# Evaluation Rubric :

|  |  |  |
| --- | --- | --- |
| **Evaluation parameter** | **Does not meet specifications** | **Meets specifications** |
| **Problem statement** |  |  |
| Problem Statement must be clearly defined |  |  |
| Expected input and output formats must be described |  |  |
| Explain the problem statement with an example(if applicable) |  |  |
| **Expected input & output** |  |  |
| Minimum of 5 test cases (if applicable) |  |  |
| Coverage |  |  |
| Border condition |  |  |
| Unexpected inputs |  |  |
| **Solution** |  |  |
| The correctness of the solution. |  |  |
| Check for all the elements (tokens) of the problem (Assignment, Arithmetic, conditional, relational, input, output etc) |  |  |
| **Trace Table :** |  |  |
| Columns are variables, conditions, print statements |  |  |
| Order |  |  |
| Trace table for each function(If applicable) |  |  |
| labeling the columns |  |  |
| Coverage (conditions, iterations... etc) |  |  |
| **Final Result** |  |  |
| Executable File Submission |  |  |
| **Executable File** |  |  |
| Check with all test cases |  |  |

# 

**Problem Statement**: **(2 Marks)**

**Find factorial of a given number?**

**Test cases: (3 Marks)**

|  |  |
| --- | --- |
| **Expected Input** | **Expected Output** |
| 5 | 120 |
| 3 | 6 |
| 2 | 2 |
| 4 | 24 |
| 0 | 1 |

**Solution**: **(5 Marks)**

**Step 1:** START

Step 2: Input number N

Step 3: Set fact=1 , i=i

Step 4: if(i<=N) go to Step 4.1 else Step 6

Step 4.1: Compute fact=fact\*i , do i=i+1

Step 5: Print fact

Step 6: End

**Trace Table** : **(5 Marks)**

Test Case 1: Input n=5

|  |  |  |  |
| --- | --- | --- | --- |
| n | fact | i<n | i |
| 5 | 1 | 1<5 | 1 |
|  | 1\*2 | 2<5 | 2 |
|  | 1\*2\*3 | 3<5 | 3 |
|  | 1\*2\*3\*4 | 4<5 | 4 |
|  | 1\*2\*3\*4\*5 | 5<5 | 5 |
|  | print 120 |  |  |

Test case 2: Input n=4

|  |  |  |  |
| --- | --- | --- | --- |
| n | fact | i<n | i |
| 4 | 1 | 1<4 | 1 |
|  | 1\*2 | 2<4 | 2 |
|  | 1\*2\*3 | 3<4 | 3 |
|  | 1\*2\*3\*4 | 4<4 | 4 |
|  | print 24 |  |  |

Test case 3: Input n= 3

|  |  |  |  |
| --- | --- | --- | --- |
| n | fact | i<n | i |
| 3 | 1 | 1<3 | 1 |
|  | 1\*2 | 2<3 | 2 |
|  | 1\*2\*3 | 3<3 | 3 |
|  | print 6 |  |  |

Test case 4: Input n= 2

|  |  |  |  |
| --- | --- | --- | --- |
| n | fact | i<n | i |
| 2 | 1 | 1<3 | 1 |
|  | 1\*2 | 2<3 | 2 |
|  | print 6 | 3<3 | 3 |

Test case 5: Input n=0

|  |  |  |  |
| --- | --- | --- | --- |
| n | fact | i<n | i |
| 0 | 1 | 1<0 | 1 |
|  | print 1 |  |  |

**Final Result :** **(2 Marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Expected input** | **Expected output** | **Actual output** | **Test result** |
| 5 | 120 | 120 | 120 |
| 3 | 6 | 6 | 6 |
| 2 | 2 | 2 | 2 |
| 4 | 24 | 24 | 24 |
| 0 | 1 | 1 | 1 |