॥वसुधैव कुटुम्बकम॥
SYMBIOSIS INSTITUTE OF TECHNOLOGY, PUNE
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Assignment No.: 12	
Course Name	Programming in C Lab
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Branch	CSE
Class	C-1
Academic Year & Semester	2023-2024 & Semester 2
Date of Performance	12/04/2024
Assignment Title (Full):	Write a C program to find the factorial of a number using recursion

Theory: (Note: According to the assignment title, please write the background information as an introduction, then write the steps/logic/process/algorithm of the C program in the Journal Notebook, and add its screenshot in the below theory response.)

Theory Response:

- **Factorial Function (Fact):**
  1. Base case: If x is 0, return 1 (base case for factorial).
  2. Recursive case: Return x multiplied by Fact(x-1) to compute factorial recursively.

- **Main Function:**
  1. Prompt user to enter an integer x.
  2. Read the integer x using scanf.
  3. Call Fact(x) to compute the factorial of x.
  4. Print the computed factorial value with a formatted string using printf.

Output: (Note: Execute the C program as per the assignment title, take an input code and output result screenshot with the date and time from your computer, and add its screenshot in the below output response.)

Output Response:

```c
#include <stdio.h>

float Fact(int x){
    if(x==0) return 1;
    return x*Fact(x-1);
}

int main(){
    int x;
    printf("\nEnter number: ");
    scanf("%d",&x);
    printf("\nFactorial of %d is %f.\n",x,Fact(x));
    return 0;
}
```

```
Enter number: 7

Factorial of 7 is 5040.000000.
(base) fahee@Faheems-MacBook-Pro Programming_in_C %
```

Conclusion: (Note: Write the key findings or outcome from this assignment, enlist their potential real-world applications in Journal Notebook, and add its screenshot in the below conclusion response.)

Conclusion Response:

This program calculates the factorial of a given non-negative integer x using a recursive approach. The factorial of x (denoted x!) is computed by multiplying x with the factorial of x-1, continuing until the base case of 0! is reached, which is defined as 1. Note that **float** is used for the return type of **Fact** to handle potentially large factorial values.

Please note that assignment content can be readable.

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