Project: Calculator for Scientific Operations

Source Code:

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

int main()
{
	cout<< endl<<"************Calculator for Scientific Operations************"<<
	endl<< endl;
	int num1, num2, choice, select, exp, root;
	double angleInRadian, ln, base;
	char ch;
	do {
	cout << endl;
	cout<<"Choose any Operation..."<< endl;
	cout << setw(35) << "1 : Arithmetic Operations" << endl;
	cout << setw(37) << "2 : Trigonometric Functions" << endl;
	cout << setw(35) << "3 : Logarithmic Functions" << endl;
	cout << setw(29) << "4 : Power Functions" << endl;
	cout << setw(28) << "5 : Root Functions" << endl;
	cout << setw(18) << "6 : Exit" << endl<< endl;
	cin>>choice;

	if(choice == 1) {
	cout << endl;
	cout << setw(22) << "1 : Addition" << endl;
	cout << setw(25) << "2 : Subtraction" << endl;
	cout << setw(28) << "3 : Multiplication" << endl;
	cout << setw(22) << "4 : Division" << endl << endl;
	cin>>select;

	cout<<"\nEnter first number: ";
	cin>>num1;
	cout<<"Enter second number: ";
	cin>>num2;
	cout << endl << endl;
```

```
    switch(select) {
          case 1 :
            cout << "Result = " << num1+num2 << endl;
            break;
          case 2 :
            cout << "Result = " << num1-num2 << endl;
            break;
          case 3 :
            cout << "Result = " << num1*num2 << endl;
            break;
          case 4 :
          {

            if(num2 == 0)
            {
                  cout<<"Invalid Division!! (not divisible by 0)"<<endl;
                  cout<<"Enter another second number: ";
                  cin>>num2;
                  cout << "Result = " << num1/num2 << endl;

                    }
                    else {
                          cout << "Result = " << num1/num2 << endl;
                    }
    }
            break;
          default :
                  cout << "Invalid choice!!" << endl;
          }
}
else if(choice == 2) {
          cout << endl;
          cout << setw(27) << "1 : Sine Function" << endl;
          cout << setw(29) << "2 : Cosine Function" << endl;
          cout << setw(30) << "3 : Tangent Function" << endl;
          cin>>select;

          cout<<"\nEnter angle in Radian: ";
    cin>>angleInRadian;
    cout << endl << endl;
```

```
     switch(select) {
          case 1 :
            cout << "Result = " << sin(angleInRadian) << endl;
            break;
          case 2 :
            cout << "Result = " << cos(angleInRadian) << endl;
            break;
          case 3 :
            cout << "Result = " << tan(angleInRadian) << endl;
            break;
          default :
                  cout << "Invalid choice!!" << endl;
          }
}
else if(choice == 3) {
          cout << endl;
          cout << setw(31) << "1 : Natural Logarithm" << endl;
          cout << setw(31) << "2 : Base-10 Logarithm" << endl;
          cin>>select;

          cout<<"\nEnter log number: ";
   cin>>ln;
   cout << endl << endl;

    switch(select) {
          case 1 :
            cout << "Result = " << log(ln) << endl;
            break;
          case 2 :
            cout << "Result = " << log10(ln) << endl;
            break;
          default :
                  cout << "Invalid choice!!" << endl;
          }
}
else if(choice == 4) {
          cout << endl;
          cout << setw(28) << "1 : Power Function" << endl;
          cin>>select;
```

```
    cout<<"\nEnter base number: ";
    cin>>base;
    cout<<"Enter exponent number: ";
    cin>>exp;
    cout << endl << endl;

     switch(select) {
          case 1 :
            cout << "Result = " << pow(base,exp) << endl;
            break;
          default :
                    cout << "Invalid choice!!" << endl;
          }
}
else if(choice == 5) {
          cout << endl;
          cout << setw(25) << "1 : Square Root" << endl;
          cout << setw(23) << "2 : Cube Root" << endl;
          cin>>select;

          cout<<"\nEnter positive root number: ";
    cin>>root;
    cout << endl << endl;
    RootFunc:
    if(root>0) {
     switch(select) {
          case 1 :
            cout << "Result = " << sqrt(root) << endl;
            break;
          case 2 :
            cout << "Result = " << cbrt(root) << endl;  //cube root
            break;
          default :
                    cout << "Invalid choice!!" << endl;
          }         }
          else {
                    cout<<"Invalid Input!!\nEnter positive root number again: ";
                    cin>>root;
             goto RootFunc;
          } }
```

```
        else if(choice == 6) {
                exit(0);
        }
        else {
                cout << "Invalid choice!!" << endl;
        }

        cout<<"Press key to continue (y/Y)...";
        cin>>ch;

        } while(ch == 'y' || ch == 'Y');

        return 0;
}
```