

Base cases:

The factorial of 1 = 1

The factorial of 2 = 2

The factorial of 3 = 6

The factorial of 4 = 24

The factorial of 5 = 120

Inductive step:

The definition for the calculation of a given factorial number, is

$n! = n \cdot (n - 1) \cdot (n - 2) \cdot (n - 3) \dots$ where the calculation stops when $n = 0$.

So for any number of $n \cdot fact(n - 1)$ to be true, both $n = 1$ and $n = 2$ should also be true.

As both of these would return their respective base-cases, this must mean that $fact(3)$ must be true as well. If both $fact(2)$ and $fact(3)$ are true, $fact(4)$ must also be true. And this would apply for any whole and positive number of n , given to the program.