Time complexity of recursive factorial function

Lets take eg

f(5)

↳ 5 × f(4) → calls itself

4 × f(3) ←

3 × f(2)

2 × f(1)

.

$T(n) = C + T(n-1)$

when n calls itself

↓

(n-1) ⟶ Takes time (C)

↓

(n-2) ⟶ takes time (C)

⋮

1 ⟶ (C)

$\Rightarrow nC. =$

Big O $O(n)$

Time complexity is (n)