WEEK #4

OBJECTIVES

- To help the students in learning the concepts of C++.
- To help the students in learning about different operators available in C++.
- To help the students in learning the different decision-making statements and control statements used in C++.

OUTCOMES

After completing this, the students would be able to:

- Understand the concepts of C++.
- Understand the usage of various operators and their precedence in expression evaluation.
- Understand the usage of decision-making statements and control statements of C++ in real life applications.

PROBLEMS

1# Write a C++ program to check whether a number is even or odd using ternary operator.

```
#include<iostream>
using namespace std;
int main(){
        int num;
        cout<<"Enter the number: ";
        cin>>num;
                num%2==0?cout<<"Even":cout<<"Odd";
        return 0;
}
```

2# Write a C++ program to perform the addition of two numbers without using + operator.

```
#include<iostream>
using namespace std;
int main(){
        int num1, num2;

        cout<<"Enter the numbes: ";
        cin>>num1>>num2;
```

```
        for(int i=1; i<=num2; i++){
                num1++;
        }
        cout<<"The sum is : "<<num1;
}
```

3# Write a C++ program to evaluate the arithmetic expression ((a + b / c * d - e) * (f - g)). Read the values a, b, c, d, e, f, g from the standard input device.

```
#include<iostream>
using namespace std;
int main(){
        float a, b, c, d, e, f, g;
        cout<<"Enter the numbers 'a' to 'g' : ";
        cin>>a>>b>>c>>d>>e>>f>>g;

        float res =  ((a + b / c * d - e)* (f - g));

        cout<<"The result of the expression is: "<<res;
                return 0;
}
```

4# A Fibonacci sequence is defined as follows: The first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.

```
#include<iostream>
using namespace std;
int main(){
        int num;
        cout<<"Enter the the number : ";
        cin>>num;
        int n1 = 0;
```

```
        int n2 = 1;
        cout<<n1<<" ";
        cout<<n2<<" ";
        for(int i=2; i<=num; i++){
            int tmp = n2;
            n2= n1+n2;
            n1=tmp;
            //n2=res;
            cout<<n2<<" ";
        }
        return 0;
    }
```

5# Write a C++ program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

```
    // C++ program to display Prime numbers till N
    #include <bits/stdc++.h>
    using namespace std;
    // Function to check if a given number is prime
    bool isPrime(int n)
    {
        // Since 0 and 1 is not
        // prime return false.
        if(n == 1 || n == 0) return false;
        // Run a loop from 2 to n-1
        for(int i = 2; i < n; i++)
        {
            // if the number is divisible by i,
            // then n is not a prime number.
            if(n % i == 0) return false;
        }
```

```
        // Otherwise n is a prime number.
        return true;
}
// Driver code
int main()
{
        int N;
        cout<<"Enter the value of N: ";
        cin>>N;
        // Check for every number from 1 to N
        for(int i = 1; i <= N; i++)
        {
                // Check if current number is prime
                if(isPrime(i))
                {
                        cout << i << " ";
                }
        }
        return 0;
}
```

6# A character is entered through keyboard. Write a C++ program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol using if-else and switch case. The following table shows the range of ASCII values for various characters. Characters ASCII values A – Z: 65 – 90, a – z: 97 – 122, 0 – 9: 48 – 57 Special symbols 0 – 47, 58 – 64, 91 – 96, 123 – 127.

```
#include<iostream>
using namespace std;
// Printing ASCII character correspoding to a digit
void ascii(int dig){
        if(dig>=65 && dig<=90){
                cout<<(char)dig;
```

```
            cout<<" : Entered digit corresponds to upper case character";
        }
        else if(dig>=97  && dig<=122){
            cout<<(char)dig;
            cout<<" : Entered digit corresponds to small case character";
        }
        else if(dig>=48   && dig<=57){
            cout<<(char)dig;
            cout<<" : Entered digit corresponds to decimal number";
        }
        else if(dig>=0  && dig<=47 || dig>=58  && dig<= 64  || dig>=123   &&
dig<=127 ){
            cout<<(char)dig;
            cout<<" : Entered digit corresponds to special character";
        }else{
            cout<<"Please enter correct digit.";
        }
}
int main(){
        int dig;
        cout<<"Enter the ASCII digit :";
        cin>>dig;
        char ch;
        ascii(dig);
}
```

7# Write a C++ program to find the roots of a quadratic equation. 8# Write a C++ program to check whether a given 3-digit number is Armstrong number or not.

```
#include<iostream>
using namespace std;
int main(){
```

```
int num;
cout<<"Enter the number: ";
cin>>num;
        int sum = 0;
int tmp=num;
while(tmp!=0){
            int rem  = tmp%10;
        tmp = tmp/10;
        sum = sum+rem*rem*rem;
}
        if(sum==num){
        cout<<"The entered number is Armstrong number.";
}else{
        cout<<"The entered number is not Armstrong number.";
}
        return 0;
}
```