

factorial of a number  
Iterative approach

int factorial (int n)

{

    int fact = 1 ;

    for (int i=2; i<=n; i++)

{

        fact = fact \* i ;

}

    return fact ;

}

Let  $n = 5$

Iteration 1

$$2 <= 5$$

$$f = 1 * 2$$

$$= 2$$

~~loop~~

Iteration 2

$$3 <= 5$$

$$f = 2 * 3$$

$$= 6$$

Iteration 3

$$4 <= 5$$

$$f = 6 * 4$$

$$= 24$$

Iteration 4

$$5 <= 5$$

$$f = 24 * 5$$

$$= 120$$

Iteration

$$6 <= 5$$

Loop &

factorial =

$$8\ 5$$

# Recursive Approach

fact (int n)

if ( $n == 0$ )

return 1

return  $n * \text{fact}(n-1)$

3

120

fact(5)

120

5

+ fact(4)

24

4

\* fact(3)

6

3

+ fact(2)

2

2

\* fact(1)

1

1

\* fact(0)

1

factorial of 5 = 120