

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	
<p>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:</p> <ol style="list-style-type: none"> 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 <p>The program should input each of these facts, calculate the new balance ($=\text{beginning balance} + \text{charges} - \text{credits}$), 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."</p>	
<p>Sample output:</p> <p><i>Enter account number (-1 to end): 100</i> <i>Enter beginning balance: 5394.78</i> <i>Enter total charges: 1000.00</i> <i>Enter total credits: 500.00</i> <i>Enter credit limit: 5500.00</i> <i>Account: 100</i> <i>Credit limit: 5500.00</i> <i>Balance: 5894.78</i> <i>Credit Limit Exceeded.</i></p> <p><i>Enter account number (-1 to end): 200</i> <i>Enter beginning balance: 1000.00</i> <i>Enter total charges: 123.45</i> <i>Enter total credits: 321.00</i> <i>Enter credit limit: 1500.00</i> <i>Enter account number (-1 to end): 300</i> <i>Enter beginning balance: 500.00</i> <i>Enter total charges: 274.73</i> <i>Enter total credits: 100.00</i> <i>Enter credit limit: 800.00</i> <i>Enter account number (-1 to end): -1</i> <i>Program ends.</i></p> <p>CODE:</p> <pre>#include <iostream> #include <iomanip></pre>	

```

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;
}

std::cout << "\nProgram ended." << std::endl;

return 0;
}

```

RESULT:

The screenshot shows a C++ development environment with two windows. The left window is the code editor for 'Q1.cpp' in Dev-C++ 5.11, displaying the following 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 decimal points

        if (newBalance > creditLimit) {
            std::cout << "\nEnter account number (-1 to end): ";
            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;
    }

    std::cout << "\nProgram ended.";
    return 0;
}
```

The right window is a terminal window titled 'C:\Users\Ralph\Desktop\College First Year\Computer Programming\FINISHED\Q1.exe' showing the program's execution:

```
Enter account number (-1 to end): 143
Enter beginning balance: 1200.00
Enter total charges: 300.69
Enter total credits: 200.00
Enter credit limit: 5000.00

Account: 143
Credit limit: 5000.00
Balance: 5000.69
Credit Limit Exceeded.

Enter account number (-1 to end) 143637
Enter beginning balance: 1200.00
Enter total charges: 300.69
Enter total credits: 200.00
Enter credit limit: 2500.00

Enter account number (-1 to end) 143
Enter beginning balance: 668.00
Enter total charges: 300.69
Enter total credits: 200.00
Enter credit limit: 1200.00

Enter account number (-1 to end) -1
Program ended.

Process exited after 200.5 seconds with return value 0
Press any key to continue . . .
```

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:

The screenshot shows the Dev-C++ IDE interface. On the left, the code editor displays the file Q1.cpp with C++ code for calculating miles per gallon. On the right, the terminal window shows the program's output after running.

```
#include <iostream>
#include <cmath>

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 mpgSum = miles / gallons;
            std::cout << "The miles / gallon for this tank was " << std::fixed << std::setprecision(6) << mpgSum << std::endl;
        }
        totalGallons = totalGallons + gallons;
        totalMiles = totalMiles + miles;
        std::cout << "\nEnter the gallons used (-1 to end): ";
        std::cin >> gallons;
    }
    if (totalGallons > 0) {
        double overallMpgSum = totalMiles / totalGallons;
        std::cout << "The overall average miles/gallon was " << std::fixed << std::setprecision(6) << overallMpgSum << std::endl;
    } else {
        std::cout << "No data entered." << std::endl;
    }
    return 0;
}
```

Output from the terminal window:

```
Enter the gallons used (-1 to end): 16.9
Enter the miles driven: 269
The miles / gallon for this tank was 15.917108
Enter the gallons used (-1 to end): 12.4
Enter the miles driven: 223
The miles / gallon for this tank was 17.983871
Enter the gallons used (-1 to end): 302
Enter the miles driven: 21.571429
The miles / gallon for this tank was 21.571429
Enter the gallons used (-1 to end): -1
The overall average miles/gallon was 18.337182
-----
Process exited after 108.4 seconds with return value 0
Press any key to continue . . .
```

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:

The screenshot shows the Dev-C++ IDE interface. On the left, the code editor displays `Q1.cpp` with the following content:

```

1 #include <iostream>
2
3 int main() {
4     int parcel;
5
6     std::cout << "Enter weight of item: ";
7     std::cin >> parcel;
8
9     if (parcel <= 300) {
10         std::cout << "Weight: " << parcel << "g You must pay P5.00 for your small parcel";
11     } else if (parcel >= 301 && parcel <= 400) {
12         std::cout << "Weight: " << parcel << "g You must pay P7.00";
13     } else if (parcel >= 401 && parcel <= 500) {
14         std::cout << "Weight: " << parcel << "g You must pay P9.00";
15     } else if (parcel >= 501 && parcel <= 600) {
16         std::cout << "Weight: " << parcel << "g You must pay P11.00";
17     } else if (parcel >= 601 && parcel <= 700) {
18         std::cout << "Weight: " << parcel << "g You must pay P13.00";
19     } else if (parcel >= 701 && parcel <= 800) {
20         std::cout << "Weight: " << parcel << "g You must pay P15.00";
21     } else if (parcel >= 801 && parcel <= 900) {
22         std::cout << "Weight: " << parcel << "g You must pay P17.00";
23     } else if (parcel >= 901 && parcel <= 1000) {
24         std::cout << "Weight: " << parcel << "g You must pay P19.00";
25     } else {
26         std::cout << "Weight Exceeded";
27     }
28
29     return 0;
30 }
31

```

On the right, a terminal window titled "C:\Users\Ralph\Desktop\College First Year\Computer Programming\FINISHED\Q1.exe" shows the program's output:

```

Enter weight of item: 695
Weight: 695g You must pay P13.00
Process exited after 16.31 seconds with return value 0
Press any key to continue . .

```

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:

The screenshot shows the Dev-C++ IDE with the file `Q1.cpp` open. The code implements a menu-based conversion program. The user can choose between cm, inches, feet, or meters. The program uses a switch statement to handle each choice and performs the conversion using division by 2.54 or multiplication by 3.28084. It also handles invalid input and asks for another value if the user wants to continue.

```

1 #include <iostream>
2 #include <iomanip>
3
4 int main() {
5
6     std::cout << std::fixed << std::setprecision(2); // to result to only 2 decimals.
7     int choice;
8     double value;
9     char continueC;
10
11    do {
12
13        std::cout << "-----\n";
14        std::cout << "Conversion Table v1.43\n";
15        std::cout << "(1) cm -> inches\n";
16        std::cout << "(2) inches -> cm\n";
17        std::cout << "(3) feet -> meters\n";
18        std::cout << "(4) meters -> feet\n";
19        std::cout << "-----\n";
20        std::cout << "Enter your choice (1-4): ";
21        std::cin >> choice;
22
23        switch (choice) {
24            case 1:
25                std::cout << "Enter the value in centimeters (cm): ";
26                std::cin >> value;
27                std::cout << value << " cm is equal to " << value / 2.54 << " inches.\n";
28                break;
29            case 2:
30                std::cout << "Enter the value in inches: ";
31                std::cin >> value;
32                std::cout << value << " inches is equal to " << value * 2.54 << " cm.\n";
33                break;
34            case 3:
35                std::cout << "Enter the value in feet: ";
36                std::cin >> value;
37                std::cout << value << " feet is equal to " << value / 3.28084 << " meters.\n";
38                break;
39            case 4:
40                std::cout << "Enter the value in meters: ";
41                std::cin >> value;
42                std::cout << value << " meters is equal to " << value * 3.28084 << " feet.\n";
43                break;
44            default:
45                std::cout << "Invalid choice. Please select a number from 1 to 4.\n";
46        }
47        std::cout << "\nDo you want to convert another value? (y/n): ";
48        std::cin >> continueC;
49
50    } while (continueC == 'y' || continueC == 'Y');
51    if (continueC == 'n' || continueC == 'N') {
52        std::cout << "Thanks for converting!\n";
53    } else {
54        std::cout << "Invalid Choice. Please restart to convert again.\n";
55    }
56
57    return 0;
58
59

```

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 . . .

INPUTTING RANDOM VALUES

This screenshot shows the same conversion program running with random input. The user enters an invalid choice (5), which triggers an error message. The program then asks if the user wants to convert another value, but the user inputs a non-alphabetic character ('dasdfaf'). The program exits after 10.71 seconds.

```

1 #include <iostream>
2 #include <iomanip>
3
4 int main() {
5
6     std::cout << std::fixed << std::setprecision(2); // to result to only 2 decimals.
7     int choice;
8     double value;
9     char continueC;
10
11    do {
12
13        std::cout << "-----\n";
14        std::cout << "Conversion Table v1.43\n";
15        std::cout << "(1) cm -> inches\n";
16        std::cout << "(2) inches -> cm\n";
17        std::cout << "(3) feet -> meters\n";
18        std::cout << "(4) meters -> feet\n";
19        std::cout << "-----\n";
20        std::cout << "Enter your choice (1-4): ";
21        std::cin >> choice;
22
23        switch (choice) {
24            case 1:
25                std::cout << "Enter the value in centimeters (cm): ";
26                std::cin >> value;
27                std::cout << value << " cm is equal to " << value / 2.54 << " inches.\n";
28                break;
29            case 2:
30                std::cout << "Enter the value in inches: ";
31                std::cin >> value;
32                std::cout << value << " inches is equal to " << value * 2.54 << " cm.\n";
33                break;
34            case 3:
35                std::cout << "Enter the value in feet: ";
36                std::cin >> value;
37                std::cout << value << " feet is equal to " << value / 3.28084 << " meters.\n";
38                break;
39            case 4:
40                std::cout << "Enter the value in meters: ";
41                std::cin >> value;
42                std::cout << value << " meters is equal to " << value * 3.28084 << " feet.\n";
43                break;
44            default:
45                std::cout << "Invalid choice. Please select a number from 1 to 4.\n";
46        }
47        std::cout << "\nDo you want to convert another value? (y/n): ";
48        std::cin >> continueC;
49
50    } while (continueC == 'y' || continueC == 'Y');
51    if (continueC == 'n' || continueC == 'N') {
52        std::cout << "Thanks for converting!\n";
53    } else {
54        std::cout << "Invalid Choice. Please restart to convert again.\n";
55    }
56
57    return 0;
58
59

```

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): dasdfaf
Invalid Choice. Please restart to convert again.
Process exited after 10.71 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:
                break;
        }
    } while(continueC != 'N' && continueC != 'n');
}
```

```

        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:

The screenshot shows the execution of a C++ program named 'Computation Formula v1.43'. The terminal window displays the following interaction:

```

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:
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:
Enter Width:
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:
Enter Base:
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:
The area of the square is: 64
Do you want to continue? (y/n): n
Thanks for computing!

```

The terminal window also shows the message 'Process exited after 62.98 seconds with return value 0'.

INPUTTING RANDOM VALUES

The screenshot shows two windows. On the left is a code editor with the file 'Q1.cpp' open, displaying C++ code for a computation formula. On the right is a terminal window titled 'Computation Formula v1.43' showing the execution of the program.

```
Q1.cpp istringstream
1 #include <iostream>
2 #include <iomanip>
3
4 int main() {
5     int choice;
6     double radius;
7     double length;
8     double width;
9     double height;
10    double side;
11    double sideC;
12    char continueC;
13
14    do {
15        std::cout << "-----\n";
16        std::cout << " Computation Formula v1.43 \n";
17        std::cout << "-----\n";
18        std::cout << "(1) Area of circle\n";
19        std::cout << "(2) Area of rectangle\n";
20        std::cout << "(3) Area of triangle\n";
21        std::cout << "(4) Area of square\n";
22        std::cout << "Enter your choice: ";
23        std::cin >> choice;
24
25        switch(choice){
26            case 1:
27                std::cout << "Enter radius: ";
28                std::cin >> radius;
29                std::cout << "The radius is " << radius << "\n";
30                std::cout << "The area of the circle is: " << 3.14 * (radius * radius) << std::endl;
31                break;
32            case 2:
33                std::cout << "Enter Length: ";
34                std::cin >> length;
35                std::cout << "Enter Width: ";
36                std::cin >> width;
37                std::cout << "The area of the rectangle is: " << (length * width) << "\n";
38                break;
39            case 3:
40                std::cout << "Enter Height: ";
41                std::cin >> height;
42                std::cout << "Enter Base: ";
43                std::cin >> base;
44                std::cout << "The area of the triangle is: " << (height * base) / 2 << "\n";
45                break;
46            case 4:
47                std::cout << "Enter the length of the sides: ";
48                std::cin >> side;
49                std::cout << "The area of the square is: " << (side * side) << "\n";
50                break;
51            default:
52                std::cout << "Invalid choice. Please select a number from 1 to 4.\n";
53        }
54
55        std::cout << "\nDo you want to continue? (y/n): ";
56        std::cin >> continueC;
57    } while ((continueC == 'Y') || (continueC == 'y'));
58    if (continueC == 'N' || continueC == 'n') {
59        std::cout << "Thanks for computing!\n";
60    } else {
61        std::cout << "Invalid Choice. Please Restart.\n";
62    }
63 }
```

Terminal Output:

```
Computation Formula v1.43
(1) Area of circle
(2) Area of rectangle
(3) Area of triangle
(4) Area of square
Enter your choice: 5
Invalid choice. Please select a number from 1 to 4.

Do you want to continue? (y/n): ralph
Invalid Choice. Please Restart.

Process exited after 14.85 seconds with return value 0
Press any key to continue . . .
```

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