenshot shows the Visual Studio Code editor with a Java file named `Patterb.java`. The code defines a `public class Patterb` with a `main` method. Inside the `main` method, it sets `int rows = 4;` and uses nested `for` loops to generate a pattern of asterisks. The outer loop iterates from `i = 1` to `i = rows`, and the inner loop iterates from `j = 1` to `j = i`. The output is printed as `"* "` followed by a newline character `System.out.println();` after each row. The terminal at the bottom shows the command `javac Patterb.java` and `java Patterb` being executed, resulting in the pattern of asterisks being printed to the console.

```
File Edit Selection View Go Run Terminal Help Patterb.java - java - Visual Studio Code
EXPLORER
  OPEN EDITORS
    Patterb.java
  JAVA
    Factorial.class
    Factorial.java
    Hello.class
    Hello.java
    InputClass.class
    InputClass.java
    lab 1 codes 20mic006...
    lab 1 codes 20mic006...
    Loops.class
    Loops.java
    Multi.java
    MultiTable.class
    MultiTable.java
    Operations.class
    Operations.java
    Patterb.class
    Patterb.java
    Prime.class
    Prime.java
    Secondsinyear.class
    Secondsinyear.java
    Switch.class
  OUTLINE
  JAVA PROJECTS

Patterb.java > Patterb > main(String[])
1 public class Patterb {
2
3 Run | Debug
4     public static void main(String[] args) {
5         int rows = 4;
6
7         for (int i = 1; i <= rows; ++i) {
8             for (int j = 1; j <= i; ++j) {
9                 System.out.print("* ");
10            }
11            System.out.println();
12        }
13    }
14 }

PROBLEMS 6 OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\anany\Desktop\VIT\semester 4\java> javac Patterb.java
PS C:\Users\anany\Desktop\VIT\semester 4\java> java Patterb
*
* *
* * *
* * * *
PS C:\Users\anany\Desktop\VIT\semester 4\java>
```

5. Write a program to generate the Fibonacci series.

```
import java.util.Scanner;
```

```
public class Fibbo {
```

```
public static void main(String[] args) {  
int FibLength;  
Scanner sc = new Scanner(System.in);
```

```
System.out.print("Please enter length: ");  
FibLength = sc.nextInt();
```

```
int[] num = new int[FibLength];
```

```
num[0] = 0;
```

```
num[1] = 1;  
for (int i = 2; i < FibLength; i++) {  
num[i] = num[i - 1] + num[i - 2];  
}
```

```
System.out.println("Fibonacci Series: ");  
for (int i = 0; i < FibLength; i++) {  
System.out.print(num[i] + " ");  
}  
}
```

The screenshot shows the Visual Studio Code editor with a Java file named `Fibbo.java`. The code is as follows:

```
import java.util.Scanner;

public class Fibbo {

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

        System.out.print("Please enter length: ");
        FibLength = sc.nextInt();

        int[] num = new int[FibLength];

        num[0] = 0;

        num[1] = 1;
        for (int i = 2; i < FibLength; i++) {
            num[i] = num[i - 1] + num[i - 2];
        }

        System.out.println("Fibonacci Series: ");
        for (int i = 0; i < FibLength; i++) {
            System.out.print(num[i] + " ");
        }
    }
}
```

The terminal output shows the program being compiled and run:

```
PS C:\Users\anany\Desktop\VIT\semester 4\java> javac Fibbo.java
PS C:\Users\anany\Desktop\VIT\semester 4\java> java Fibbo
Please enter length: 12
Fibonacci Series:
0 1 1 2 3 5 8 13 21 34 55 89
PS C:\Users\anany\Desktop\VIT\semester 4\java>
```

6. Write a program to sort n numbers in ascending order.

```
import java.util.Arrays;
import java.util.Scanner;

public class SortArr {
    private static Scanner sc;
    public static void main(String[] args)
    {
        int Size, i;
        sc = new Scanner(System.in);

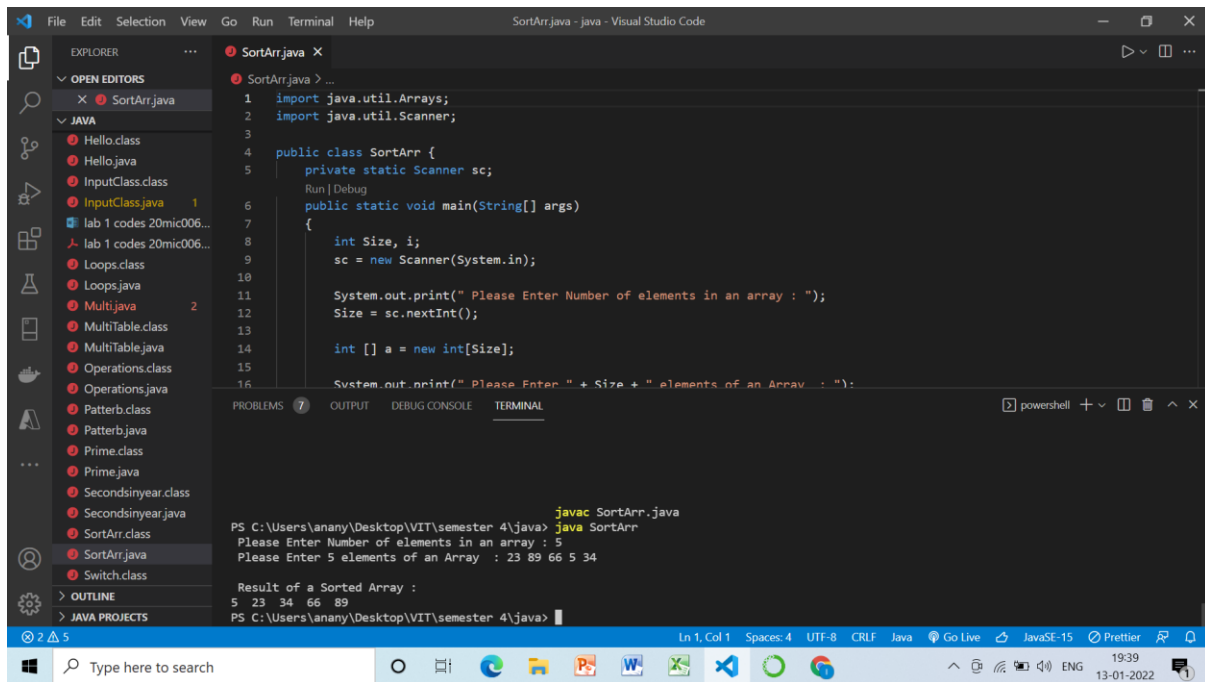
        System.out.print(" Please Enter Number of elements in an array : ");
        Size = sc.nextInt();

        int [] a = new int[Size];

        System.out.print(" Please Enter " + Size + " elements of an Array : ");
        for (i = 0; i < Size; i++)
        {
            a[i] = sc.nextInt();
        }

        Arrays.sort(a);

        System.out.println("\n Result of a Sorted Array : ");
        for (int Number: a)
        {
            System.out.print(Number + " ");
        }
    }
}
```



7. Write a program to search a number among n numbers

```
import java.util.*;
```

```
public class SearchNum
```

```
{
```

```
    public static void main(String args[]){
```

```
        int n,loop;
```

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

```
        System.out.print("Enter total number of elements: ");
```

```
        n=SC.nextInt();
```

```
        int arr[]=new int[n];
```

```
        System.out.println("Enter array elements:");
```

```
        for(loop=0; loop<n; loop++){
```

```
            System.out.print("Enter element (" + (loop+1) + "): ");
```

```
            arr[loop]=SC.nextInt();
```

```
        }
```

```
        int num;
```

```
        System.out.print("Enter number to search: ");
```

```
        num=SC.nextInt();
```

```
        int index=-1;
```

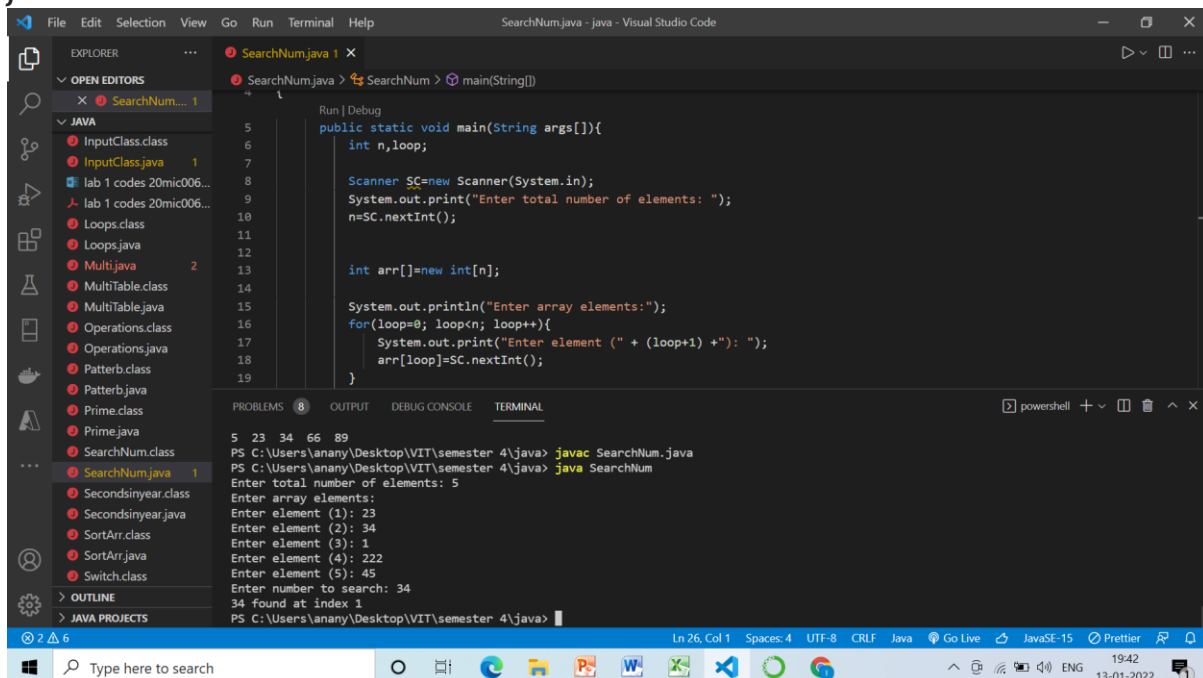
```

        for(loop=0;loop<n;loop++){
            if(arr[loop]==num){
                index=loop;
                break;
            }
        }

        if(index!=-1){
            System.out.println("Sorry! " + num + " is not found in array.");
        }
        else{
            System.out.println(num + " found at index " + index);
        }

        SC.close();
    }
}

```



8. Write a program to read 'n' numbers and print their sum and average.

```

import static java.lang.Float.sum;
import java.util.Scanner;
public class Avgsum {
    public static void main(String[] args)
    {
        int n, count = 1;
        float xF, averageF, sumF = 0;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the value of n");
        n = sc.nextInt();
        while (count <= n)

```

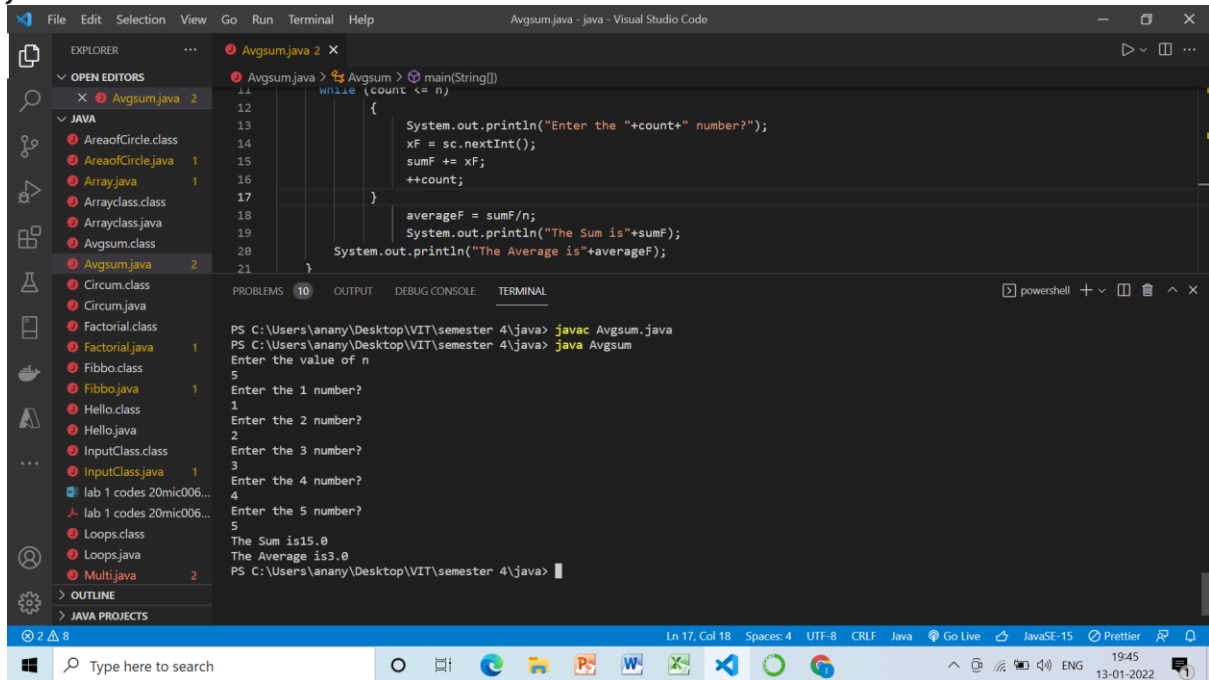


```

    {
        System.out.println("Enter the "+count+" number?");
        xF = sc.nextInt();
        sumF += xF;
        ++count;
    }

    averageF = sumF/n;
    System.out.println("The Sum is"+sumF);
    System.out.println("The Average is"+averageF);
}
}

```



The screenshot shows the Visual Studio Code editor with the following components:

- Explorer:** Lists the project files, including `Avgsum.java` (2 lines) and various other Java files like `AreaofCircle.class`, `Array.java`, etc.
- Editor:** Displays the code for `Avgsum.java`. The code is as follows:
 

```

11  while (count <= n)
12  {
13      System.out.println("Enter the "+count+" number?");
14      xF = sc.nextInt();
15      sumF += xF;
16      ++count;
17  }
18
19  averageF = sumF/n;
20  System.out.println("The Sum is"+sumF);
21  System.out.println("The Average is"+averageF);

```
- Terminal:** Shows the command prompt output:
 

```

PS C:\Users\anany\Desktop\VIT\semester 4\java> javac Avgsum.java
PS C:\Users\anany\Desktop\VIT\semester 4\java> java Avgsum
Enter the value of n
5
Enter the 1 number?
1
Enter the 2 number?
2
Enter the 3 number?
3
Enter the 4 number?
4
Enter the 5 number?
5
The Sum is15.0
The Average is3.0
PS C:\Users\anany\Desktop\VIT\semester 4\java>

```