#include <iostream>

#include <cmath> // Use <cmath> for C++

using namespace std;

float calcu[20];

float Add();

float Subtract();

float Multiplication(); // Corrected spelling

float Division();

float Sin();

float Cos();

float Tan();

float Sin\_inverse();

float Cos\_inverse();

float Tan\_inverse();

void display(float); // Change parameter type to float

int main() {

A:

cout << "\t 1: Arithmetic operation " << endl;

cout << "\t 2: Trigonometric operation " << endl;

cout << "\t 3: Exit \n";

int userinput;

cin >> userinput;

if (userinput == 1) {

B:

cout << "1 : Addition " << endl;

cout << "2 : Subtraction " << endl;

cout << "3 : Multiplication " << endl;

cout << "4 : Division" << endl;

cout << "5 : Main menu" << endl;

cout << "\t Enter your choice = ";

int choice;

cin >> choice;

if (choice == 1) {

calcu[choice] = Add();

} else if (choice == 2) {

calcu[choice] = Subtract();

} else if (choice == 3) {

calcu[choice] = Multiplication();

} else if (choice == 4) {

calcu[choice] = Division();

} else if (choice == 5) {

goto A; // Go back to main menu

} else {

cout << "Invalid choice, please try again." << endl;

goto B; // Retry the operations menu

}

display(calcu[choice]);

goto B; // Repeat the arithmetic operations menu

}

if (userinput == 2) {

c:

cout << "\t 1: Sin function" << endl;

cout << "\t 2: Cos function" << endl;

cout << "\t 3: Tan function" << endl;

cout << "\t 4: Sin\_inverse" << endl;

cout << "\t 5: Cos\_inverse" << endl;

cout << "\t 6: Tan\_inverse" << endl;

cout << "\t 7: Main menu" << endl;

int choice;

cin >> choice;

if (choice == 1) {

calcu[choice] = Sin();

} else if (choice == 2) {

calcu[choice] = Cos();

} else if (choice == 3) {

calcu[choice] = Tan();

} else if (choice == 4) {

calcu[choice] = Sin\_inverse();

} else if (choice == 5) {

calcu[choice] = Cos\_inverse();

} else if (choice == 6) {

calcu[choice] = Tan\_inverse();

} else if (choice == 7) {

goto A; // Go back to main menu

} else {

cout << "Invalid choice, please try again." << endl;

goto c; // Retry the trigonometric operations menu

}

display(calcu[choice]);

goto c; // Repeat the trigonometric operations menu

}

if (userinput == 3) {

return 0; // Exit the program

}

return 0; // Additional safety return

}

float Add() {

int a, b;

cout << "Enter first number: ";

cin >> a;

cout << "Enter second number: ";

cin >> b;

return (a + b);

}

float Subtract() {

int a, b;

cout << "Enter first number: ";

cin >> a;

cout << "Enter second number: ";

cin >> b;

return (a - b);

}

float Multiplication() {

int a, b;

cout << "Enter first number: ";

cin >> a;

cout << "Enter second number: ";

cin >> b;

return (a \* b);

}

float Division() {

int a, b;

cout << "Enter first number: ";

cin >> a;

cout << "Enter second number: ";

cin >> b;

if (b != 0) {

return (float)a / b; // Cast to float for accurate division

} else {

cout << "Error: Division by zero!" << endl;

return 0;

}

}

float Sin() {

float a;

cout << "Enter value in radians: ";

cin >> a;

return sin(a);

}

float Cos() {

float a;

cout << "Enter value in radians: ";

cin >> a;

return cos(a);

}

float Tan() {

float a;

cout << "Enter value in radians: ";

cin >> a;

return tan(a);

}

float Sin\_inverse() {

float a;

cout << "Enter value (must be between -1 and 1): ";

cin >> a;

if (a >= -1 && a <= 1) {

return asin(a);

} else {

cout << "Error: Input out of range!" << endl;

return 0;

}

}

float Cos\_inverse() {

float a;

cout << "Enter value (must be between -1 and 1): ";

cin >> a;

if (a >= -1 && a <= 1) {

return acos(a);

} else {

cout << "Error: Input out of range!" << endl;

return 0;

}

}

float Tan\_inverse() {

float a;

cout << "Enter value: ";

cin >> a;

return atan(a);

}

void display(float result) {

cout << "Result: " << result << endl;

}