Experiment No-11: Introduction to Recursion in C

Example 1: Write a C++ program to calculate the factorial of a number using recursion.

```
#include <iostream>
using namespace std;
int factorial(int n) {
    if (n == 0 || n == 1) {
        return 1;
    } else {
        return n * factorial(n - 1);
    }
}

int main() {
    int num;
    cout << "Enter a number:" << endl;
    cin >> num;
    cout << "Factorial of " << num << " is " << factorial(num) << endl;
    return 0;
}
```

Example 2: Write a C++ program to print the Fibonacci series using recursion.

```
#include <iostream>
using namespace std;
int fib(int x) {
   if((x==1)||(x==0)) {
      return(x);
   }else {
```

```
    return(fib(x-1)+fib(x-2));
  }
}
int main() {
  int x , i=0;
  cout << "Enter the number of terms of series : ";
  cin >> x;
  cout << "\nFibonnaci Series : ";
  while(i < x) {
    cout << " " << fib(i);
    i++;
  }
  return 0;
}
```

Example 3: Write a C++ program to print the sum of array elements using recursion.

```
#include <iostream>
using namespace std;
int arraySum(int arr[], int n) {
   if (n <= 0) {
      return 0;
   } else {
      return arr[n - 1] + arraySum(arr, n - 1);
   }
}

int main() {
   int arr[] = {6, 2, 3, 4, 5, 7};
   int n = sizeof(arr) / sizeof(arr[0]);
```

```
    cout << "Sum of array elements: " << arraySum(arr, n) << endl;
    return 0;
}
```