# Assignment Number: 5-c-2

# Problem Statement:

**Recursion and the Factorial Function:** A function is said to be recursive if the function calls itself. MATLAB functions are designed to allow recursive operation. To test this feature, write a MATLAB function to evaluate the factorial function, which is defined as follows:

N!= N(N-1)!....N>=1

1…….N=0

Where, N is a positive integer. The function should check to make sure that there is a single argument N, and that N is a non-negative integer. If it is not, generate an error using the error function. If the input argument is a nonnegative integer, the function should evaluate N! using the above equation .

# Inputs:

* Input the value of N

# Outputs:

* Factorial of N will be displayed

# Pseudocode:

* Create a function with 1 output and 1 input variable
* Check if the number is 0 or 1 for which you have to provide the predefined factorial
* If there is a negative value then display an error message.
* Now calculate the factorial of the given number
* Display the result
* stop

# Program: factorial.m

% script file : factorial

% objective :

%to calculate the factorial of a given number

% record of revision :

% DATE PROGRAMMER DESCRIPTION OF CHANGE

% ======== ============= ====================

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% define variable :

% f-factorial

%N-value for which factorial will be calculated

function[f]=factorial(N)

if(N>=0)

    f=1;

    if(N==0)

        f;

    else

       for i=1:N

           f=f\*i;

       end

    end

else

   error('In this case, factorial cannot be evaluated');

end

end

# Test Results:

factorial(5)

ans =

120