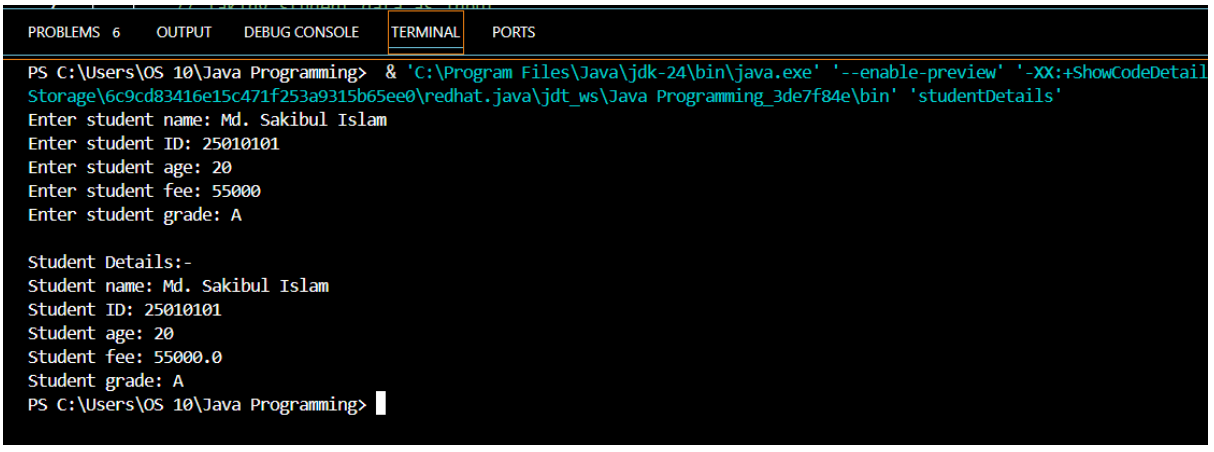
Lab Task 4

1. Student Details

Input:

Output:



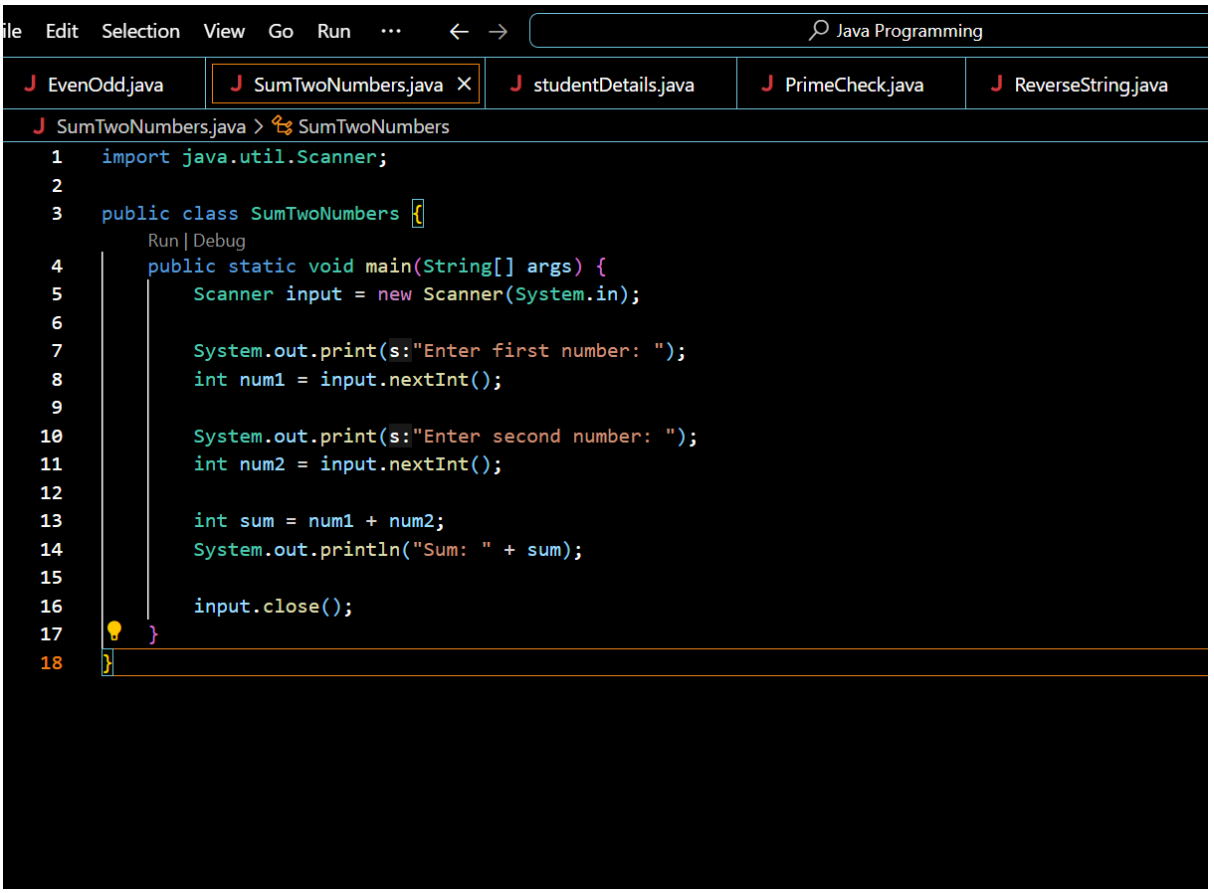
Explanation :

3. Explanation of Important Lines:

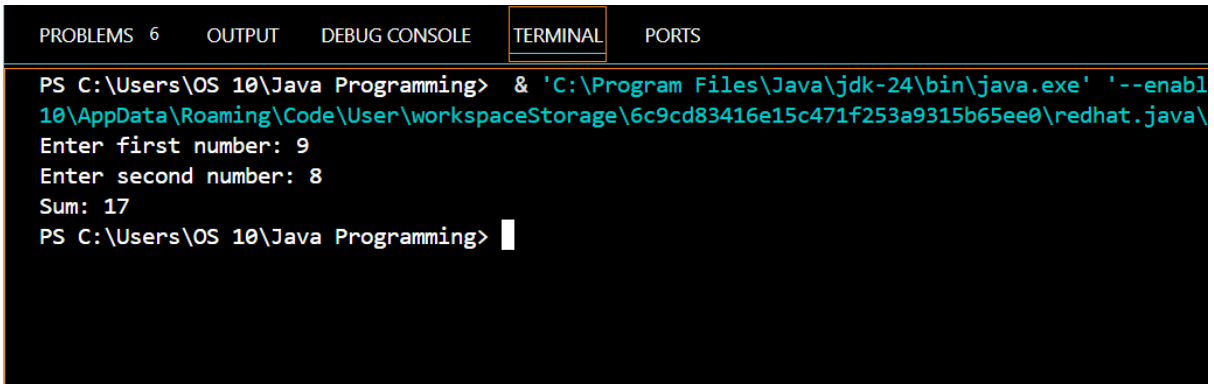
● Scanner scanner = new Scanner(System.in);
This creates a Scanner object to read input from the console.
● String studentName = scanner.nextLine();
Reads the full line entered by the user for the student's name.
● int studentID = scanner.nextInt(); and other similar lines
Read integer and float inputs respectively for ID, age and fee.
● char studentGrade = scanner.next().charAt(0);
Reads a single character (the grade) from the user input. The .charAt(0) means take the first character of the entered string.
● System.out.println(...) statements
Display the collected student details in an organized manner.
● scanner.close():
Closes the Scanner object to free up resources.

2.Sum of Two Numbers

Input:



Output:



Explanation :

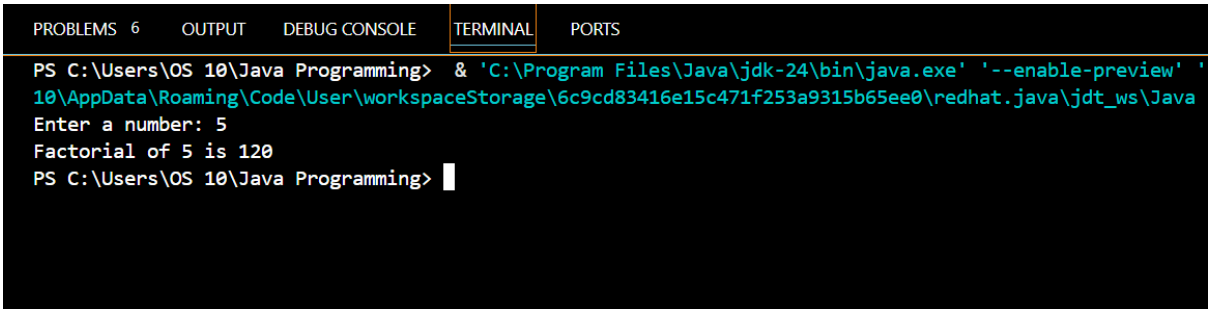
Explanation of Important Lines:

● int number = input.nextInt();
Reads the integer input from the user.
● if (number % 2 == 0)
Checks if the number is divisible by 2 with no remainder (meaning it is even).
● System.out.println(number + " is Even."); Prints that the number is even if the condition is true.
● else { ... }
If the number is not even, it is odd, and this block handles printing that message.
● input.close();
Closes the scanner to free up resources.

4. Find the Factorial of a Number

Input:

Output:



Explanation :

Explanation of Important Lines:

- **int num = input.nextInt(); Reads the integer input from the user.**
- **long factorial = 1;**

Initializes the factorial result as 1. We use long here to allow larger factorial values without overflow.

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

This loop runs from 1 to num, multiplying the factorial variable by each i in the range. This effectively calculates the factorial (e.g., 5! = 1×2×3×4×5).

- **System.out.println("Factorial of " + num + " = " + factorial);**

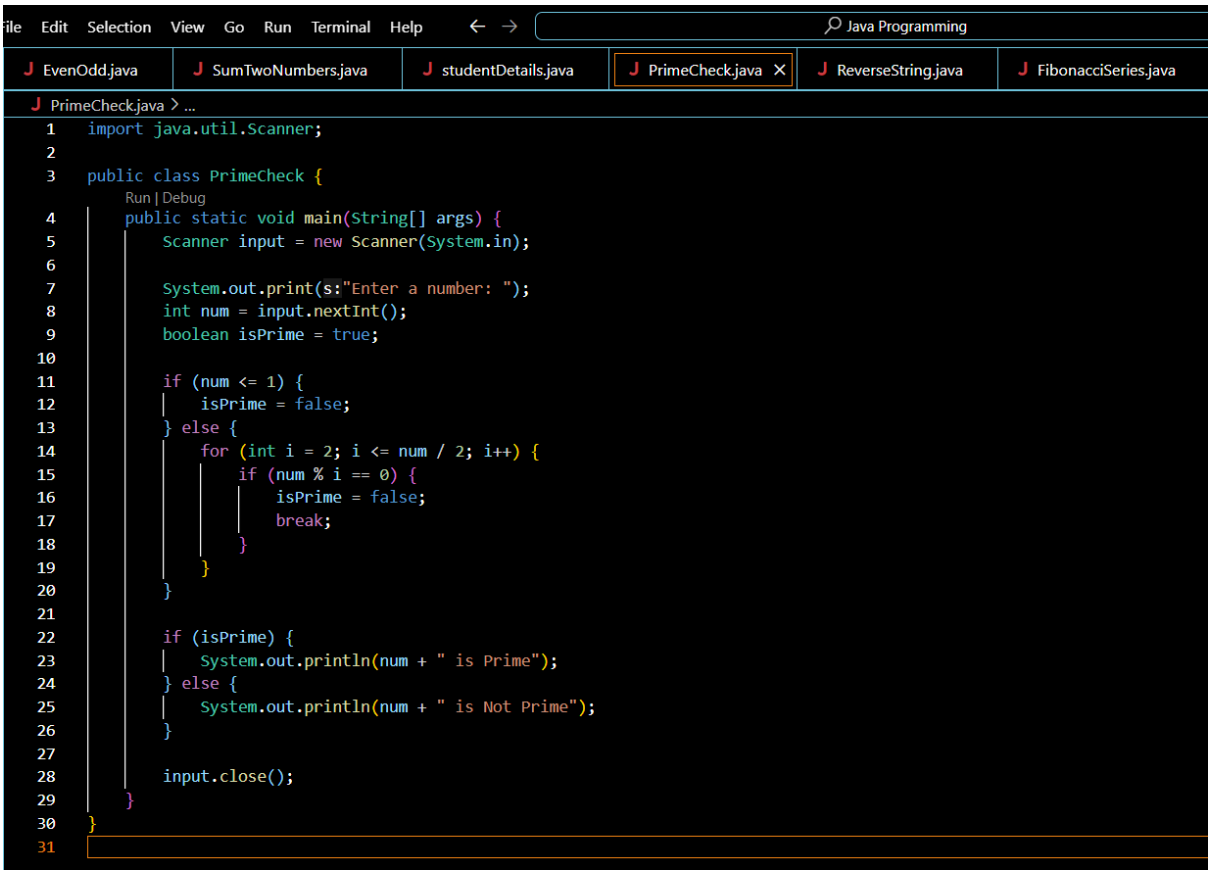
Prints the factorial result in a readable format.

- **input.close();**

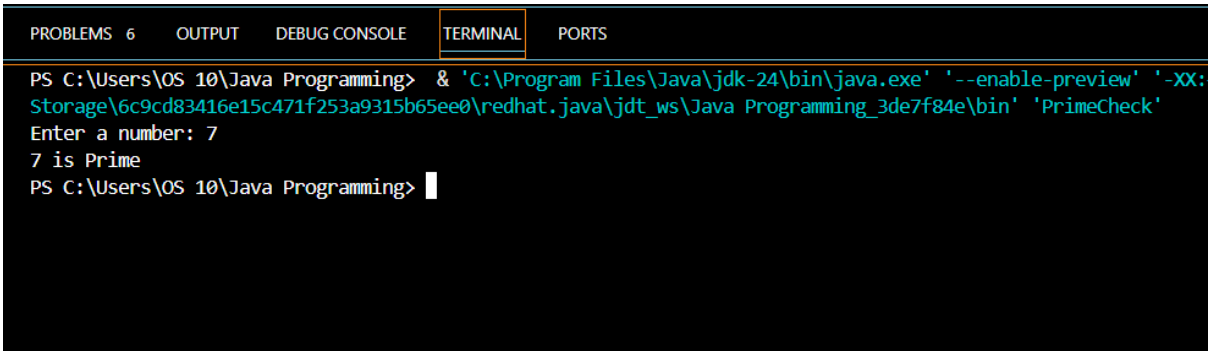
Closes the Scanner to release system resources.

5. Prime Number Check.

Input:



Output:



Explanation :

Explanation of Important Lines:

- **boolean isPrime = true;**

Assumes the number is prime at the start.

- **if (num <= 1)**

Immediately disqualifies numbers 1 and below from being prime.

- **for (int i = 2; i <= Math.sqrt(num); i++)**

Efficiently checks possible factors only up to the square root of num because any factor larger than that would have a corresponding smaller factor.

- **if (num % i == 0)**

Checks if num is divisible by i. If yes, it's not prime.

- **isPrime = false; break;**

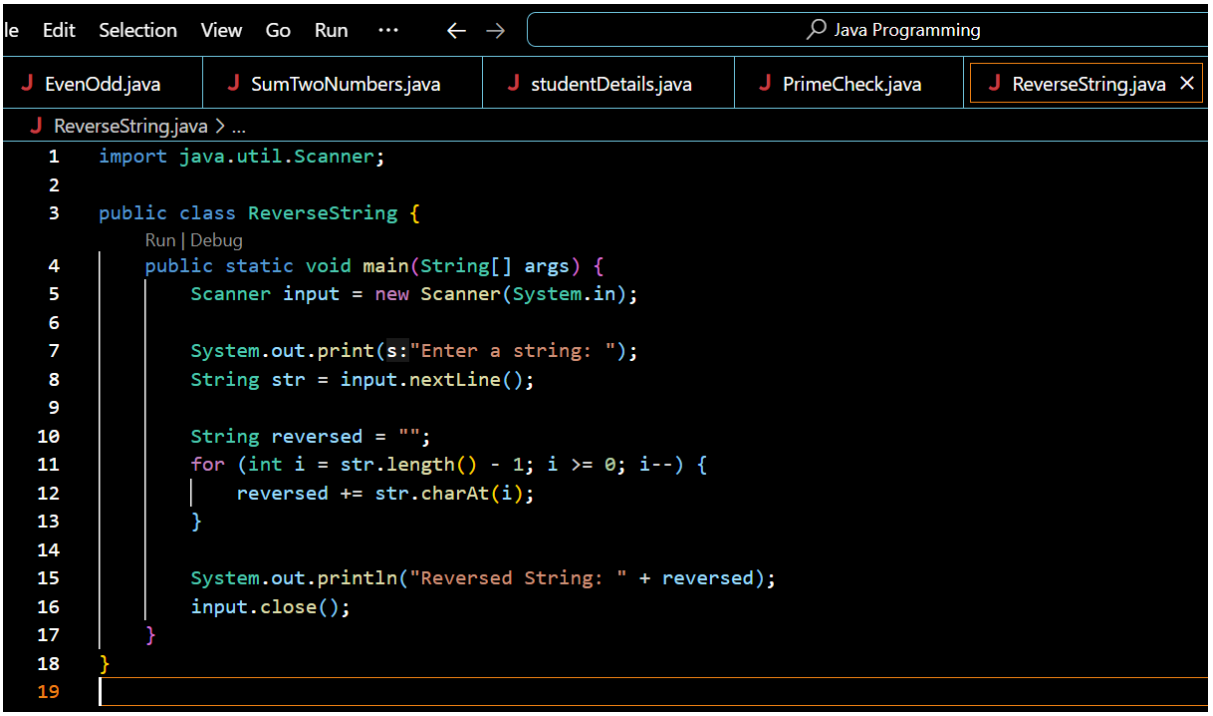
Once a divisor is found, marks num as not prime and stops further checking.

- **if (isPrime) { ... } else { ... }**

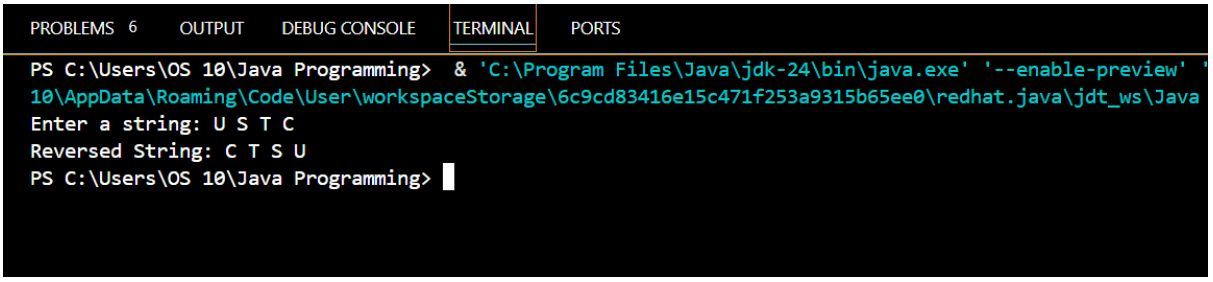
Prints the final verdict.

6. Reverse a String

Input:



Output:



Explanation :

Explanation of Important Lines:

- String str = input.nextLine();

Reads the entire line of text input by the user.

- for (int i = str.length() - 1; i >= 0; i--)

Loops backwards through the string starting from the last character index to zero.

- reversed += str.charAt(i);

Adds each character from the end of str to the reversed string.

- System.out.println("Reversed String: " + reversed);

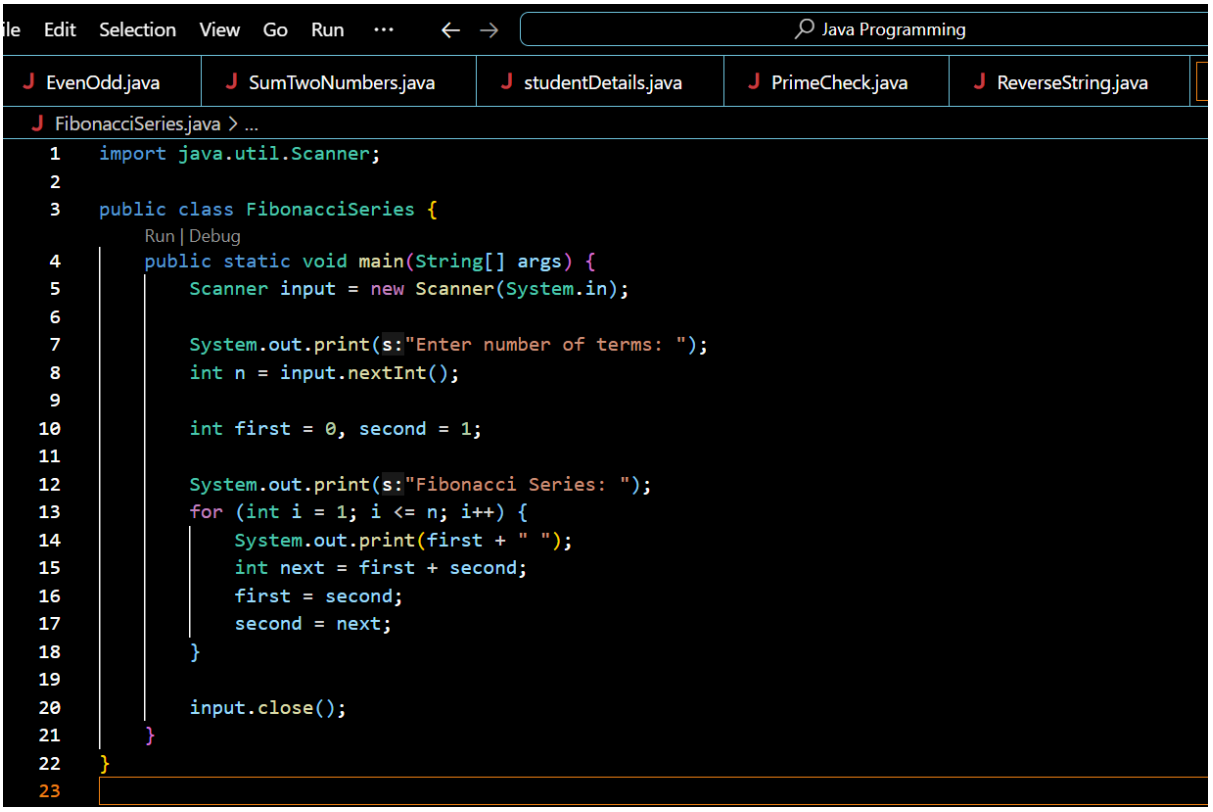
Prints out the reversed string in a readable format.

- input.close();

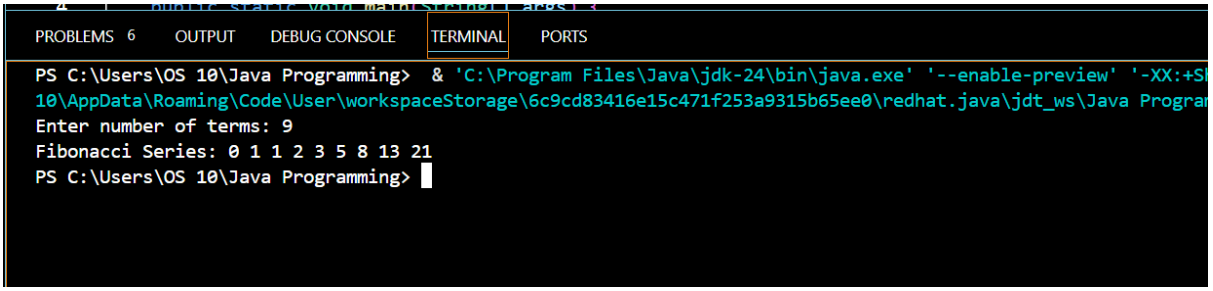
Closes the Scanner to release system resources.

7. Fibonacci Series up to N Terms

Input:



Output:



Explanation :

First condition: `if (num1 >= num2 && num1 >= num3)` **checks if** `num1` **is greater than or equal to both** `num2` **and** `num3`**. If this is true,** `num1` **is the largest.**

Second condition: `else if (num2 >= num1 && num2 >= num3)` **is checked only if the first condition is false. It checks if** `num2` **is greater than or equal to both** `num1` **and** `num3`**. If true,** `num2` **is the largest.**

Final condition: `else` **is the default case. If neither of the first two conditions is true, it means** `num3` **must be the largest number.**