



# Assignment: Factorial of number

Factorial of any number  $n$  is represented by  $n!$  and is equal to  $1*2*3*...*(n-1)*n$ . E.g.-

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

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

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

Also,

$$1! = 1$$

$$0! = 1$$

Write a pseudo code to find the factorial of the number.

**Explanation :**

As we know to find the factorial we should multiply  $1,2,3,...,n$ .

The number of times we should multiply is known. Hence we can use a for loop.

Assume the value for  $n$  is 4 and result is stored in a variable factorial.



We do  $\text{factorial} = \text{factorial} * i$  ----> loop variable

Initially  $\text{factorial} = 1$ .

In loop when variable  $i$  is 1  $\text{factorial} = \text{factorial} * i = 1 * 1 = 1$

Next when  $i$  is 2,  $\text{factorial} = \text{factorial} * i = 1 * 2 = 2$ .

When  $i$  is 3,  $\text{factorial} = \text{factorial} * i = 2 * 3 = 6$ .

When  $i$  is 4,  $\text{factorial} = \text{factorial} * i = 6 * 4 = 24$ .

When  $i$  is 5 it is not between 0 and  $n$ , hence will come out of loop and print factorial which is equal to 24.

**Pseudocode :**

Pseudocode should start with BEGIN statement.

We need a variable to store the number, factorial and the loop variable  $i$ .

*DECLARE variables number, factorial = 1, i*

Next we should get the number as input from the user.

*READ number*

Write a for loop that executes  $n$  times as

*FOR  $i = 1$  TO number do*

To repeat the statement  $\text{factorial} = \text{factorial} * i$  inside the loop

*SET factorial <- factorial \* i*

Close the for loop

**END FOR**

Coming out of for loop print the factorial

*PRINT factorial*

Finally **END** the pseudocode



Submission status	Submitted for grading
Grading status	Not graded
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Online text	<pre><b>—</b>  <b>BEGIN</b>  <b>DECLARE</b> variables <i>number, factorial = 1, i</i> <b>READ</b> <i>number</i> <b>FOR</b> <i>i = 1 TO number</i> <b>do</b>     <b>SET</b> <i>factorial</i> <b>&lt;-</b> <i>factorial * i</i> <b>END FOR</b>  <b>PRINT</b> <i>factorial</i>  <b>END</b></pre>

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