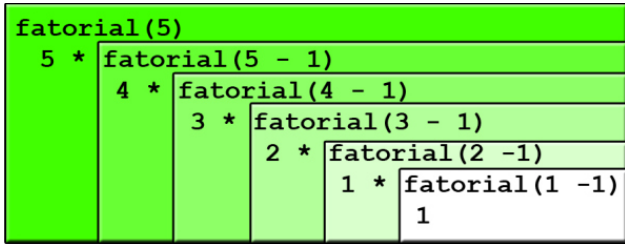


## Fatorial



Fonte:

<https://olamundo0.wordpress.com/2010/04/20/recursividade/>

## Fatorial recursivo

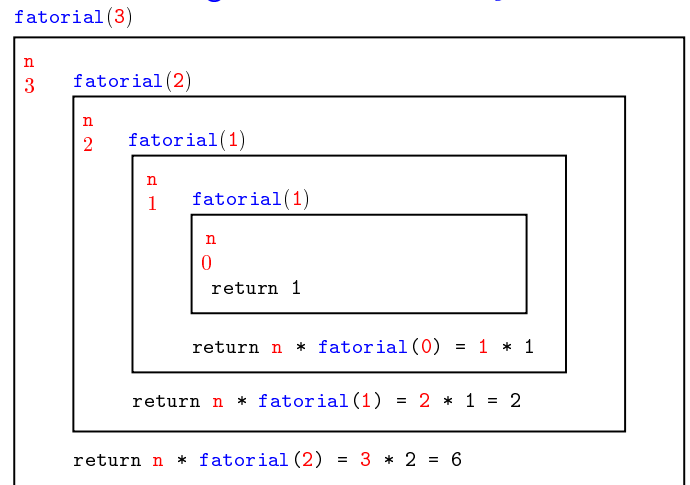
$$n! = \begin{cases} 1, & \text{quando } n = 0, \\ n \times (n - 1)!, & \text{quando } n > 0. \end{cases}$$

```
def fatorial(n)
    '''(int) -> int
    Recebe um inteiro n e retorna n!
    '''
    if n == 0:
        return 1
    return n * fatorial(n-1)
```

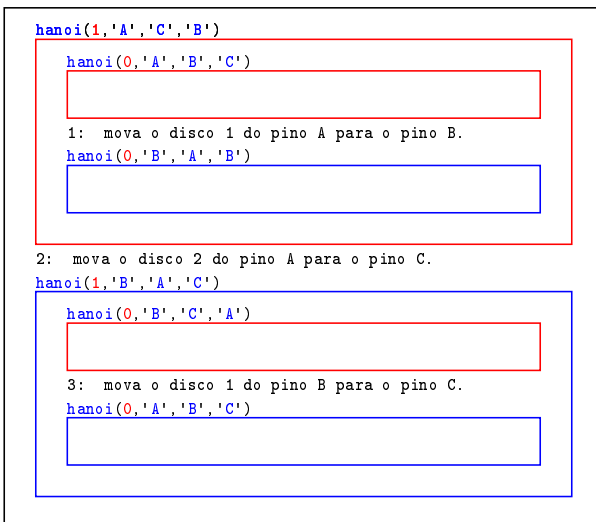
## fatorial(10)

```
fatorial(10)
  fatorial(9)
    fatorial(8)
      fatorial(7)
        fatorial(6)
          fatorial(5)
            fatorial(4)
              fatorial(3)
                fatorial(2)
                  fatorial(1)
                    fatorial(0)
fatorial de 10 e' 3628800.
```

## Diagramas de execução



hanoi(2, 'A', 'B', 'C')



## Fatorial iterativo

```
def fatorial(n):
    '''(int) -> int
    Recebe um inteiro n e retorna n!
    '''
    ifat = 1
    for i in range(2, n+1): # /*1*/
        ifat *= i
    return ifat
```

Em /\*1\*/ vale que `ifat == (i-1)!`