

## Recursion

The process in which a function call itself is known as recursion.

(for example)

```
public static void main (String [] args) {  
    print-num (0);  
}
```

```
static void print-num (int n) {  
    if (n == 8) {  
        System.out.println (n);  
        return;  
    }  
    System.out.println (n);  
    print-num (n+2);  
}
```

The function will be calling itself but with different arguments in our case. Also, every function call will take separate memory for itself. That's why we should implement something known as a 'base condition'.

## Base Condition

The function will stop making recursive calls if this condition is fulfilled.

In our case the base condition is  $n == 8$

But what if there's no base condition?

Well, the function will keep making recursive calls and the stack memory will get filled.

This will lead to the Stackoverflow error.

Space Complexity of recursion is not constant because of recursive calls.

Why do we need recursion?

- (1) It helps us in solving complex problems.
- (2) You can convert recursive solution into iteration.
- (3) It helps in breaking down bigger problems into smaller ones.