Activity No. 3.1	
Hands-on : Control Structures (Part 2)	
Course Code: CPE007	**Program:** Computer Engineering
Course Title: Programming Logic and Design	**Date Performed:** August 16, 2025
Section: CPE11S1	**Date Submitted:** August 18, 2025
Name(s): Mendoza, Nathaniel	**Instructor: Engr. Jimlord M. Quejado**

6. Output

Problem 1

CODE

```cpp
#include <iostream>     // MENDOZA, NATHANIEL B (PROBLEM 1)
using namespace std;
int main() {
    int accountNumber;
    float beginningBalance, totalCharges, totalCredits, creditLimit,
        newBalance;
    cout << "Enter account number: ";
    cin >> accountNumber;
    cout << "Enter beginning balance: ";
    cin >> beginningBalance;
    cout << "Enter total charges: ";
    cin >> totalCharges;
    cout << "Enter total credits: ";
    cin >> totalCredits;
    cout << "Enter credit limit: ";
    cin >> creditLimit;
    newBalance = beginningBalance + totalCharges - totalCredits;

    cout << "\nAccount Number: " << accountNumber << endl;
    cout << "Credit Limit: " << creditLimit << endl;
    cout << "New Balance: " << newBalance << endl;
    if (newBalance > creditLimit) {
        cout << "Credit limit exceeded." << endl;
    }
    return 0;
}
```

Algorithm:

Start
  Input accountNumber
  Input beginningBalance
  Input totalCharges
  Input totalCredits
  Input creditLimit
  Formula : newBalance ← beginningBalance + totalCharges - totalCredits
  Display "Account Number: ", accountNumber
  Display "Credit Limit: ", creditLimit
  Display "New Balance: ", newBalance
  If newBalance > creditLimit then
    Display "Credit limit exceeded"
  End If type
Stop

OUTPUT

```
Enter account number: 200
Enter beginning balance: 1000.00
Enter total charges: 123.45
Enter total credits: 321.00
Enter credit limit: 1500.00

Account Number: 200
Credit Limit: 1500
New Balance: 802.45


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

```
Enter account number: 100
Enter beginning balance: 5394.78
Enter total charges: 1000.00
Enter total credits: 500.00
Enter credit limit: 5500.00

Account Number: 100
Credit Limit: 5500
New Balance: 5894.78
Credit limit exceeded.


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

Problem 2

CODE

```cpp
#include <iostream>                //MENDOZA, NATHANIEL B (PROBLEM 2)
#include <iomanip>
using namespace std;
int main() {
    float gallons, miles, totalMiles = 0, totalGallons = 0;
    cout << fixed << showpoint;
    while (true) {
        cout << "Enter the gallons used (-1 to end): ";
        cin >> gallons;
        if (gallons == -1) break;
        cout << "Enter the miles driven: ";
        cin >> miles;
        cout << "The miles / gallon for this tank was " << miles / gallons <<
            endl;
        totalMiles += miles;
        totalGallons += gallons;
    }
    if (totalGallons > 0) {
        cout << "\nThe overall average miles/gallon was " << totalMiles /
            totalGallons << endl;
    }
    return 0;
}
```

Algorithm
Start
totalMiles = 0
totalGallons = 0
Repeat
Input gallons
If gallons = -1 then
Exit loop
End If
Input miles
mpg = miles / gallons
Display "Miles per gallon for this tank: ", mpg
totalMiles = totalMiles + miles
totalGallons = totalGallons + gallons
Until gallons = -1
If totalGallons > 0 then
overallMPG = totalMiles / totalGallons
Display "Overall miles per gallon: ", overallMPG
End If
Stop

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): -1

The overall average miles/gallon was 21.601423


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

Problem 3

CODE

```cpp
#include <iostream>             //MENDOZA, NATHANIEL B (PROBLEM 3)
#include <cmath>
using namespace std;
int main() {
    float weight, cost;
    cout << "Enter parcel weight in grams: ";
    cin >> weight;
    if (weight > 1000) {
        cout << "Maximum weight exceeded." << endl;
    } else {
        if (weight <= 300) {
            cost = 5.0;
        } else {
            float extraWeight = weight - 300;
            int extraUnits = ceil(extraWeight / 100);
            cost = 5.0 + (extraUnits * 2.0);
        }
        cout << "The shipping cost is P" << cost << endl;
    }
    return 0;
}
```

OUTPUT

```
Enter parcel weight in grams: 1001
Maximum weight exceeded.


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

```
Enter parcel weight in grams: 900
The shipping cost is P17


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

Algorithm

Start
  Input weight
  If weight > 1000 then
    Display "Weight exceeds maximum limit"
  Else
    cost = 5.0
    If weight > 300 then
      excess = weight - 300
      addCharge = ceiling(excess / 100) * 2.0
      cost = cost + addCharge
    End If
    Display "Total cost: ", cost
  End If
Stop

Problem 4

CODE

```cpp
#include <iostream>          //MENDOZA, NATHANIEL B (PROBLEM 4)
#include <iomanip>
using namespace std;
int main() {
    int choice;
    float value;
    char again = 'y';
    cout << fixed << showpoint;
    while (again == 'y' || again == 'Y') {
        cout << "\nConversion Menu:\n";
        cout << "1. cm to inches\n";
        cout << "2. inches to cm\n";
        cout << "3. feet to meters\n";
        cout << "4. meters to feet\n";
        cout << "Enter choice: ";
        cin >> choice;

        if (choice == 1) {
            cout << "Enter cm: ";
            cin >> value;
            cout << "Inches: " << value / 2.54 << endl;
        } else if (choice == 2) {
            cout << "Enter inches: ";
            cin >> value;
```

```
25            cout << "Centimeters: " << value * 2.54 << endl;
26        } else if (choice == 3) {
27            cout << "Enter feet: ";
28            cin >> value;
29            cout << "Meters: " << value * 0.3048 << endl;
30        } else if (choice == 4) {
31            cout << "Enter meters: ";
32            cin >> value;
33            cout << "Feet: " << value / 0.3048 << endl;
34        } else {
35            cout << "Invalid choice." << endl;
36        }
37        cout << "\nDo you want another conversion? (y/n): ";
38        cin >> again;
39    }
40    return 0;
41 }
```

OUTPUT

```
Conversion Menu:
1. cm to inches
2. inches to cm
3. feet to meters
4. meters to feet
Enter choice: 1
Enter cm: 100
Inches: 39.370079

Do you want another conversion? (y/n): y

Conversion Menu:
1. cm to inches
2. inches to cm
3. feet to meters
4. meters to feet
Enter choice: 2
Enter inches: 100
Centimeters: 254.000000

Do you want another conversion? (y/n): y
```

```
Conversion Menu:
1. cm to inches
2. inches to cm
3. feet to meters
4. meters to feet
Enter choice: 3
Enter feet: 100
Meters: 30.480000

Do you want another conversion? (y/n): y

Conversion Menu:
1. cm to inches
2. inches to cm
3. feet to meters
4. meters to feet
Enter choice: 4
Enter meters: 100
Feet: 328.083990

Do you want another conversion? (y/n): n


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

Algorithm
Start
  Repeat
    Display "Conversion Menu"
    Display "1. cm to inches"
    Display "2. inches to cm"
    Display "3. feet to meters"
    Display "4. meters to feet"
    Input choice
    If choice = 1 then
      Input cm
      inches = cm / 2.54
      Display "Inches: ", inches
    Else if choice = 2 then
      Input inches
      cm = inches * 2.54
      Display "Centimeters: ", cm
    Else if choice = 3 then
      Input feet
      meters = feet * 0.3048
      Display "Meters: ", meters
    Else if choice = 4 then
      Input meters
      feet = meters / 0.3048
      Display "Feet: ", feet
    End If
    Ask user if they want another conversion
  Until user chooses no
Stop

Problem 5

CODE

```cpp
#include <iostream>          // MENDOZA, NATHANIEL B (PROBLEM 5)
#include <iomanip>
using namespace std;
int main()
{
    int choice;
    float r, l, w, b, h, s, area;
    char again = 'y';
    cout << fixed << showpoint;
    while (again == 'y' || again == 'Y')
    {
        cout << "\nComputation Menu:\n";
        cout << "1. Area of Circle\n";
        cout << "2. Area of Rectangle\n";
        cout << "3. Area of Triangle\n";
        cout << "4. Area of Square\n";
        cout << "Enter choice: ";
        cin >> choice;

        if (choice == 1) {
            cout << "Enter radius: ";
            cin >> r;
            area = 3.14159 * r * r;
            cout << "Area of Circle: " << area << endl;
        } else if (choice == 2) {
            cout << "Enter length: ";
            cin >> l;
            cout << "Enter width: ";
```

```
            cin >> w;
            area = l * w;
            cout << "Area of Rectangle: " << area << endl;
        } else if (choice == 3) {
            cout << "Enter base: ";
            cin >> b;
            cout << "Enter height: ";
            cin >> h;
            area = 0.5 * b * h;
            cout << "Area of Triangle: " << area << endl;
        } else if (choice == 4) {
            cout << "Enter side: ";
            cin >> s;
            area = s * s;
            cout << "Area of Square: " << area << endl;
        } else {
            cout << "Invalid choice." << endl;
        }
        cout << "\nDo you want another computation? (y/n): ";
        cin >> again;
    }
    return 0;
}
```

OUTPUT

```
Computation Menu:
1. Area of Circle
2. Area of Rectangle
3. Area of Triangle
4. Area of Square
Enter choice: 1
Enter radius: 5
Area of Circle: 78.539749

Do you want another computation? (y/n): y

Computation Menu:
1. Area of Circle
2. Area of Rectangle
3. Area of Triangle
4. Area of Square
Enter choice: 2
Enter length: 5
Enter width: 10
Area of Rectangle: 50.000000

Do you want another computation? (y/n): y
```

```
Computation Menu:
1. Area of Circle
2. Area of Rectangle
3. Area of Triangle
4. Area of Square
Enter choice: 3
Enter base: 10
Enter height: 50
Area of Triangle: 250.000000

Do you want another computation? (y/n): y

Computation Menu:
1. Area of Circle
2. Area of Rectangle
3. Area of Triangle
4. Area of Square
Enter choice: 4
Enter side: 10
Area of Square: 100.000000

Do you want another computation? (y/n): n


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

```
Algorithm
Start
   Repeat
      Display "Computation Menu"
      Display "1. Area of Circle"
      Display "2. Area of Rectangle"
      Display "3. Area of Triangle"
      Display "4. Area of Square"
      Input choice
      If choice = 1 then
         Input radius
         area = 3.1416 * radius * radius
         Display "Area of Circle: ", area
      Else if choice = 2 then
         Input length
         Input width
         area = length * width
         Display "Area of Rectangle: ", area
      Else if choice = 3 then
         Input base
         Input height
         area = 0.5 * base * height
         Display "Area of Triangle: ", area
      Else if choice = 4 then
         Input side
         Area = side * side
         Display "Area of Square: ", area
      End If
      Ask user if they want another computation
   Until user chooses no
Stop
```

7. Supplementary Activity

8. Conclusion

After completing this activity, I became more familiar with the proper use of if and else statements in solving different types of problems. I realized that programming is not just about writing code, but also about applying logical thinking and mathematical concepts to achieve the desired results. This activity showed me how formulas can be directly translated into code, making problem-solving more practical and efficient. It also gave me confidence that the skills I am learning now can be applied to more complex programs in higher levels of study. Overall, this exercise strengthened my understanding of how programming and mathematics work hand in hand to create meaningful solutions.

9. Assessment Rubric