This program provides a basic interactive console-based calculator that performs addition, subtraction, multiplication, and division. It repeatedly displays a menu, prompts the user for input, performs the chosen operation, and displays the result. The loop continues until the user chooses to exit.

1. Preprocessor Directives and Namespace.

#include <iostream>

using namespace std;

 #include <iostream>: This includes the standard input-output stream library, which allows the program to use cin and cout.

 using namespace std;: This allows the program to use elements from the std namespace directly without prefixing them with std::.

1. Function Definitions

void displayMenu() {

cout << "Welcome to the Digital Calculator" << endl;

cout << "Select an operation to perform:" << endl;

cout << "1. Addition (+)" << endl;

cout << "2. Subtraction (-)" << endl;

cout << "3. Multiplication (\*)" << endl;

cout << "4. Division (/)" << endl;

cout << "5. Exit" << endl;

}

* This function displays the menu with available operations for the calculator.

Arithmetic Functions

double add(double a, double b) {

return a + b;

}

double subtract(double a, double b) {

return a - b;

}

double multiply(double a, double b) {

return a \* b;

}

double divide(double a, double b) {

if (b != 0)

return a / b;

else {

cout << "Error: Division by zero is not allowed." << endl;

return 0;

}

}

 These functions perform basic arithmetic operations: addition, subtraction, multiplication, and division.

 The divide function includes a check to prevent division by zero and outputs an error message if the denominator is zero.

1. Main Function

int main() {

int choice;

double num1, num2;

bool running = true;

while (running) {

displayMenu();

cout << "Enter your choice: ";

cin >> choice;

if (choice == 5) {

running = false;

cout << "Exiting the calculator. Goodbye!" << endl;

continue;

}

cout << "Enter the first number: ";

cin >> num1;

cout << "Enter the second number: ";

cin >> num2;

switch (choice) {

case 1:

cout << "Result: " << add(num1, num2) << endl;

break;

case 2:

cout << "Result: " << subtract(num1, num2) << endl;

break;

case 3:

cout << "Result: " << multiply(num1, num2) << endl;

break;

case 4:

cout << "Result: " << divide(num1, num2) << endl;

break;

default:

cout << "Invalid choice! Please try again." << endl;

break;

}

cout << endl;

}

return 0;

}

 The main function is the entry point of the program.

 It declares variables for the user's choice, two numbers for the operations, and a boolean running to control the loop.

 The program enters a while loop that continues running until running is set to false.

 Inside the loop:

* The menu is displayed by calling displayMenu().
* The user is prompted to enter their choice.
* If the user enters 5, the program sets running to false and exits the loop after displaying a goodbye message.
* Otherwise, the user is prompted to enter two numbers.
* A switch statement determines which arithmetic operation to perform based on the user's choice and calls the corresponding function.
* The result of the operation is displayed.
* If the user enters an invalid choice, an error message is displayed.