Recursion

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Definition

How does it work

Recursion and Iteration

What is Recursion

Recursion is a method of solving a problem where the solution depends on solutions to smaller instances of the same problem. To do these tasks the recursion involves a function calling itself.

Example

```
static int factorial(int n){
 if (n == 0)
   return 1;
 else
   return(n * factorial(n-1)); //RECURSION
```

How Recursive methods works

To write a recursive method you need to know two parts:
A base case and a general case. The first one will make the
recursive method reach an end, and the second one it is the
operation.

Example

```
static int factorial(int n){
 if (n == 0)
   return 1;      //BASE CASE
 else
   return(n * factorial(n-1)); //GENERAL CASE
```

Graphic Representation

Definition	How does it work	Recursion and Iteration
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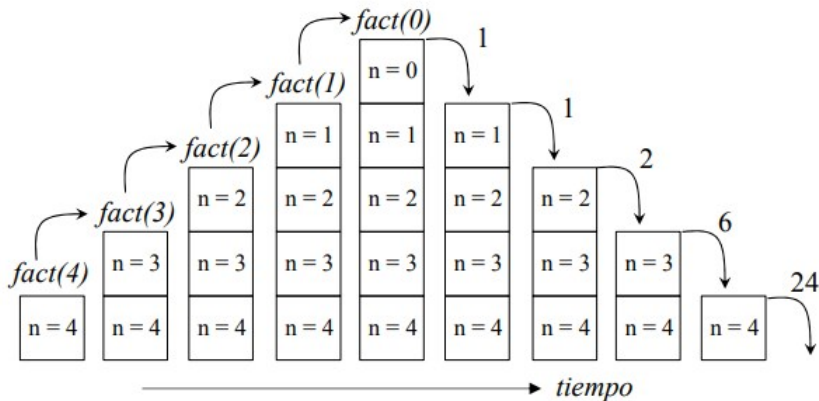
Important aspects to be taken into consideration when using recursion and iteration

The computing load Time of Ejecution and memory used.

Redundancy Sometimes Recursion resolves the same problem multiple times.

Solution Sometimes an iterative solution it is too complicate to find

Resultant code Using recursion, the final code might be more concise, elegant and easy to read and understand

Comparation between Recursion and Iteration

Recursion

```
static int factorial(int n){
 if (n == 0)
   return 1;
 else
   return(n * factorial(n-1));
```

Iteration

```
public static int factorial(int n) {
if (n == 0) {
return 1;
}else  {
int factorial = 1;
for(int i=1;i<=n;i++) {
factorial = factorial * i;
}return factorial;
} }
```