Assignment-1

1.Print a series of numbers with recursive Java methods.

Recursive.java

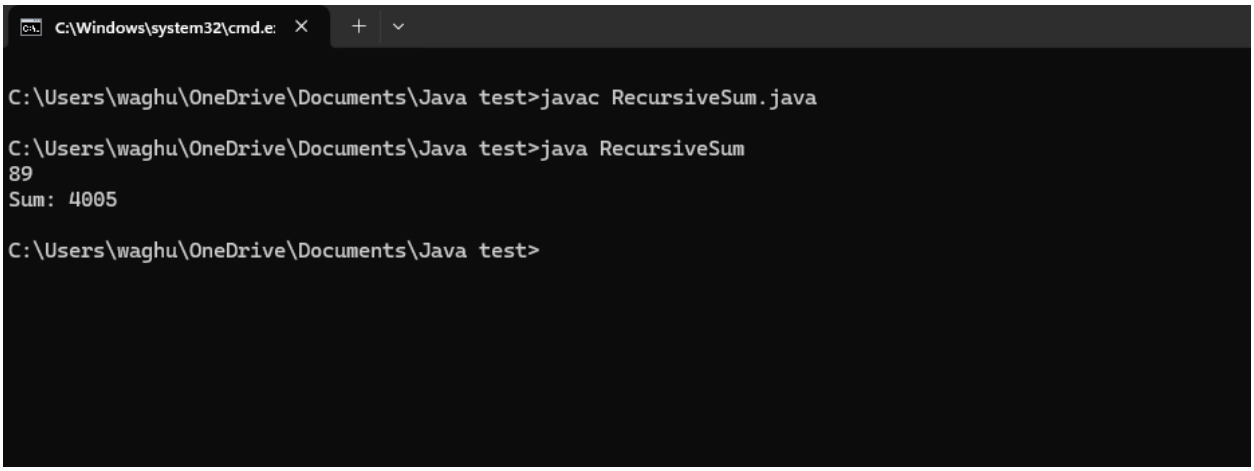
```java
import java.util.Scanner;
public class Recursive{
    public static void print(int n) {
        if (n < 1){
            return;
        }
        print(n - 1);
        System.out.print(n + "10,78,89,100,89!.");
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        System.out.print("Series: ");
        print(n);
        scanner.close();
    }
}
```

```
C:\Windows\system32\cmd.e:

C:\Users\waghu\OneDrive\Documents\Java test>javac Recursive.java

C:\Users\waghu\OneDrive\Documents\Java test>java Recursive
78
Series: 110,78,89,100,89!.210,78,89,100,89!.310,78,89,100,89!.410,78,89,100,89!.510,78,89,100,89!.610,78,89,100,89!.710,
78,89,100,89!.810,78,89,100,89!.910,78,89,100,89!.1010,78,89,100,89!.1110,78,89,100,89!.1210,78,89,100,89!.1310,78,89,10
0,89!.1410,78,89,100,89!.1510,78,89,100,89!.1610,78,89,100,89!.1710,78,89,100,89!.1810,78,89,100,89!.1910,78,89,100,89!.
2010,78,89,100,89!.2110,78,89,100,89!.2210,78,89,100,89!.2310,78,89,100,89!.2410,78,89,100,89!.2510,78,89,100,89!.2610,7
8,89,100,89!.2710,78,89,100,89!.2810,78,89,100,89!.2910,78,89,100,89!.3010,78,89,100,89!.3110,78,89,100,89!.3210,78,89,1
00,89!.3310,78,89,100,89!.3410,78,89,100,89!.3510,78,89,100,89!.3610,78,89,100,89!.3710,78,89,100,89!.3810,78,89,100,89!
.3910,78,89,100,89!.4010,78,89,100,89!.4110,78,89,100,89!.4210,78,89,100,89!.4310,78,89,100,89!.4410,78,89,100,89!.4510,
78,89,100,89!.4610,78,89,100,89!.4710,78,89,100,89!.4810,78,89,100,89!.4910,78,89,100,89!.5010,78,89,100,89!.5110,78,89,
100,89!.5210,78,89,100,89!.5310,78,89,100,89!.5410,78,89,100,89!.5510,78,89,100,89!.5610,78,89,100,89!.5710,78,89,100,89
!.5810,78,89,100,89!.5910,78,89,100,89!.6010,78,89,100,89!.6110,78,89,100,89!.6210,78,89,100,89!.6310,78,89,100,89!.6410
,78,89,100,89!.6510,78,89,100,89!.6610,78,89,100,89!.6710,78,89,100,89!.6810,78,89,100,89!.6910,78,89,100,89!.7010,78,89
,100,89!.7110,78,89,100,89!.7210,78,89,100,89!.7310,78,89,100,89!.7410,78,89,100,89!.7510,78,89,100,89!.7610,78,89,100,8
9!.7710,78,89,100,89!.7810,78,89,100,89!.
C:\Users\waghu\OneDrive\Documents\Java test>
C:\Users\waghu\OneDrive\Documents\Java test>
```

2.Sum a series of numbers with Java recursion.

RecursiveSum.java

```java
import java.util.Scanner;
public class RecursiveSum{
    public static int sumSeries(int n){
        if (n == 0){
            return 0;
        }
        return n + sumSeries(n-1);
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        System.out.println("Sum: " + sumSeries(n));
        scanner.close();
    }
}
```



3.Calculate a factorial in Java with recursion.

RecursiveFactorial.java

```java
import java.util.Scanner;
public class RecursiveFactorial{
    public static int factorial(int n){
        if (n == 0 || n == 1){
            return 1;
        }
        return n * factorial(n - 1);
    }
    public static void main(String[] args){
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        System.out.println("Factorial: " + factorial(n));
        scanner.close();
    }
}
```

C:\Windows\system32\cmd.e

```
C:\Users\waghu\OneDrive\Documents\Java test>javac RecursiveFactorial.java

C:\Users\waghu\OneDrive\Documents\Java test>java RecursiveFactorial
58
Factorial: 0

C:\Users\waghu\OneDrive\Documents\Java test>java RecursiveFactorial
6
Factorial: 720

C:\Users\waghu\OneDrive\Documents\Java test>
```

4.A recursive Java palindrome checker.

RecursivePalindrome.java

```java
import java.util.Scanner;

public class RecursivePalindrome {
    public static boolean isPalindrome(String str) {
        return isPalindromeHelper(str, 0, str.length() - 1);
    }

    private static boolean isPalindromeHelper(String str, int left, int right) {
        if (left >= right) return true;
        return (str.charAt(left) == str.charAt(right)) && isPalindromeHelper(str, left + 1, right - 1);
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String str = scanner.nextLine();
        System.out.println(isPalindrome(str) ? "Palindrome" : "Not a Palindrome");
        scanner.close();
    }
}
```

C:\Windows\system32\cmd.e

```
C:\Users\waghu\OneDrive\Documents\Java test>javac RecursivePalindrome.java

C:\Users\waghu\OneDrive\Documents\Java test>java RecursivePalindrome
7
Palindrome

C:\Users\waghu\OneDrive\Documents\Java test>java RecursivePalindrome
89
Not a Palindrome

C:\Users\waghu\OneDrive\Documents\Java test>
```