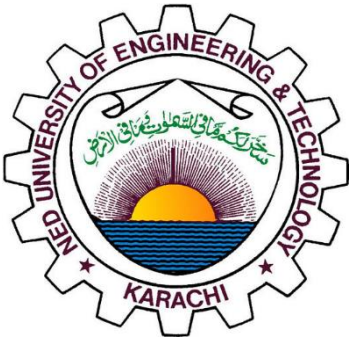

NED UNIVERSITY
OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

MUHAMMAD ABSAR UDDIN

EE – 17165

ENROL #: NED/1030/2017

EE -163 COMPUTER PROGRAMMING ASSIGNMENT

SUBMITTED TO: SIR IQBAL AZEEM

SCIENTIFIC CALCULATOR C++

CODE:

```cpp
#include <iostream>
#include <cmath>
using namespace std;
int main()
{
    int option, factorial, j;
    double num1, num2, result, result2, a, b, c;
    const double pi=3.141592;
    factorial=1;

    cout <<endl <<"\t\t\t...MUHAMMAD ABSAR UDDIN..." << endl;
    cout <<"\t\t\t...     EE - 17165     ..." << endl;
    cout <<"\t\t\t...    NED/1030/2017   ..." << endl <<endl;
    cout <<"\t\t***SCIENTIFIC CALCULATOR WITH 21 FUNCTIONS***" <<endl;
    cout <<"\t\t***      SUBMITTED TO SIR IQBAL AZEEM     ***" <<endl <<endl;
    cout <<"*********************************************************************************"<<endl<<endl;
    cout <<"1. Addition   \t 2. Subtraction \t 3. Multiplication\t4.Division "<<endl <<endl;
    cout <<"5. Power      \t 6. Square root \t 7. Cube Root     \t8.Abs Value"<<endl <<endl;
    cout <<"9. Exponential\t 10.Logarithm   \t 11.Log base 10"<<endl <<endl;
    cout <<"12.Deg to Rad \t 13.Rad to Deg" <<endl <<endl;
    cout <<"14.sin        \t 15.cos         \t 16.tan     "<<endl <<endl;
    cout <<"17.sin-1      \t 18.cos-1       \t 19.tan-1   "<<endl <<endl;
    cout <<"20.Factorial \t 21.Quadratic Eqn\t 0. Exit"<<endl <<endl;
    cout <<"*********************************************************************************";

    while(option!=0)
{
    cout <<endl <<endl <<"Enter the option you want to perform>>>" <<flush;
    cin >>option;

        if (option==1)
        {
        cout<<endl <<"Enter the first number..."; cin>>num1;
        cout<<"Enter the second number...";cin>>num2;
        result=num1+num2;
        cout <<endl <<"\t\tResult>>" "  "<<num1 <<"+" <<num2 <<" = "   <<result;
        }
        else if(option==2)
        {
        cout<<endl <<"Enter the first number..."; cin>>num1;
        cout<<"Enter the second number...";cin>>num2;
        result=num1-num2;
        cout <<endl <<"\t\tResult>>" "  "<<num1 <<"-" <<num2 <<" = "   <<result;
        }
        else if(option==3)
        {
        cout<<endl <<"Enter the first number..."; cin>>num1;
        cout<<"Enter the second number..."; cin>>num2;
        result=num1*num2;
        cout <<endl <<"\t\tResult>>" "  "<<num1 <<"*" <<num2 <<" = "   <<result;
        }
        else if(option==4)
        {
        cout<<endl <<"Enter the number..."; cin>>num1;
        cout<<"Enter the dividend..."; cin>>num2;
        result=num1/num2;
        cout <<endl <<"\t\tResult>>" "  "<<num1 <<"/" <<num2 <<" = "   <<result;
        }
        else if(option==5)
        {
        cout<<endl <<"Enter the number..."; cin>>num1;
        cout<<"Enter the power..."; cin>>num2;
        result=pow(num1,num2);
        cout <<endl <<"\t\tPower of>>" "  "<<num1 <<"^" <<num2 <<" = "   <<result;
        }
```

```
66          else if(option==6)
67          {
68          cout<<endl <<"Enter the number for square root..."; cin>>num1;
69          result=sqrt(num1);
70          cout <<endl <<"\t\tSquare root of>>"<<num1 <<" = "   <<result;
71          }
72          else if(option==7)
73          {
74          cout<<endl <<"Enter the number for cube root..."; cin>>num1;
75          result=cbrt(num1);
76          cout <<endl <<"\t\tCube root of>>"<<num1 <<" = "   <<result;
77          }
78          else if(option==8)
79          {
80          cout<<endl <<"Enter the number for Absolute Value..."; cin>>num1;
81          result=(abs(num1));
82          cout <<endl <<"\t\tAbsolute value of>>"<<num1 <<" = "   <<result;
83          }
84          else if(option==9)
85          {
86          cout<<endl <<"Enter the number for exponential..."; cin>>num1;
87          result=exp(num1);
88          cout <<endl <<"\t\tExponential of>>"  <<num1  <<" = "   <<result;
89          }
90          else if(option==10)
91          {
92          cout<<endl <<"Enter the number for logarithm..."; cin>>num1;
93          result=log(num1);
94          cout <<endl <<"\t\tLogarithm of>>"  <<num1  <<" = "   <<result;
95          }
96          else if(option==11)
97          {
98          cout<<endl <<"Enter the number for log with base 10..."; cin>>num1;
99          result=log10(num1);
100         cout <<endl <<"\t\tlog10 of>>"  <<num1  <<" = "   <<result;
101         }
102         else if(option==12)
103         {
104         cout<<endl <<"Enter the angle in degrees..."; cin>>num1;
105         result=num1*pi/180;
106         cout <<endl <<"\t\t" <<num1  <<"degrees" <<" = "   <<result <<" radians ";
107         }
108         else if(option==13)
109         {
110         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
111         result=num1*180/pi;
112         cout <<endl <<"\t\t" <<num1  <<"radians" <<" = "   <<result <<" degrees ";
113         }
114         else if(option==14)
115         {
116         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
117         result=sin(num1);
118         cout <<endl <<"\t\tSin("  <<num1 <<")"  <<" = "   <<result <<" radians ";
119         }
120         else if(option==15)
121         {
122         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
123         result=cos(num1);
124         cout <<endl <<"\t\tCos("  <<num1 <<")"  <<" = "   <<result <<" radians ";
125         }
126         else if(option==16)
127         {
128         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
129         result=tan(num1);
130         cout <<endl <<"\t\tTan("  <<num1 <<")"  <<" = "   <<result <<" radians ";
131         }
```

```
132         else if(option==17)
133         {
134         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
135         result=asin(num1);
136         cout <<endl <<"\t\tsin-1("  <<num1 <<")" <<" = "    <<result <<" radians ";
137         }
138         else if(option==18)
139         {
140         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
141         result=acos(num1);
142         cout <<endl <<"\t\tcos-1("  <<num1 <<")"  <<" = "    <<result <<" radians ";
143         }
144         else if(option==19)
145         {
146         cout<<endl <<"Enter the angle in radians..."; cin>>num1;
147         result=atan(num1);
148         cout <<endl <<"\t\ttan-1("  <<num1 <<")"  <<" = "    <<result <<" radians ";
149         }
150         else if(option==20)
151         {
152         cout<<"Enter the number for factorial..."; cin>>num1;
153             for (j=1; j<=num1; j++)
154             {
155             factorial=factorial*j;
156             }
157         cout <<endl <<"\t\tFactorial of " <<num1<<" is= "<<factorial<<endl;
158         }
159         else if(option==21)
160         {
161         cout << "Enter coefficient a...";  cin>>a;     cout<<"Enter coefficient b..."; cin>>b;
162         cout << "Enter coefficient c..."; cin>>c;
163         result = (-b + sqrt(b * b - 4 * a * c)) / (2 * a);
164         result2 = (-b - sqrt(b * b - 4 * a * c)) / (2 * a);
165         cout <<endl <<"\t\t The value of x1 = " <<result;
166         cout <<endl <<"\t\t The value of x2 = " << result2;
167         }
168 }
169     return 0;
170 }
```

OUTPUT:

```
                    ...MUHAMMAD ABSAR UDDIN...
                    :::      EE - 17165      :::
                    :::    NED/1030/2017     :::

              ***SCIENTIFIC CALCULATOR WITH 21 FUNCTIONS***
              ***       SUBMITTED TO SIR IQBAL AZEEM      ***

*********************************************************************************

1. Addition      2. Subtraction         3. Multiplication      4.Division
5. Power         6. Square root         7. Cube Root           8.Abs Value
9. Exponential   10.Logarithm           11.Log base 10
12.Deg to Rad    13.Rad to Deg
14.sin           15.cos                 16.tan
17.sin-1         18.cos-1               19.tan-1
20.Factorial     21.Quadratic Eqn       0. Exit
*********************************************************************************

Enter the option you want to perform>>>
```

```
                    ...MUHAMMAD ABSAR UDDIN...
                    :::      EE - 17165      :::
                    :::    NED/1030/2017     :::

              ***SCIENTIFIC CALCULATOR WITH 21 FUNCTIONS***
              ***       SUBMITTED TO SIR IQBAL AZEEM      ***

*********************************************************************************

1. Addition      2. Subtraction         3. Multiplication      4.Division
5. Power         6. Square root         7. Cube Root           8.Abs Value
9. Exponential   10.Logarithm           11.Log base 10
12.Deg to Rad    13.Rad to Deg
14.sin           15.cos                 16.tan
17.sin-1         18.cos-1               19.tan-1
20.Factorial     21.Quadratic Eqn       0. Exit
*********************************************************************************

Enter the option you want to perform>>>1
Enter the first number...12
Enter the second number...42
              Result>>  12+42 = 54
Enter the option you want to perform>>>
```

```
Enter the option you want to perform>>>2

Enter the first number...42
Enter the second number...13

                Result>>  42-13 = 29

Enter the option you want to perform>>>3

Enter the first number...4
Enter the second number...5

                Result>>  4*5 = 20

Enter the option you want to perform>>>4

Enter the number...100
Enter the dividend...10

                Result>>  100/10 = 10

Enter the option you want to perform>>>5

Enter the number...2
Enter the power...5

                Power of>>  2^5 = 32

Enter the option you want to perform>>>6

Enter the number for square root...144

                Square root of>>144 = 12

Enter the option you want to perform>>>7

Enter the number for cube root...64

                Cube root of>>64 = 4

Enter the option you want to perform>>>8

Enter the number for Absolute Value...-256.4

                Absolute value of>>-256.4 = 256.4

Enter the option you want to perform>>>
```

```
                Absolute value of>>-256.4 = 256.4

Enter the option you want to perform>>>9

Enter the number for exponential...2

                Exponential of>>2 = 7.38906

Enter the option you want to perform>>>10

Enter the number for logarithm...3

                Logarithm of>>3 = 1.09861

Enter the option you want to perform>>>11

Enter the number for log with base 10...2

                log10 of>>2 = 0.30103

Enter the option you want to perform>>>12

Enter the angle in degrees...45

                45degrees = 0.785398 radians

Enter the option you want to perform>>>13

Enter the angle in radians...0.785398

                0.785398radians = 45 degrees

Enter the option you want to perform>>>
```

```
Enter the angle in radians...0.785398
                0.785398radians = 45 degrees
Enter the option you want to perform>>>14
Enter the angle in radians...0.574
                Sin(0.574) = 0.542995 radians
Enter the option you want to perform>>>15
Enter the angle in radians...1.412
                Cos(1.412) = 0.15813 radians
Enter the option you want to perform>>>16
Enter the angle in radians...1
                Tan(1) = 1.55741 radians
Enter the option you want to perform>>>17
Enter the angle in radians...0.5
                sin-1(0.5) = 0.523599 radians
Enter the option you want to perform>>>18
Enter the angle in radians...1
                cos-1(1) = 0 radians
Enter the option you want to perform>>>19
Enter the angle in radians...0.75
                tan-1(0.75) = 0.643501 radians
Enter the option you want to perform>>>
```

```
Enter the option you want to perform>>>19

Enter the angle in radians...0.75

                tan-1(0.75) = 0.643501 radians

Enter the option you want to perform>>>20
Enter the number for factorial...4

                Factorial of 4 is= 24


Enter the option you want to perform>>>21
Enter coefficient a...2
Enter coefficient b...-4
Enter coefficient c...-2

                 The value of x1 = 2.41421
                 The value of x2 = -0.414214

Enter the option you want to perform>>>0

Process returned 0 (0x0)   execution time : 57.720 s
Press any key to continue.
```