Recursion in Java

Recursion in java is a process in which a method calls itself continuously. A method in java that calls itself is called recursive method.

It makes the code compact but complex to understand.

Syntax:

```
returntype methodname(){
//code to be executed
methodname();//calling same method
}
```

Java Recursion Example 1: Infinite times

```
public class RecursionExample1 {
static void p(){
System.out.println("hello");
p();
}
  public static void main(String[] args) {
p();
}
}
```

Output:

```
hello
hello
...
java.lang.StackOverflowError
```

Java Recursion Example 2: Finite times

```
public class RecursionExample2 {
static int count=0;
static void p(){
count++;
if(count<=5){
System.out.println("hello "+count);
p();}}
```

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

Output:

```
hello 1
hello 2
hello 3
hello 4
hello 5
```

Java Recursion Example 3: Factorial Number

```
    public class RecursionExample3 {
       static int factorial(int n){
            if (n == 1)
              return 1;
            else
              return(n * factorial(n-1));
       }
     public static void main(String[] args) {
    System.out.println("Factorial of 5 is: "+factorial(5));
    } }
```

Output:

```
Factorial of 5 is: 120
```

Working of above program:

```
  factorial(5)
    factorial(4)
      factorial(3)
        factorial(2)
          factorial(1)
            return 1
          return 2*1 = 2
        return 3*2 = 6
      return 4*6 = 24
    return 5*24 = 120
```