Simple Scientific Calculator

1. Student Profile

Name : Jordanatha

ID : 2001586174

1. Program Description

This program is made as a replacement of scientific calculator in a simple way. This program can do several things that scientific calculator does such as:

1. Adding
2. Substracting
3. Dividing
4. Multiplying
5. Sin(x)
6. Cos(x)
7. Tan(x)
8. Power
9. Square root
10. Logarithm
11. Desingn / Plan

Design / Plan will be shown in the last page.

1. Function Explanation

There are several functions that work in the project will be explained.

1. Void setFunction (string, string)

This function is to set values that are entered by user to be worked in the main function. This function sets basic calculation values such as sum, substraction, division, and multiplication.

1. Void setDegreeFunction (float, float)

This function is to set values that are entered by user to be worked in the main function. This function sets trigonometry calculation values such as sin(x), cos(x), and tan(x).

1. Void setPowerFunction (int, int, float)

This function is to set values that are enterd by user to be worked in main function. This function sets power calculation values.

1. Void setSqrtFunction (int, float)

This function is to set values that are enterd by user to be worked in main function. This function sets square root calculation values.

1. Void setLogFunction (float, float)

This function is to set values that are enterd by user to be worked in main function. This function sets logarithm calculation values.

1. Double getSumFunction ( )

This function is made to return a total of sum function that called in the main function.

1. Double getMinFunction ( )

This function is made to return a total of substraction function that called in the main function.

1. Double getDivisionFunction ( )

This function is made to return a total of division function that called in the main function.

1. Double getMultiplyFunction ( )

This function is made to return a total of multiplication function that called in the main function.

1. Double getSinFunction ( )

This function is made to return a result of sin (x) that user input in the main function.

1. Double getCosFunction ( )

This function is made to return a result of cos(x) that user input in the main function.

1. Double getTanFunction ( )

This function is made to return a result of tan(x) that user input in the main function.

1. Double getPowerFunction ( )

This function is made to return a result of a power function that called in the main function.

1. Double getSqrtFunction ( )

This function is made to return a result of the square root function that called in the main function.

1. Double getLogFunction ( )

This function is made to return a result of logarithm function that called in the main function.

1. main ( )

This function is to run the whole function above, in this main function, there are menu to displayed by *cout*, user input by using *cin*, call the other function to make this calculator works. This main function is also using the *ofstream* to output the history of results in “History.txt” file in the same folder as the project.

1. What I learned?

From this project, I have learned how to apply almost all of the subjects that I have learned in the class before. This project made me understand more about the subjects that I have learned before. Still, I have to learn more about the subjects that I have not understand yet.

1. Promblem(s) that I Have Overcome

Through this project, I have overcome problem that I cannot solve before such as applying the subject that I learned like functions, class, outputfile, in codes. I also overcome my laziness to make this program.

1. Coding
2. FINALPROJ.hpp

#ifndef FINALPROJ\_hpp

#define FINALPROJ\_hpp

#include <string>

#include <iostream>

using namespace std;

class Calc {

protected :

float num;

float num1;

float num2;

float total = 0;

public :

Calc ();

// to set the basic calculation : + - \* ://

void setFunction (string, string);

// to set the power calculation : ^//

void setPowerFunction (string, string);

// to set the square root calculation//

void setSqrtFunction (string);

// to set the logarithm calculation//

void setLogFunction (string);

// to return sum result from numbers that user input in the main function//

double getSumFunction ();

// to return min result from numbers that user input in the main function//

double getMinFunction ();

// to return division result from numbers that user input in the main function//

double getDivisionFunction ();

// to return multiplication result from numbers that user input in the main function//

double getMultiplyFunction ();

// to return power result from numbers that user input in the main function //

double getPowerFunction ();

// to return the square root result from numbers that user input in the main function//

double getSqrtFunction ();

// to return the logarithm result from numbers that user input in the main function//

double getLogFunction ();

// to set the degree calculation : sin(x), cos(x), tan(x)//

void setDegreeFunction (string);

// to return the sin(x) result from number that user input in the main function//

double getSinFunction ();

// to return the cos(x) result from number that user input in the main function//

double getCosFunction ();

// to return the tan(x) result from number that user input in the main function//

double getTanFunction ();

};

#endif

1. FINALPROJ.hpp

//THIS FILE INCLUDES ALL THE FUNCTIONS THAT USED TO BE WORKED HERE//

#include <iostream>

#include <cmath>

#include <string>

#include "FINALPROJ.hpp"

using namespace std;

float PI = 3.14159265;

Calc :: Calc (){

num = 0;

num1 = 0;

num2 = 0;

}

void Calc :: setFunction (string word1, string word2){

// for the "Ans" feature //

if(word1 == "Ans" || word1 == "ans"){

num1 = total;

num2 = stof(word2);

}

else if(word2 == "Ans" || word2 == "ans"){

num2 = total;

num1 = stof(word1);

}

else{

this -> num1 = stof(word1);

this -> num2 = stof(word2);

}

}

double Calc :: getSumFunction (){

total = num1 + num2;

return total;

}

double Calc :: getMinFunction (){

total = num1-num2;

return total;

}

double Calc :: getDivisionFunction (){

total = num1/num2;

return total;

}

double Calc :: getMultiplyFunction (){

total = num1\*num2;

return total;

}

void Calc :: setDegreeFunction (string word3){

if(word3 == "Ans" || word3 == "ans"){

num = total;

}

else {

this -> num = stof(word3);

}

}

double Calc :: getSinFunction(){

total = sin (num \* PI /180);

return total;

}

double Calc :: getCosFunction (){

total = cos (num \* PI/180);

return total;

}

double Calc :: getTanFunction(){

total = tan (num \* PI /180);

return total;

}

void Calc :: setPowerFunction (string word1, string word2){

if(word1 == "Ans" || word1 == "ans"){

num1 = total;

num2 = stof(word2);

}

else if(word2 == "Ans" || word2 == "ans"){

num2 = total;

num1 = stof(word1);

}

else{

this -> num1 = stof(word1);

this -> num2 = stof(word2);

}

}

double Calc :: getPowerFunction (){

total = pow(num1,num2);

return total;

}

void Calc :: setSqrtFunction(string word3){

if(word3 == "Ans" || word3 == "ans"){

num = total;

}

else {

this -> num = stof(word3);

this -> total = total;

}

}

double Calc :: getSqrtFunction (){

total = sqrt(num);

return total;

}

void Calc :: setLogFunction (string word3){

if(word3 == "Ans" || word3 == "ans"){

num = total;

}

else {

this -> num = stof(word3);

this -> total = total;

}

}

double Calc :: getLogFunction (){

total = log10(num);

return total;

}

1. main

#include <iostream>

#include <cmath>

#include <fstream>

#include <string>

#include "FINALPROJ.hpp"

#include "FINALPROJ.cpp"

using namespace std;

int main (){

Calc obj;

char choice;

int number;

float num, num1, num2;

float total;

string Num1, Num2 , Num;

ofstream file;

cout << setw(80) << "========= WELCOME TO MY CALCULATOR =========" << endl;

// MENU.

do {

cout << "Enter math operation" << endl ;

cout << "1. +" << endl;

cout << "2. -" << endl;

cout << "3. :" << endl;

cout << "4. x" << endl;

cout << "5. sin(x)" << endl;

cout << "6. cos(x)" << endl;

cout << "7. tan(x)" << endl;

cout << "8. Power (^)" << endl;

cout << "9. Square root" << endl;

cout << "10. Logaritm" << endl;

cout << "Please input the number (1-10) : ";

cin >> number;

cout << endl ;

// connects each number with each function and save to the "History.txt"//

switch (number){

case 1:

cout << "Num 1 + Num 2 : " << endl;

cin >> Num1;

cin >> Num2;

obj.setFunction (Num1, Num2);

file.open ("History.txt");

file << "Num1 + Num2 = " << obj.getSumFunction() << endl << endl;

cout << "The result is : " << obj.getSumFunction() << endl << endl;

file.close ();

break;

case 2:

cout << "Num 1 - Num 2 : " << endl;

cin >> Num1;

cin >> Num2;

obj.setFunction(Num1, Num2);

file.open ("History.txt");

file <<"Num 1 - Num 2 = " << obj.getMinFunction() << endl << endl;

cout << "The result is : " << obj.getMinFunction() << endl << endl;

file.close ();

break;

case 3:

cout << "Num 1 : Num 2 : " << endl;

cin >> Num1;

cin >> Num2;

obj.setFunction(Num1, Num2);

file.open ("History.txt");

file << "Num 1 : Num 2 = " << obj.getDivisionFunction() << endl << endl;

cout << "The result is : " << obj.getDivisionFunction() << endl << endl;

file.close();

break;

case 4:

cout << "Num 1 \* Num 2 : " << endl;

cin >> Num1;

cin >> Num2;

obj.setFunction(Num1, Num2);

file.open ("History.txt");

file << "Num 1 \* Num 2 = " << obj.getMultiplyFunction() << endl << endl;

cout << "The result is : " << obj.getMultiplyFunction() << endl << endl;

file.close ();

break;

case 5:

cout << "Enter Degree : ";

cin >> Num;

obj.setDegreeFunction(Num);

file.open ("History.txt");

file << "Sin of (" << Num << ") is : " << obj.getSinFunction() << endl << endl;

cout << "Sin of (" << Num << ") is : " << obj.getSinFunction() << endl << endl;

file.close ();

break;

case 6:

cout << "Enter Degree : ";

cin >> Num;

obj.setDegreeFunction(Num);

file.open ("History.txt");

file << "Cos of (" << Num << ") is : " << obj.getCosFunction() << endl << endl;

cout << "Cos of (" << Num << ") is : " << obj.getCosFunction() << endl << endl;

file.close ();

break;

case 7:

cout << "Enter Degree : ";

cin >> Num;

obj.setDegreeFunction(Num);

file.open ("History.txt");

file << "Tan of (" << Num << ") is : " << obj.getTanFunction() << endl << endl;

cout << "Tan of (" << Num << ") is : " << obj.getTanFunction() << endl << endl;

file.close ();

break;

case 8:

cout << "Number : ";

cin >> Num1;

cout << "To the power of : ";

cin >> Num2;

obj.setPowerFunction(Num1, Num2);

file.open ("History.txt");

file << Num1 << " to the power of " << Num2 << " is : " << obj.getPowerFunction() << endl << endl;

cout << "The result is : " << obj.getPowerFunction() << endl << endl;

file.close ();

break;

case 9:

cout << "Enter Number : ";

cin >> Num;

obj.setSqrtFunction(Num);

file.open ("History.txt");

file << "Squaret root of " << Num << " is : " << obj.getSqrtFunction() << endl << endl;

cout << "Squaret root of " << Num << " is : " << obj.getSqrtFunction() << endl << endl;

file.close ();

break;

case 10:

cout << "Enter Number : ";

cin >> Num;

obj.setLogFunction(Num);

file.open ("History.txt");

file << "Log (" << Num << ") is : " << obj.getLogFunction() << endl << endl;

cout << "Log (" << Num << ") is : " << obj.getLogFunction() << endl << endl;

file.close();

break;

case 11:

cout << "Press ENTER to exit.";

cin.ignore();

cin.get();

exit (0);

default:

cout << "There's no such number, sorry." << endl;

cout << "Press ENTER to exit.”;

cin.ignore();

cin.get();

exit (0);

}

cout << "Do u want to add another equation? (Y/N) : ";

cin >> choice;

while (choice != 'y' && choice != 'Y' && choice != 'n' && choice != 'N'){

cout << "Error. Wrongly input the choice, please input either Y/N : ";

cin >> choice;

cout << endl;

}

}

while (choice == 'y' || choice == 'Y');

if (choice == 'N' || choice == 'n'){

cout << setw(78) << "Thank You!!";

}

else {

cout << “Error. Wrongly input the choice.”

}

Return 0;

}

DESIGN / PLAN

set( )

set( )

set( )

set( )

set( )

set( )

set( )

4

5

7

8

9

10

2

3

1

main ( )

6

set( )

set( )

set( )

get( )

get( )

get( )

get( )

get( )

get( )

get( )

get( )

get( )

get( )

return 0;

cout << obj.get() in every function.