main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;

int main() {
    string name;
    int age;
    cout << "Enter your name: ";
    cin >> name;
    cout << "Enter your age: ";
    cin >> age;
    cout << "Hello " << name << ", you are " << age << " years old!" <<
        endl;

    return 0;
}
```

Output

Clear

```
Enter your name: Prateek
Enter your age: 18
Hello Prateek, you are 18 years old!


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    int num1, num2;
    cout << "Enter the first integer: ";
    cin >> num1;
    cout << "Enter the second integer: ";
    cin >> num2;
    int sum = num1 + num2;
    cout << "The sum of " << num1 << " and " << num2 << " is: " << sum <<
        endl;
    return 0;
}
```

Output Clear

```
Enter the first integer: 45
Enter the second integer: 98
The sum of 45 and 98 is: 143


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    double num1, num2;
    char op;
    cout << "Enter first number: ";
    cin >> num1;
    cout << "Enter second number: ";
    cin >> num2;
    cout << "Enter operator (+, -, *, /): ";
    cin >> op;
    switch(op) {
        case '+':
            cout << "Result: " << num1 + num2 << endl;
            break;
        case '-':
            cout << "Result: " << num1 - num2 << endl;
            break;
        case '*':
            cout << "Result: " << num1 * num2 << endl;
            break;
        case '/':
            if(num2 != 0)
                cout << "Result: " << num1 / num2 << endl;
            else
                cout << "Error! Division by zero." << endl;
            break;
        default:
            cout << "Invalid operator!" << endl;
    }
return 0;
}
```

Output

Clear

```
Enter first number: 5
Enter second number: 2
Enter operator (+, -, *, /): /
Result: 2.5


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
#include <iomanip>
using namespace std;
int main() {
    float num1, num2;
    cout << "Enter the first floating-point number: ";
    cin >> num1;

    cout << "Enter the second floating-point number: ";
    cin >> num2;
    if (num2 != 0) {
        float result = num1 / num2;
        cout << fixed << setprecision(2);
        cout << "The division result is: " << result << endl;
    } else {
        cout << "Error: Division by zero is not allowed!" << endl;
    }

    return 0;
}
```

Output

Clear

```
Enter first number: 5
Enter second number: 2
Enter operator (+, -, *, /): +
Result: 7


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
#include <cmath>
using namespace std;
int main() {
    const double RATE_OF_INTEREST = 5.0;
    const int TIME_PERIOD = 10;
    double principal, amount, interest;
    cout << "Enter the principal amount: ";
    cin >> principal;
    amount = principal * pow((1 + RATE_OF_INTEREST / 100), TIME_PERIOD);
    interest = amount - principal;
    cout << "Principal amount: " << principal << endl;
    cout << "Rate of interest: " << RATE_OF_INTEREST << "%" << endl;
    cout << "Time period: " << TIME_PERIOD << " years" << endl;
    cout << "Compound interest: " << interest << endl;
    cout << "Total amount after " << TIME_PERIOD << " years: " << amount << endl;
return 0;
}
```

Output

Clear

```
Enter the principal amount: 20000
Principal amount: 20000
Rate of interest: 5%
Time period: 10 years
Compound interest: 12577.9
Total amount after 10 years: 32577.9


--- Code Execution Successful ---
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    const double LENGTH_MULTIPLIER = 1.0;
    const double WIDTH_MULTIPLIER = 1.0;
    double length, width;
    cout << "Enter the length of the rectangle: ";
    cin >> length;
    cout << "Enter the width of the rectangle: ";
    cin >> width;
    double area = length * width;
    double perimeter = 2 * (length + width);
    cout << "Area of the rectangle: " << area << endl;
    cout << "Perimeter of the rectangle: " << perimeter << endl;
    return 0;
}
```

Output

Clear

```
Enter the length of the rectangle: 15
Enter the width of the rectangle: 12
Area of the rectangle: 180
Perimeter of the rectangle: 54


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    double num1, num2;
    cout << "Enter first number: ";
    cin >> num1;
    cout << "Enter second number: ";
    cin >> num2;
    double temp = num1;
    num1 = num2;
    num2 = temp;
    cout << "After swapping using a temporary variable:" << endl;
    cout << "First number: " << num1 << endl;
    cout << "Second number: " << num2 << endl;
    num1 = num1 + num2;
    num2 = num1 - num2;
    num1 = num1 - num2;
    cout << "After swapping without using a temporary variable:" << endl;
    cout << "First number: " << num1 << endl;
    cout << "Second number: " << num2 << endl;
return 0;
}
```

Output

Clear

```
Enter first number: 5
Enter second number: 8
After swapping using a temporary variable:
First number: 8
Second number: 5
After swapping without using a temporary variable:
First number: 5
Second number: 8


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    string firstName;
    int age;
    cout << "Enter your first name: ";
    cin >> firstName;
    cout << "Enter your age: ";
    cin >> age;
    int daysLived = age * 365;
    cout << "Hello " << firstName << ", you are " << age << " years old
        and have lived for approximately " << daysLived << " days." <<
        endl;
    return 0;
}
```

Output

Clear

```
Enter your first name: Prateek
Enter your age: 18
Hello Prateek, you are 18 years old and have lived for approximately 6570 days.


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
#include <iomanip>
using namespace std;
int main() {
    char character;
    int integer;
    float floatingPoint;
    cout << "Enter a character: ";
    cin >> character;
    cout << "Enter an integer: ";
    cin >> integer;
    cout << "Enter a floating-point number: ";
    cin >> floatingPoint;
    cout << "\nFormatted output:\n";
    cout << "Character\tInteger\tFloat\n";
    cout << "---------------------------------\n";
    cout << character << "\t\t" << integer << "\t\t" << fixed <<
        setprecision(2) << floatingPoint << endl;
return 0;
}
```

Output

Clear

```
Enter a character: a
Enter an integer: 5
Enter a floating-point number: 2.0

Formatted output:
Character   Integer Float
---------------------------------
a       5       2.00


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;

int main() {
    int num1, num2;
    cout << "Enter the first integer: ";
    cin >> num1;
    cout << "Enter the second integer: ";
    cin >> num2;
    if (num2 != 0 && num1 % num2 == 0) {
        cout << num1 << " is a multiple of " << num2 << "." << endl;
    } else if (num2 == 0) {
        cout << "Error: Division by zero is not allowed!" << endl;
    } else {
        cout << num1 << " is not a multiple of " << num2 << "." << endl;
    }
    return 0;
}
```

Output

Clear

```
Enter the first integer: 25
Enter the second integer: 32
25 is not a multiple of 32.


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int countBits(int num) {
    int count = 0;
    while (num) {
        count += num & 1;
        num >>= 1;
    }
    return count;
}
int main() {
    int number;
    cout << "Enter an integer: ";
    cin >> number;
    int result = countBits(number);
    cout << "The number of 1 bits in " << number << " is: " << result <<
        endl;
    return 0;
}
```

Output

Clear

```
Enter an integer: 29
The number of 1 bits in 29 is: 4


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
#include <cmath>
using namespace std;
int main() {
    double a, b, c;
    double discriminant, root1, root2;
    cout << "Enter coefficient a: ";
    cin >> a;
    cout << "Enter coefficient b: ";
    cin >> b;
    cout << "Enter coefficient c: ";
    cin >> c;
    if (a == 0) {
        cout << "Not a quadratic equation, as 'a' cannot be zero." << endl;
        return 0;
    }
    discriminant = b * b - 4 * a * c;
    if (discriminant > 0) {
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        cout << "The equation has real and distinct roots." << endl;
        cout << "Root 1 = " << root1 << endl;
        cout << "Root 2 = " << root2 << endl;
    }
    else if (discriminant == 0) {
        root1 = -b / (2 * a);
        cout << "The equation has real and equal roots." << endl;
        cout << "Root 1 = Root 2 = " << root1 << endl;
    }
    else {
        double realPart = -b / (2 * a);
        double imaginaryPart = sqrt(-discriminant) / (2 * a);
        cout << "The equation has complex roots." << endl;
        cout << "Root 1 = " << realPart << " + " << imaginaryPart << "i" << endl;
        cout << "Root 2 = " << realPart << " - " << imaginaryPart << "i" << endl;
  }
return 0;
}
```

Output

Clear

```
Enter coefficient a: 5
Enter coefficient b: 1
Enter coefficient c: 6
The equation has complex roots.
Root 1 = -0.1 + 1.09087i
Root 2 = -0.1 - 1.09087i


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    int option;
    double balance = 1000.0;
    double depositAmount, withdrawalAmount;
    do {
        cout << "\nATM Menu:\n";
        cout << "1. Withdrawal\n";
        cout << "2. Deposit\n";
        cout << "3. Balance Inquiry\n";
        cout << "4. Exit\n";
        cout << "Enter your option (1-4): ";
        cin >> option;
        if (cin.fail()) {
            cin.clear();
            cout << "Invalid input! Please enter a valid option.\n";
            continue;
        }
        switch (option) {
            case 1:
                cout << "Enter amount to withdraw: ";
                cin >> withdrawalAmount;
                if (cin.fail() || withdrawalAmount <= 0) {
                    cin.clear();
                    cout << "Invalid amount entered. Please enter a valid withdrawal amount.\n";
                    break;
                }
                if (withdrawalAmount > balance) {
                    cout << "Error: Insufficient balance.\n";
} else {
                    balance -= withdrawalAmount;
                    cout << "You have successfully withdrawn " << withdrawalAmount << ".\n";
                    cout << "New balance: " << balance << "\n";
                }
                break;
            case 2:
                cout << "Enter amount to deposit: ";
                cin >> depositAmount;
                if (cin.fail() || depositAmount <= 0) {
                    cin.clear();
                    cout << "Invalid amount entered. Please enter a valid deposit amount.\n";
                    break;
                }
                balance += depositAmount;
                cout << "You have successfully deposited " << depositAmount << ".\n";
                cout << "New balance: " << balance << "\n";
                break;
            case 3:
                cout << "Your current balance is: " << balance << "\n";
                break;
            case 4:
                cout << "Thank you for using the ATM. Goodbye!\n";
                break;
            default:
                cout << "Invalid option. Please select a valid option (1-4).\n";
        }
    } while (option != 4);
return 0;
}
```

Output

```
ATM Menu:
1. Withdrawal
2. Deposit
3. Balance Inquiry
4. Exit
Enter your option (1-4): 1
Enter amount to withdraw: 2000
ERROR!
Error: Insufficient balance.

ATM Menu:
1. Withdrawal
2. Deposit
3. Balance Inquiry
4. Exit
Enter your option (1-4): 2
Enter amount to deposit: 2000
You have successfully deposited 2000.
New balance: 3000

ATM Menu:
1. Withdrawal
2. Deposit
3. Balance Inquiry
4. Exit
Enter your option (1-4): 4
Thank you for using the ATM. Goodbye!


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    double side1, side2, side3;
    cout << "Enter the lengths of the three sides of the triangle:\n";
    cout << "Side 1: ";
    cin >> side1;
    cout << "Side 2: ";
    cin >> side2;
    cout << "Side 3: ";
    cin >> side3;
    if (side1 <= 0 || side2 <= 0 || side3 <= 0) {
        cout << "Invalid input! Side lengths must be greater than zero.\n";
    } else if ((side1 + side2 > side3) && (side2 + side3 > side1) && (side3 + side1 > side2)) {
        if (side1 == side2 && side2 == side3) {
            cout << "The triangle is Equilateral.\n";
        } else if (side1 == side2 || side2 == side3 || side3 == side1) {
            cout << "The triangle is Isosceles.\n";
        } else {
            cout << "The triangle is Scalene.\n";
        }
    } else {
        cout << "The sides do not form a valid triangle. The sum of any two sides must be greater than the third side.\n";
    }
return 0;
}
```

Output

Clear

```
Enter the lengths of the three sides of the triangle:
Side 1: 52
Side 2: 44
Side 3: 6
The sides do not form a valid triangle. The sum of any two sides must be greater than the
    third side.


=== Code Execution Successful ===
```

main.cpp

Share Run

```cpp
#include <iostream>
using namespace std;
int main() {
    int a, b, c, d;
    cout << "Enter value for a: ";
    cin >> a;
    cout << "Enter value for b: ";
    cin >> b;
    cout << "Enter value for c: ";
    cin >> c;
    cout << "Enter value for d: ";
    cin >> d;
    int result = (a * a * b) + (c & d);
    cout << "The result of the expression (a² * b + c & d) is: " << result
        << endl;
return 0;
}
```

Output

Clear

```
Enter value for a: 65
Enter value for b: 84
Enter value for c: 25
Enter value for d: 66
The result of the expression (a² * b + c & d) is: 354900


=== Code Execution Successful ===
```