Definition of factorial

$n! = n * (n - 1) * (n - 2) * (n - 3) * \dots 1$

$Fact_0 = 0! = 1$

$Fact_1 = 1! = 1$

$Fact_2 = 2! = 2*1 = 2$

$Fact_3 = 3! = 3*2*1 = 6$

$Fact_4 = 4! = 4*3*2*1 = 24$

$Fact_n = n! = n * (n-1) * (n-2) * (n-3) * \dots 1$ (for $n >= 1$)

Base case:

```
if (n == 1) //smallest possible case inside the range of the factorial definition
  return 1
```

```
if (n == 0) (non-recursive case)
  return 1
```

Inductive step

Assume:

That fact(n - 1) * n correctly computes the product of the n^{th} factorial number for n >= 1

Then:

fact(n) = fact(n-1) * n

→ $n! = (n-1)! * n$

→ $n! = n * (n-1) * (n-2) * \dots 1$

Therefore n! or fact(n) is correct