# DATA STRUCTURES LABORATORY MANUAL – ICE 2144

## III SEMESTER B. TECH

### EXPT. 1: BASIC C++ PROGRAMS

1. Write a C++ program to find the sum of individual digits of a positive integer.

```
#include<iostream>
using namespace std;

int sum_of_digits(int n)
{
        int digit, sum=0;
        while(n!=0)
        {
                digit=n%10;
                sum=sum+digit;
                n=n/10;
        }
        return sum;
}
int main()
{
        int number, digits_sum;
        cout<<"Enter Positive integer:";
        cin>>number;
        digits_sum=sum_of_digits(number);
        cout<<"sum of digts of "<<number<<" is "<<digits_sum;
        return 0;
}
```

2. Write a C++ program to use scope resolution operator. Display the various values of the same variables declared at different scope levels.

```
#include <iostream>
using namespace std;
int x;              // Global x

int main()
{
        int x = 10;                 // Local x
        cout << "Value of global x is " << ::x << endl;
        cout << "Value of local x is " << x << endl;
        cout << "Value of global x is " << ::x + 1 << endl;
        cout << "Value of local x is " << x + 1 << endl;
        return 0;
}
```

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3. Write a C++ program to declare *struct*. Initialize and display contents of member variables.

```
#include <iostream>
using namespace std;
struct student
{
        char name[50];
        int roll;
        float marks;
};
int main()
        {
        student s;
        cout << "Enter information" << endl;
        cout << "Enter name: ";
        cin >> s.name;
        cout << "Enter roll number: ";
        cin >> s.roll;
        cout << "Enter marks: ";
        cin >> s.marks;
        cout << "\nDisplaying Information" << endl;
         cout << "Name: " << s.name << endl;
        cout << "Roll: " << s.roll << endl;
        cout << "Marks: " << s.marks << endl;
        return 0;
}
```

**EXERCISE:**

1. Write a C++ program to generate first ‘n’ terms of Tribonacci sequence.
2. Write a C++ program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
3. Write a C++ program to find both the largest and smallest number in a list of integers.
4. Write a program to illustrate New and Delete Keywords for dynamic memory allocation.
5. Write a C++ program to find Max and Min of two given numbers using inline functions.