Activity No. 3.1	
Hands-on Activity 3.1: Control Structures (part 2)	
Course Code: CPE007	**Program:** Computer Engineering
Course Title: Programming Logic and Design	**Date Performed:** 8/15/2025
Section: CPE11S1	**Date Submitted:** 8/18/2025
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Output

1. Develop a C++ program that will determine if a department store customer has exceeded the credit limit on a charge account. For each customer, the following facts are available:
    1. Account number
    2. Balance at the beginning of the month
    3. Total of all items charged by this customer this month
    4. Total of all credits applied to this customer's account this month
    5. Allowed credit limit

The program should input each of these facts, calculate the new balance (=*beginning balance +charges -credits),* and determine if the new balance exceeds the customer's credit limit. For those customers whose credit limit is exceeded, the program should display the customer's account number, credit limit, new balance and the message "Credit limit exceeded."

Sample output:
Enter account number (-1 to end): 100
Enter beginning balance: 5394.78
Enter total charges: 1000.00
Enter total credits: 500.00
Enter credit limit: 5500.00
Account: 100
Credit limit: 5500.00
Balance: 5894.78
Credit Limit Exceeded.

Enter account number (-1 to end): 200
Enter beginning balance: 1000.00
Enter total charges: 123.45
Enter total credits: 321.00
Enter credit limit: 1500.00

Enter account number (-1 to end): 300
Enter beginning balance: 500.00
Enter total charges: 274.73
Enter total credits: 100.00
Enter credit limit: 800.00

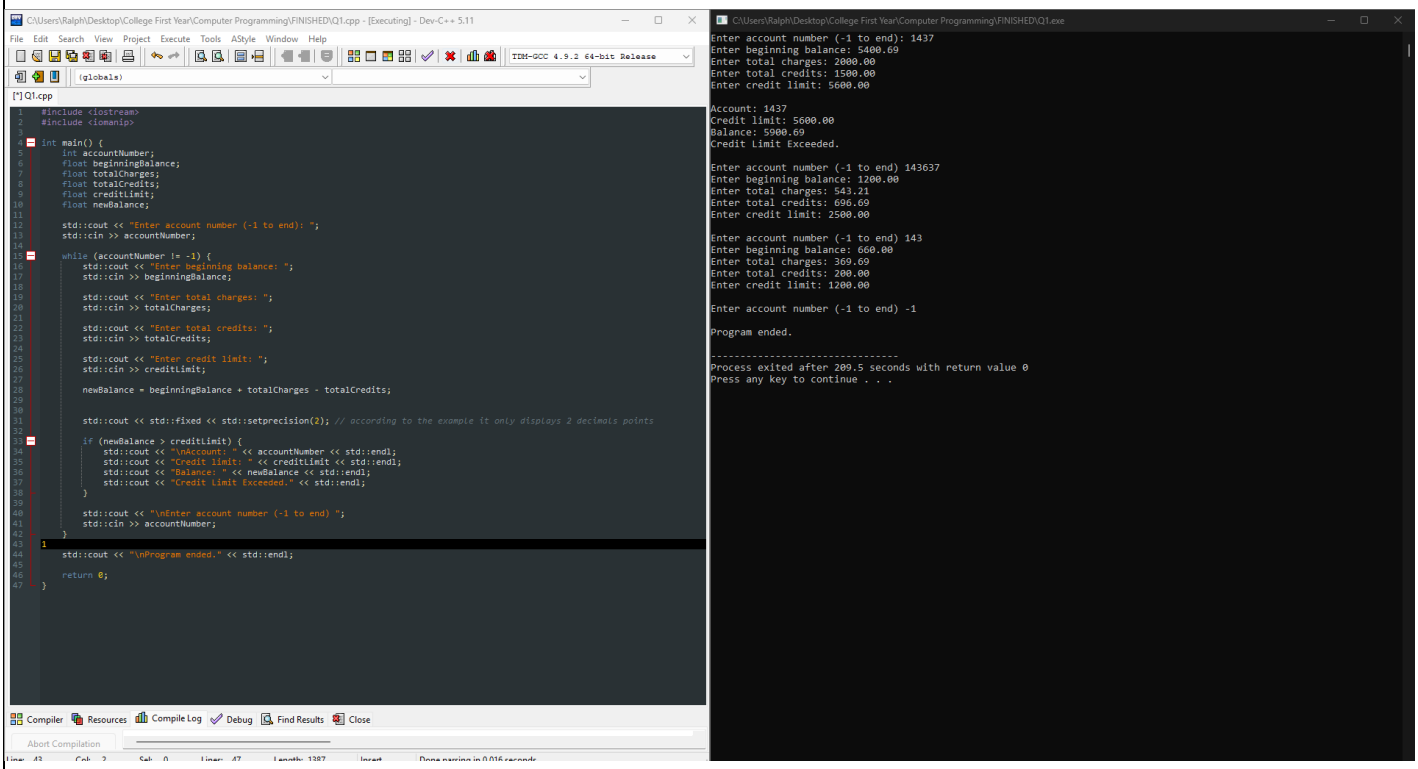
Enter account number (-1 to end): -1
Program ends.

CODE:

```
#include <iostream>
#include <iomanip>
```

```
int main() {
    int accountNumber;
    float beginningBalance;
    float totalCharges;
    float totalCredits;
    float creditLimit;
    float newBalance;

    std::cout << "Enter account number (-1 to end): ";
    std::cin >> accountNumber;

    while (accountNumber != -1) {
        std::cout << "Enter beginning balance: ";
        std::cin >> beginningBalance;

        std::cout << "Enter total charges: ";
        std::cin >> totalCharges;

        std::cout << "Enter total credits: ";
        std::cin >> totalCredits;

        std::cout << "Enter credit limit: ";
        std::cin >> creditLimit;

        newBalance = beginningBalance + totalCharges - totalCredits;


        std::cout << std::fixed << std::setprecision(2); // according to the example it only displays 2 decimals points

        if (newBalance > creditLimit) {
            std::cout << "\nAccount: " << accountNumber << std::endl;
            std::cout << "Credit limit: " << creditLimit << std::endl;
            std::cout << "Balance: " << newBalance << std::endl;
            std::cout << "Credit Limit Exceeded." << std::endl;
        }

        std::cout << "\nEnter account number (-1 to end) ";
        std::cin >> accountNumber;
    }
1
    std::cout << "\nProgram ended." << std::endl;

    return 0;
}
```

RESULT:



2. Because of the price of gasoline, drivers are concerned with the mileage obtained by their automobiles. One driver has kept track of several tankfuels of gasoline by recording miles driven and gallons used for each tankful. Develop a program that will input the miles driven and gallons used for each tankful. The program should calculate and display the miles per gallon obtained for each tankful. After processing all input information, the program should calculate and print the combined miles per gallon obtained for all tank fuels.

Sample output:

Enter the gallons used (-1 to end): 12.8
Enter the miles driven: 287
The miles / gallon for this tank was 22.421875

Enter the gallons used (-1 to end): 10.3
Enter the miles driven: 200
The miles / gallon for this tank was 19.417475

Enter the gallons used (-1 to end): 5
Enter the miles driven: 120
The miles / gallon for this tank was 24.000000

Enter the gallons used (-1 to end):

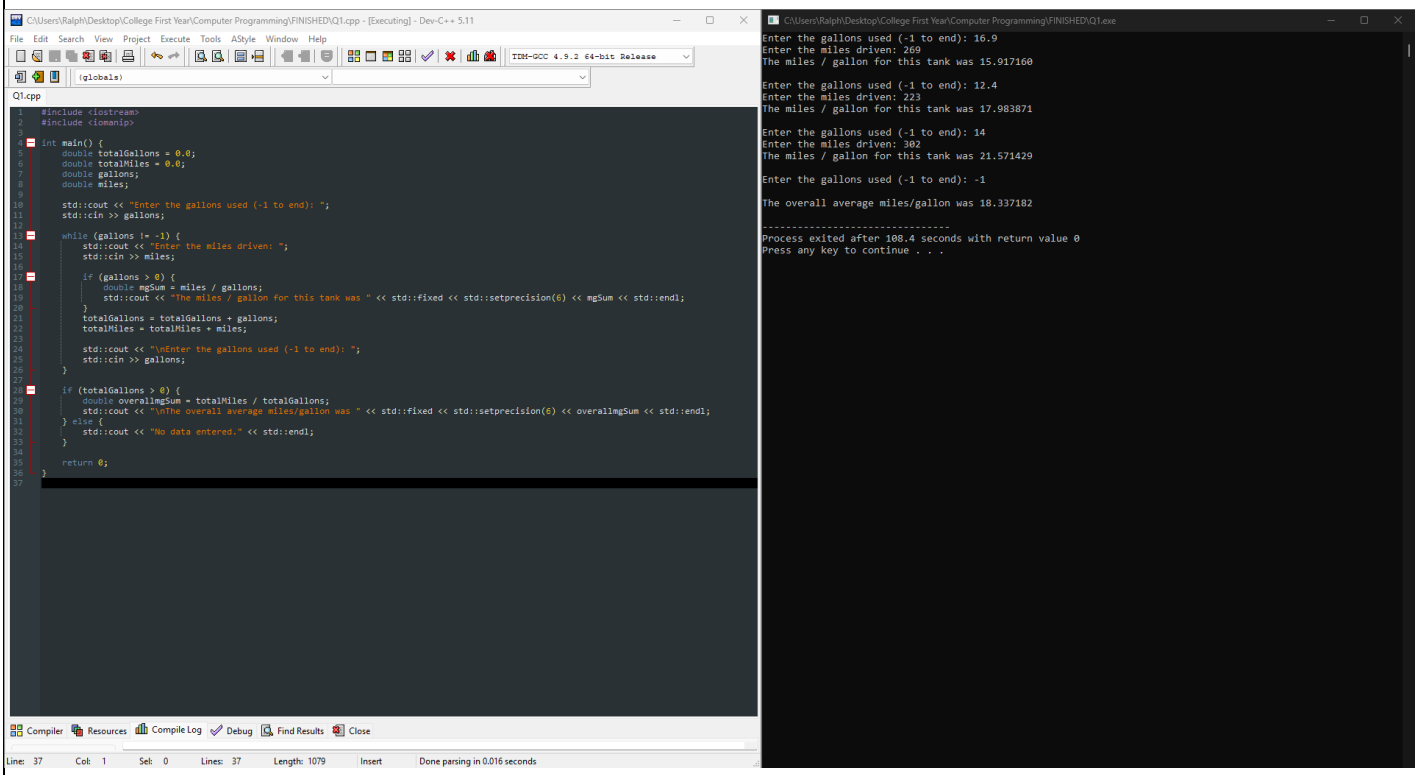
The overall average miles/gallon was 21.601423

CODE:

```
#include <iostream>
#include <iomanip>

int main() {
    double totalGallons = 0.0;
    double totalMiles = 0.0;
```

```
    double gallons;
    double miles;

    std::cout << "Enter the gallons used (-1 to end): ";
    std::cin >> gallons;

    while (gallons != -1) {
        std::cout << "Enter the miles driven: ";
        std::cin >> miles;

        if (gallons > 0) {
            double mgSum = miles / gallons;
            std::cout << "The miles / gallon for this tank was " << std::fixed << std::setprecision(6) << mgSum << std::endl;
        }
        totalGallons = totalGallons + gallons;
        totalMiles = totalMiles + miles;

        std::cout << "\nEnter the gallons used (-1 to end): ";
        std::cin >> gallons;
    }

    if (totalGallons > 0) {
        double overallmgSum = totalMiles / totalGallons;
        std::cout << "\nThe overall average miles/gallon was " << std::fixed << std::setprecision(6) << overallmgSum <<
std::endl;
    } else {
        std::cout << "No data entered." << std::endl;
    }

    return 0;
}
```

RESULT:



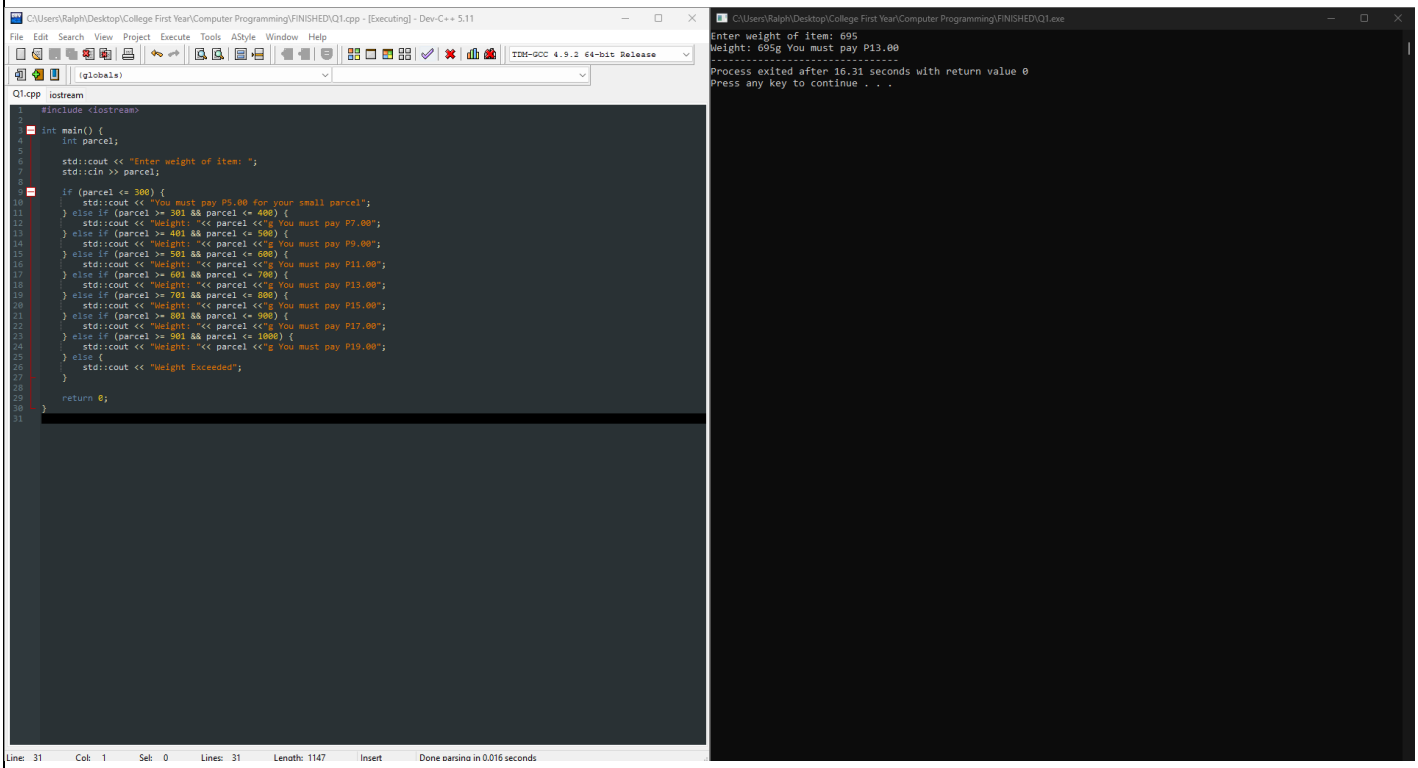
3. Create a program that will calculate the cost of sending a small parcel. The post office charges P5.00 for the first 300g, and P2.00 for every 100g thereafter (rounded up), up to a maximum weight of 1000g.

CODE:

```
#include <iostream>

int main() {
    int parcel;

    std::cout << "Enter weight of item: ";
    std::cin >> parcel;

    if (parcel <= 300) {
        std::cout << "You must pay P5.00 for your small parcel";
    } else if (parcel >= 301 && parcel <= 400) {
        std::cout << "Weight: "<< parcel <<"g You must pay P7.00";
    } else if (parcel >= 401 && parcel <= 500) {
        std::cout << "Weight: "<< parcel <<"g You must pay P9.00";
    } else if (parcel >= 501 && parcel <= 600) {
        std::cout << "Weight: "<< parcel <<"g You must pay P11.00";
    } else if (parcel >= 601 && parcel <= 700) {
        std::cout << "Weight: "<< parcel <<"g You must pay P13.00";
    } else if (parcel >= 701 && parcel <= 800) {
        std::cout << "Weight: "<< parcel <<"g You must pay P15.00";
    } else if (parcel >= 801 && parcel <= 900) {
        std::cout << "Weight: "<< parcel <<"g You must pay P17.00";
    } else if (parcel >= 901 && parcel <= 1000) {
        std::cout << "Weight: "<< parcel <<"g You must pay P19.00";
    } else {
```

```
        std::cout << "Weight Exceeded";
    }

    return 0;

}
```

RESULT:



4. Write a program that displays a menu for simple conversion such as the follow:
   (1) cm – inches
   (2) inches – cm
   (3) feet – meter
   (4) meter - feet

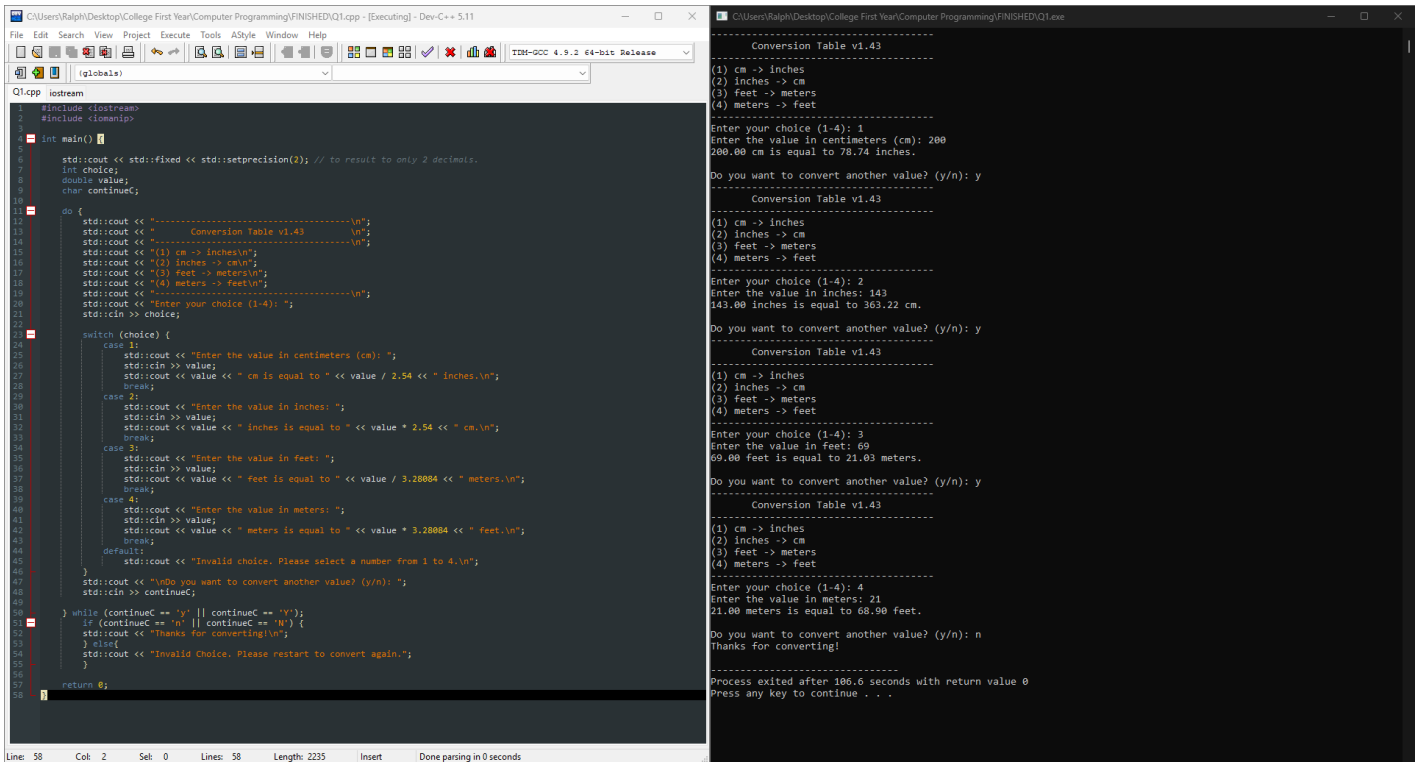
Once selected, user will be asked to enter a float and be converted. After the conversion the user would be ask to convert another until the user don't want anymore. Display your samples for all conversions

CODE:

```
#include <iostream>
#include <iomanip>

int main() {

    std::cout << std::fixed << std::setprecision(2); // to result to only 2 decimals.
    int choice;
    double value;
    char continueC;

    do {
        std::cout << "-----------------------------------\n";
        std::cout << "       Conversion Table v1.43        \n";
```

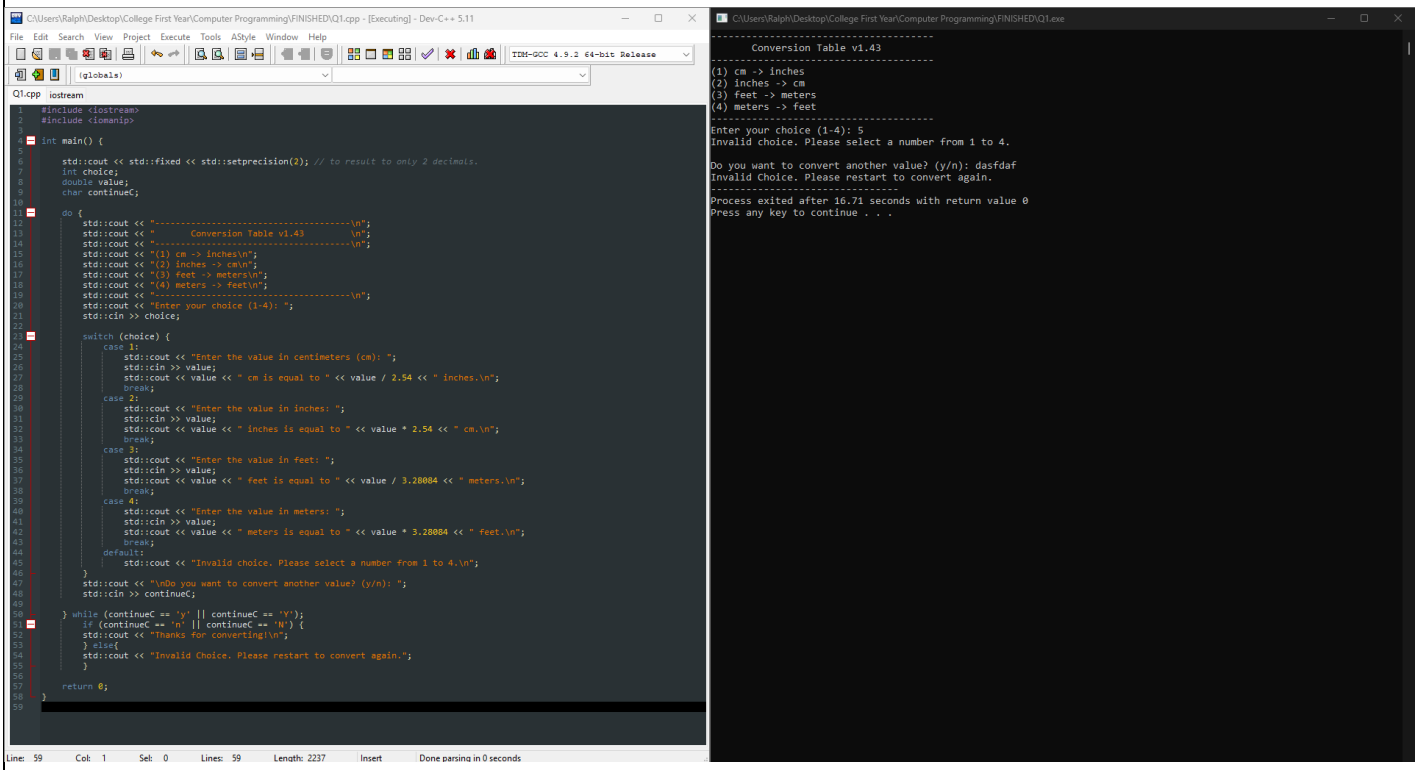
```
        std::cout << "-------------------------------------\n";
        std::cout << "(1) cm -> inches\n";
        std::cout << "(2) inches -> cm\n";
        std::cout << "(3) feet -> meters\n";
        std::cout << "(4) meters -> feet\n";
        std::cout << "-------------------------------------\n";
        std::cout << "Enter your choice (1-4): ";
        std::cin >> choice;

        switch (choice) {
            case 1:
                std::cout << "Enter the value in centimeters (cm): ";
                std::cin >> value;
                std::cout << value << " cm is equal to " << value / 2.54 << " inches.\n";
                break;
            case 2:
                std::cout << "Enter the value in inches: ";
                std::cin >> value;
                std::cout << value << " inches is equal to " << value * 2.54 << " cm.\n";
                break;
            case 3:
                std::cout << "Enter the value in feet: ";
                std::cin >> value;
                std::cout << value << " feet is equal to " << value / 3.28084 << " meters.\n";
                break;
            case 4:
                std::cout << "Enter the value in meters: ";
                std::cin >> value;
                std::cout << value << " meters is equal to " << value * 3.28084 << " feet.\n";
                break;
            default:
                std::cout << "Invalid choice. Please select a number from 1 to 4.\n";
        }
        std::cout << "\nDo you want to convert another value? (y/n): ";
        std::cin >> continueC;

    } while (continueC == 'y' || continueC == 'Y');
        if (continueC == 'n' || continueC == 'N') {
        std::cout << "Thanks for converting!\n";
        } else{
        std::cout << "Invalid Choice. Please restart to convert again.";
        }

    return 0;

}
```

RESULT:



```
C:\Users\Ralph\Desktop\College First Year\Computer Programming\FINISHED\Q1.exe
----------------------------------------
      Conversion Table v1.43
----------------------------------------
(1) cm -> inches
(2) inches -> cm
(3) feet -> meters
(4) meters -> feet
----------------------------------------
Enter your choice (1-4): 1
Enter the value in centimeters (cm): 200
200.00 cm is equal to 78.74 inches.

Do you want to convert another value? (y/n): y
----------------------------------------
      Conversion Table v1.43
----------------------------------------
(1) cm -> inches
(2) inches -> cm
(3) feet -> meters
(4) meters -> feet
----------------------------------------
Enter your choice (1-4): 2
Enter the value in inches: 143
143.00 inches is equal to 363.22 cm.

Do you want to convert another value? (y/n): y
----------------------------------------
      Conversion Table v1.43
----------------------------------------
(1) cm -> inches
(2) inches -> cm
(3) feet -> meters
(4) meters -> feet
----------------------------------------
Enter your choice (1-4): 3
Enter the value in feet: 69
69.00 feet is equal to 21.03 meters.

Do you want to convert another value? (y/n): y
----------------------------------------
      Conversion Table v1.43
----------------------------------------
(1) cm -> inches
(2) inches -> cm
(3) feet -> meters
(4) meters -> feet
----------------------------------------
Enter your choice (1-4): 4
Enter the value in meters: 21
21.00 meters is equal to 68.90 feet.

Do you want to convert another value? (y/n): n
Thanks for converting!

--------------------------------
Process exited after 106.6 seconds with return value 0
Press any key to continue . . .
```

INPUTING RANDOM VALUES



```
C:\Users\Ralph\Desktop\College First Year\Computer Programming\FINISHED\Q1.exe
----------------------------------------
      Conversion Table v1.43
----------------------------------------
(1) cm -> inches
(2) inches -> cm
(3) feet -> meters
(4) meters -> feet
----------------------------------------
Enter your choice (1-4): 5
Invalid choice. Please select a number from 1 to 4.

Do you want to convert another value? (y/n): dasfdaf
Invalid Choice. Please restart to convert again.
--------------------------------
Process exited after 16.71 seconds with return value 0
Press any key to continue . . .
```

5. Write a program that displays a menu for simple computation of formula such as the following:

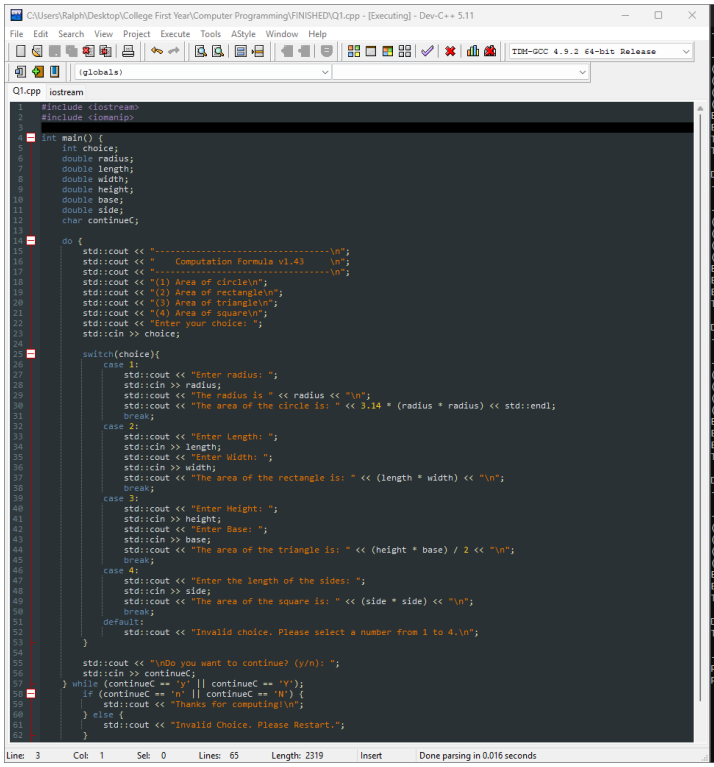
- (1) Area of circle, will ask for radius from user
- (2) Area of rectangle, will ask for L and W
- (3) Area of triangle, will ask for B and H
- (4) Area of square - feet, will ask for S

CODE:

```
#include <iostream>
#include <iomanip>

int main() {
    int choice;
    double radius;
    double length;
    double width;
    double height;
    double base;
    double side;
    char continueC;

    do {
        std::cout << "---------------------------------\n";
        std::cout << "    Computation Formula v1.43     \n";
        std::cout << "---------------------------------\n";
        std::cout << "(1) Area of circle\n";
        std::cout << "(2) Area of rectangle\n";
        std::cout << "(3) Area of triangle\n";
        std::cout << "(4) Area of square\n";
        std::cout << "Enter your choice: ";
        std::cin >> choice;

        switch(choice){
            case 1:
                std::cout << "Enter radius: ";
                std::cin >> radius;
                std::cout << "The radius is " << radius << "\n";
                std::cout << "The area of the circle is: " << 3.14 * (radius * radius) << std::endl;
                break;
            case 2:
                std::cout << "Enter Length: ";
                std::cin >> length;
                std::cout << "Enter Width: ";
                std::cin >> width;
                std::cout << "The area of the rectangle is: " << (length * width) << "\n";
                break;
            case 3:
                std::cout << "Enter Height: ";
                std::cin >> height;
                std::cout << "Enter Base: ";
                std::cin >> base;
                std::cout << "The area of the triangle is: " << (height * base) / 2 << "\n";
                break;
            case 4:
                std::cout << "Enter the length of the sides: ";
                std::cin >> side;
                std::cout << "The area of the square is: " << (side * side) << "\n";
                break;
            default:
```

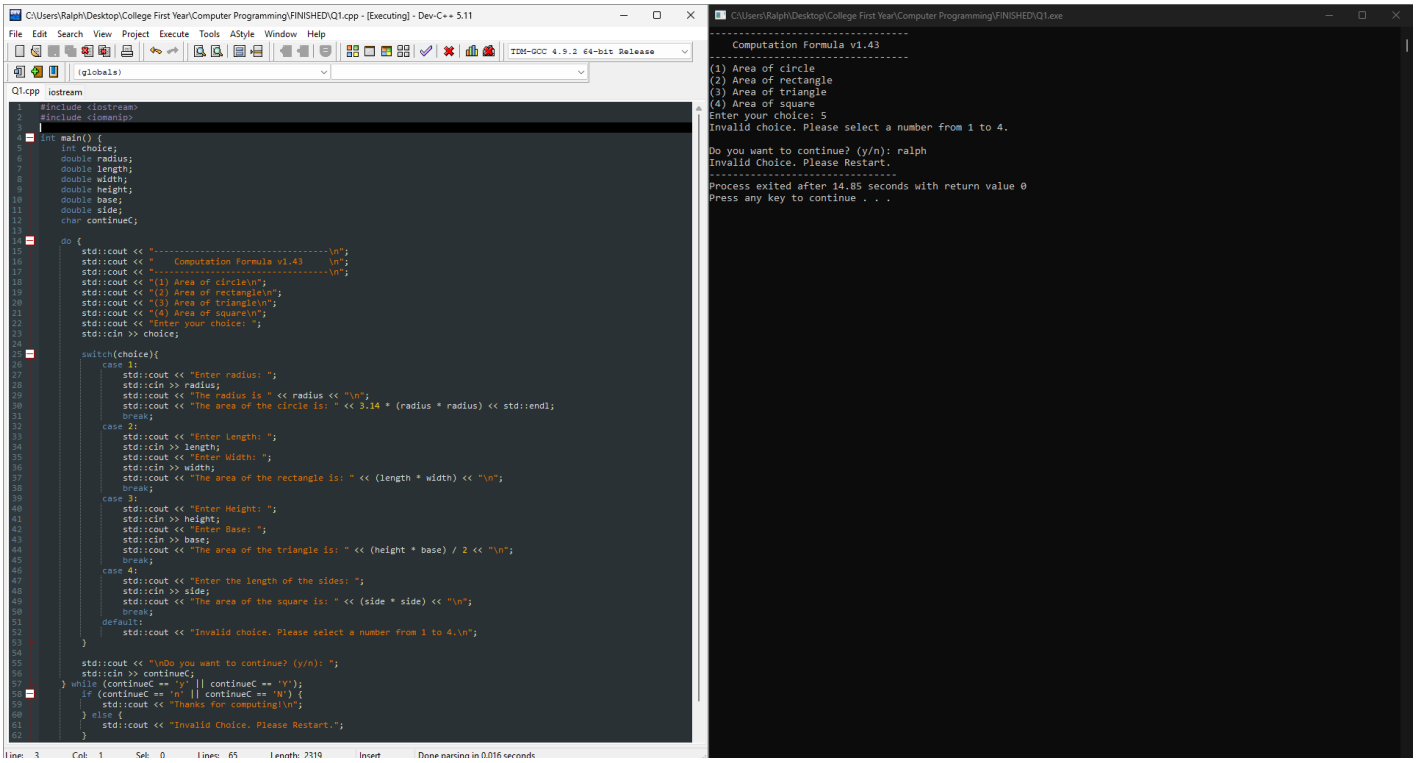
```
            std::cout << "Invalid choice. Please select a number from 1 to 4.\n";
        }

        std::cout << "\nDo you want to continue? (y/n): ";
        std::cin >> continueC;
    } while (continueC == 'y' || continueC == 'Y');
            if (continueC == 'n' || continueC == 'N') {
                    std::cout << "Thanks for computing!\n";
            } else {
                    std::cout << "Invalid Choice. Please Restart.";
    }

    return 0;
}|
```

RESULT:



```
C:\Users\Ralph\Desktop\College First Year\Computer Programming\FINISHED\Q1.exe
---------------------------------
   Computation Formula v1.43
---------------------------------
(1) Area of circle
(2) Area of rectangle
(3) Area of triangle
(4) Area of square
Enter your choice: 1
Enter radius: 7
The radius is 7
The area of the circle is: 153.86

Do you want to continue? (y/n): y
---------------------------------
   Computation Formula v1.43
---------------------------------
(1) Area of circle
(2) Area of rectangle
(3) Area of triangle
(4) Area of square
Enter your choice: 2
Enter Length: 2
Enter Width: 3
The area of the rectangle is: 6

Do you want to continue? (y/n): y
---------------------------------
   Computation Formula v1.43
---------------------------------
(1) Area of circle
(2) Area of rectangle
(3) Area of triangle
(4) Area of square
Enter your choice: 3
Enter Height: 10
Enter Base: 2
The area of the triangle is: 10

Do you want to continue? (y/n): y
---------------------------------
   Computation Formula v1.43
---------------------------------
(1) Area of circle
(2) Area of rectangle
(3) Area of triangle
(4) Area of square
Enter your choice: 4
Enter the length of the sides: 8
The area of the square is: 64

Do you want to continue? (y/n): n
Thanks for computing!

--------------------------------
Process exited after 62.98 seconds with return value 0
Press any key to continue . . .
```

INPUTING RANDOM VALUES



Supplementary Activity

Conclusion

This was by far the hardest task I've ever done in Programming Logic & Design; there were so many errors, so much searching, and so many tears shed trying to figure out what went wrong with the code. It is a miracle that I managed to figure out how to translate every single task into code. I could say that my coding skills have somewhat improved while doing this stressful activity. I had a really hard time trying to figure out 4 and 5 because trying to understand "do" and "while" took me a whole while to understand how they work. I mean, I knew how they work; I just didn't know how to code it, if that makes sense. The knowledge that I acquired from this activity will surely help me with future tasks and lessen the amount of stress that I'll be facing as I learn to code.

Assessment Rubric

Rubric for SO 7 (8)

Criteria	Ratings						Pts
SO 7 PI 1 IILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent | Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently and applies knowledge learned into practice	5 pts Good | Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently	4 pts Satisfactory | Look beyond classroom requirements, showing interest in pursuing knowledge independently	3 pts Unsatisfactory | Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently	2 pts Poor | Relies on classroom instruction only	1 pts Very Poor | No initiative or interest in acquiring new knowledge	6 pts
SO 7 PI 2 IILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent | Completes an assigned task independently and practices continuous improvement	5 pts Good | Completes an assigned task without supervision or guidance	4 pts Satisfactory | Requires minimal guidance to complete an assigned task	3 pts Unsatisfactory | Requires detailed or step-by-step instructions to complete a task	2 pts Poor | Shows little interest to complete a task independently	1 pts Very Poor | No interest to complete a task independently	6 pts
SO 7 PI 3 IILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent | Synthesizes and integrates information from a variety of sources; formulates a clear and precise perspective; draws appropriate conclusions	5 pts Good | Evaluate information from a variety of sources; formulates a clear and precise perspective.	4 pts Satisfactory | Analyze information from a variety of sources; formulates a clear and precise perspective.	3 pts Unsatisfactory | Apply the gathered information to formulate the problem	2 pts Poor | Gather and summarized the information from a variety of sources but failed to formulate the problem	1 pts Very Poor | Gather information from a variety of sources	6 pts
SO 7 PI 4 IILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent | Ideas are combined in original and creative ways in line with the new and emerging technology trends to solve a problem or address an issue.	5 pts Good | Ideas are creative and adapt the new knowledge to solve a problem or address an issue	4 pts Satisfactory | Ideas are creative in solving a problem, or address an issue	3 pts Unsatisfactory | Shows some creative ways to solve the problem	2 pts Poor | Shows initiative and attempt to develop creative ideas to solve the problem	1 pts Very Poor | Ideas are copied or restated from the sources consulted	6 pts
						Total Points: 24	