

Week 2 Lab Experiment using C++

1. Write a CPP program to enter two numbers and perform all arithmetic operations (+, -, *, and /) and then print the result.

A. CODE:

```
#include <iostream>
using namespace std;
int main()
{
    int a,b;
    int sum,sub,mul,mod;
    float division;
    cout <<"Enter the value of a:";
    cin >> a;
    cout <<"Enter the value of b:";
    cin >> b;
    sum=a+b;
    sub=a-b;
    mul=a*b;
    division =a/b;
    cout << "SUM" << a << " + " << b << " = " << sum << "\n";
    cout << "DIFFERENCE" << a << " - " << b << " = " << sub << "\n";
    cout << "PRODUCT" << a << " * " << b << " = " << mul << "\n";
    cout << "QUOTIENT" << a << " / " << b << " = " << division << "\n";
}
```

SAMPLE INPUT AND SAMPLE OUTPUT:

(i)

```
Enter the value of a:10
Enter the value of b:5
SUM          10 + 5 = 15
DIFFERENCE  10 - 5 = 5
PRODUCT     10 * 5 = 50
QUOTIENT    10 / 5 = 2
```

(ii)

```
Enter the value of a:12
Enter the value of b:4
SUM          12 + 4 = 16
DIFFERENCE  12 - 4 = 8
PRODUCT     12 * 4 = 48
QUOTIENT    12 / 4 = 3
```

2. Write a program in CPP to find the last prime number occurring before the entered number.

A. CODE:

```
#include <iostream>
using namespace std;
int main()
{
    int a,b=0,n,m;
    cout << " Input any number: ";
    cin >> a;
    for (n=a - 1;n>=1;n--)
    {
        for (m=2;m<n;m++)
        {
            if (n % m == 0)
                b++;
        }
        if (b == 0)
        {
            if (n == 1)
            {
                cout << "There is no prime number less than 2";
                break;
            }
            cout << n << " is the last prime number before " << a << endl;
            break;
        }
        b = 0;
    }
}
```

SAMPLE INPUT AND SAMPLE OUTPUT:

(i)

```
Input any number: 7
5 is the last prime number before 7
```

(ii)

```
Input any number: 4
3 is the last prime number before 4
```

3. Write a CPP Program to search an element in an array using the function.

A. CODE:

```
#include<iostream>
using namespace std;
void findNumber(int a[],int size,int num)
{
    int b = 0;
    for (int i = 0; i < size; i++)
    {
        if (num == a[i])
        {
            b = 1;
            break;
        }
    }
    if (b == 1)
        cout << "Element Found:" << num;
    else
        cout << "Element not found:" << num;
}
int main()
{
    int a[10],i,size,num;
    cout << "Enter size of an array:";
    cin>>size;
    for (i = 0; i < size; i++)
    {
        cout << "Enter array elements:";
        cin >> a[i];
    }

    cout << "Enter number for search:";
    cin>>num;
    findNumber(a,size,num);
}
```

SAMPLE INPUT AND SAMPLE OUTPUT:

(i)

```
Enter size of an array:2
Enter array elements:1
Enter array elements:2
Enter number for search:2
Element Found:2
```

(ii)

```
Enter size of an array:3
Enter array elements:57
Enter array elements:250
Enter array elements:932
Enter number for search:1
Element not found:1
```

4. Write a CPP Program to find the factorial of a number using recursion.

A. CODE:

```
#include<iostream>
using namespace std;
int factorial(int n);
int main()
{
    int n;
    cout << "Enter a positive integer: ";
    cin >> n;
    cout << "Factorial of " << n << " = " << factorial(n);
}
int factorial(int n)
{
    if(n > 1)
        return n * factorial(n - 1);
    else
        return 1;
}
```

SAMPLE INPUT AND SAMPLE OUTPUT:

(i)

```
Enter a positive integer: 6
Factorial of 6 = 720
```

(ii)

```
Enter a positive integer: 10
Factorial of 10 = 3628800
```