Q. 1)

```java
package Recursion;

import java.util.Scanner;

public class print_Numbers {
    static void print(int n){  2 usages
        if(n==1) {
            System.out.print(1+" ");
            return;
        }
        print(n-1);
        System.out.print(n+" ");
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the value : ");
        int n = sc.nextInt();

        print(n);
    }
}
```

Output :

```
Enter the value : 7
1 2 3 4 5 6 7
Process finished with exit code 0
```

Q. 2)

```java
package Recursion;

import java.util.Scanner;

public class print_Numbers {
    static void print(int n){  2 usages
        if(n==1) {
            System.out.print(1+" ");
            return;
        }
        System.out.print(n+" ");
        print(n-1);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the value : ");
        int n = sc.nextInt();

        print(n);
    }
}
```

Output :

```
Enter the value : 8
8 7 6 5 4 3 2 1
Process finished with exit code 0
```

Q. 3)

```java
package Recursion;

import java.util.Scanner;

public class add_Numbers {
    static int add(int n){  2 usages

        if(n==0) return 0;
        return n + add(n-1);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter value : ");
        int n = sc.nextInt();

        System.out.println("Sum of numbers is : "+add(n));

    }
}
```

Output :

```
Enter value : 10
Sum of numbers is : 55


Process finished with exit code 0
```

Q. 4)

```java
package Recursion;
import java.util.Scanner;

public class reverse_String {
    static void reverse(char[] arr,int left,int right){  2 usages
        if(left >= right){
            return ;
        }
        char temp = arr[left];
        arr[left] = arr[right];
        arr[right] = temp;

        reverse(arr, left: left+1, right: right-1);
    }
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Type the string : ");
        String str = sc.nextLine();
        char[] arr = str.toCharArray();

        reverse(arr, left: 0, right: arr.length-1);
        System.out.print("Reversed : "+new String(arr));
    }
}
```

Output :

```
Type the string : Data Structures

Reversed : serutcurtS ataD

Process finished with exit code 0
```

Q. 5)

```java
package Recursion;

import java.util.Scanner;

public class sum_Array {
    static int sum(int[] arr, int x){  2 usages

        if(x == arr.length) return 0;
        return arr[x] + sum(arr,  x: x+1);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter size of array : ");
        int n = sc.nextInt();

        int[] arr = new int[n];
        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
        }

        System.out.println("Sum is : "+sum(arr,  x: 0));
    }
}
```

Output :

```
Enter size of array : 5
11 22 33 44 55
Sum is : 165


Process finished with exit code 0
```

Q. 6)

```java
package Recursion;
import java.util.Scanner;


public class climbing_Stairs {
    static int climbStairs(int n) {  3 usages
        if (n == 0) return 0;
        if (n == 1) return 1;
        return climbStairs( n: n - 1) + climbStairs( n: n - 2);
    }


    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of stairs: ");
        int n = scanner.nextInt();

        System.out.println("Ways to climb stairs is : " +climbStairs(n));
    }
}
```

Output :

```
Enter the number of stairs: 7
Ways to climb stairs is : 13


Process finished with exit code 0
```

Q. 7)

```java
package Recursion;

import java.util.Scanner;

public class Factorial {
    static int fact(int n){  2 usages
        if(n == 0 || n == 1) return 1;
        return n*fact( n: n-1);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the value : ");
        int n = sc.nextInt();

        System.out.println("Factorial is : "+fact(n));
    }
}
```

Output :

```
Enter the value : 5
Factorial is : 120


Process finished with exit code 0
```

Q. 8)

```java
package Recursion;

import java.util.Scanner;

public class Fibonacci_number {
    static int printF(int x){  3 usages
        if (x <= 1) {
            return x;
        }
        return printF( x: x - 1) + printF( x: x - 2);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter value : ");
        int x = sc.nextInt();

        System.out.println("Fibonacci sequence up to " + x + " terms:");
        for (int i = 0; i < x; i++) {
            System.out.print(printF(i)+" ");
        }
    }
}
```

Output :

```
Enter value : 8
Fibonacci sequence up to 8 terms:
0 1 1 2 3 5 8 13
Process finished with exit code 0
```