	Marwadi University **Faculty of Technology** **Department of Information and Communication Technology**
Subject: DSC (01CT0308)	**Aim:** Simulation of recursion. using either sum of the first n numbers or factorial of given number.
Experiment No: 5	**Date:** **21- 10 -** **2023**	**Enrolment No:-** 92200133030

Experiment – 5

Objective: Simulation of recursion. using either sum of the first n numbers or factorial of given number.

Code :-

```cpp
#include<iostream>
using namespace std;
int Sum(int n) {
    if(n == 1) {
        return n;
    }
    else {
        return n + Sum(n-1);
    }
}
int Factorial(int n) {
    if(n == 1 || n == 0) {
        return 1 ;
    }
    else {
        return n*Factorial(n-1) ;
    }
}
int main() {
    int N ;
    int ans ;
    int choice ;
    cout << "1) Sum Of First N Natural Number " << endl ;
    cout << "2) Find A Factorial Of N" << endl;
    cout << "Enter Your Choice How You Want to Demonstrate The Recursion :- " ;
    cin >> choice ;
    if ( choice == 1) {
        cout << "Enter A The Value Of N :- " << " " ;
```

```cpp
        cin >> N ;

        ans = Sum(N);
        cout << "The Sum Of First " << N << " Number Is " << ans << endl ;
    }
    else {
        cout << "Enter A The Value Of N :- " << " " ;
        cin >> N ;
        ans = Factorial(N);
        cout << "The Factorial Of " << N << " Is " << ans << endl ;
    }
}
```

Output:

```
1) Sum Of First N Natural Number
2) Find A Factorial Of N
Enter Your Choice How You Want to Demonstrate The Recursion :- 1
Enter A The Value Of N :-  5
The Sum Of First 5 Number Is 15
```

```
1) Sum Of First N Natural Number
2) Find A Factorial Of N
Enter Your Choice How You Want to Demonstrate The Recursion :- 2
Enter A The Value Of N :-  5
The Factorial Of 5 Is 120
```