Activity No. 3.1	
Hands-on Activity 3.1: Control Structures (part 2)	
Course Code: CPE010	**Program:** Computer Engineering
Course Title: Data Structures and Algorithms	**Date Performed:**
Section: CPE11S1	**Date Submitted:**
Name(s): Tobias, Lawrence C.	**Instructor:** Engr. Jimlord M. Quejado

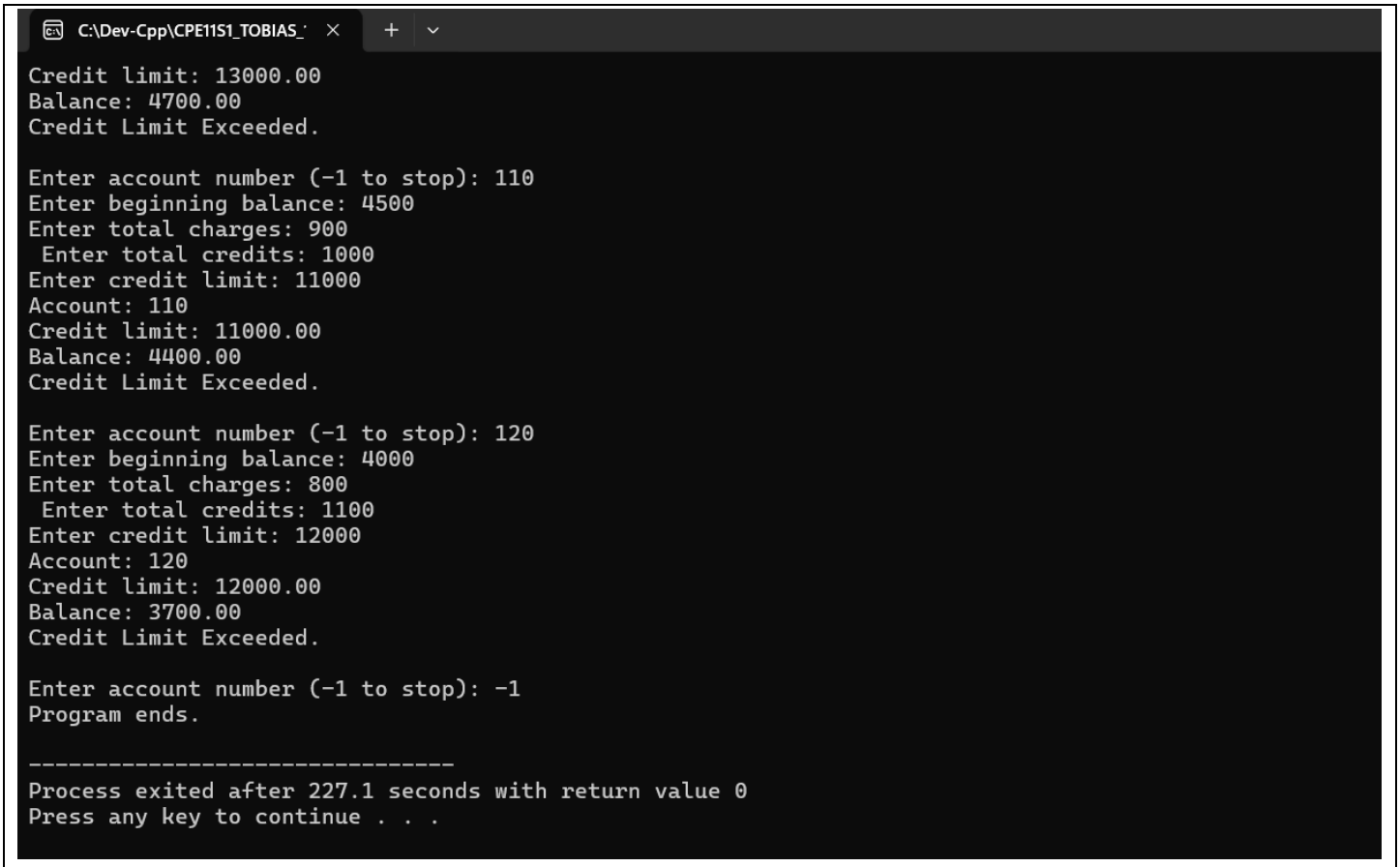
6. Output

1.

```
Start
   Input accountNumber
   While accountNumber is not -1
      Input beginningBalance
      Input totalCharges
      Input totalCredits
      Input creditLimit
      Set newBalance = beginningBalance + totalCharges - totalCredits
      If newBalance > creditLimit then
         Output "Account: ", accountNumber
         Output "Credit limit: ", creditLimit
         Output "Balance: ", newBalance
         Output "Credit Limit Exceeded."
      Else
         Output "Account: ", accountNumber
         Output "Credit limit: ", creditLimit
         Output "Balance: ", newBalance
         Output "Within credit limit."
      End if
      Input accountNumber
   End while
   Output "Program ends."
Stop
```

[*] CPE11S1_TOBIAS_1.cpp Untitled2

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

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

    cout << fixed << setprecision(2);

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


    while (accountNumber != -1) {

        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;


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

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

    }

    cout << "Program ends." << endl;

    return 0;
}
```



2.

```
Start
  Set totalMiles = 0
  Set totalGallons = 0

  Output "Enter the gallons used (-1 to end): "
  Input gallons Used

  While gallonsUsed is not equal to -1
     Output "Enter the miles driven:"
     Input miles Driven

  Set miles PerGallon = milesDriven / gallonsUsed
  Output "The miles/gallon for this tank was ", miles Per Gallon

  totalMiles = totalMiles + milesDriven
  totalGallons = totalGallons + gallonsUsed

  Output "Enter the gallons used (-1 to end): "
  Input gallons Used
End while

If totalGallons > 0 then
  Set overallAverage = totalMiles / totalGallons
  Output "The overall average miles/gallon was ", OverallAverage
End if
Stop
```

CPE11S1_TOBIAS_1.cpp CPE11S1_TOBIAS_2.cpp

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

int main() {
    float gallonsUsed;
    float milesDriven;
    float milesPerGallon;
    float totalMiles = 0;
    float totalGallons = 0;

    cout << fixed << setprecision (6);


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

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

        milesPerGallon = milesDriven / gallonsUsed;
        cout << "The miles \ gallon for this tank was " << milesPerGallon << endl;

        totalMiles += milesDriven;
        totalGallons += gallonsUsed;

        cout << "\nEnterthe gallons used (-1 to end): ";
        cin >> gallonsUsed;
    }

    if (totalGallons > 0) {
        float overallAverage = totalMiles / totalGallons;
        cout << "\nThe overall average miles/gallon was " << overallAverage << endl;
    }

    return 0;
}
```

C:\Dev-Cpp\CPE11S1_TOBIAS_

```
 Enter the gallons used (-1 to end): 13.3
Enter the miles driven: 113
The miles / gallon for this tank was 8.496241

Enterthe gallons used (-1 to end): 11.3
Enter the miles driven: 133
The miles / gallon for this tank was 11.769912

Enterthe gallons used (-1 to end): 10.3
Enter the miles driven: 33.1
The miles / gallon for this tank was 3.213592

Enterthe gallons used (-1 to end): -1

The overall average miles/gallon was 7.997135

--------------------------------
Process exited after 96.03 seconds with return value 0
Press any key to continue . . .
```

3.

```
Start
  Input weight

  If weight > 1000 then
     Output "Parcel exceeds maximum weight limit."
  Else
     If weight <= 100 then
     cost ← 2.00
  Else if weight <= 300 then
     cost ← 5.00
  Else
     cost ← 5.00
     extraWeight ← weight - 300
     extraUnits ← extraWeight / 100

     If extraWeight mod 100 ≠ 0 then
       extraUnits ← extraUnits + 1
     End if

     cost ← cost + (extraUnits * 2.00)
  End if

    Output "The cost of sending the parcel is: P", cost
End if

Stop
```

CPE11S1_TOBIAS_1.cpp | CPE11S1_TOBIAS_2.cpp | CPE11S1_TOBIAS_3.cpp

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

int main() {
    int weight;
    float cost;

    cout << fixed << setprecision(2);

    cout << "Enter weight of parcel in grams: ";
    cin >> weight;

    if (weight > 1000) {
        cout << "parcel exceeds maximum weight limit." << endl;
    } else {
        if (weight <= 100) {
            cost = 2.00;
        }
        else if (weight <= 300) {
            cost = 5.00;
        }
        else {
            cost = 5.00;
            int extraWeight = weight - 300;
            int extraUnits = extraWeight / 100;

            if (extraWeight % 100 != 0) {
                extraUnits += 1;
            }

            cost += extraUnits = 2.00;
        }

        cout << "The cost of sending the parcel is: P" << cost << endl;
    }

    return 0;
}
```

C:\Dev-Cpp\CPE11S1_TOBIAS_

```
Enter weight of parcel in grams: 130
The cost of sending the parcel is: P5.00

--------------------------------
Process exited after 17.68 seconds with return value 0
Press any key to continue . . .
```

C:\Dev-Cpp\CPE11S1_TOBIAS_

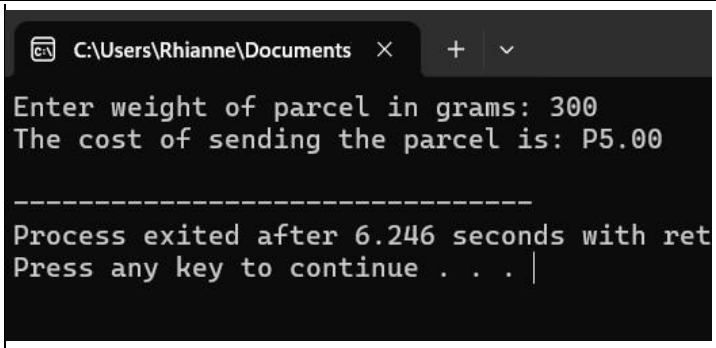
```
Enter weight of parcel in grams: 1000
The cost of sending the parcel is: P7.00

--------------------------------
Process exited after 72.73 seconds with return value 0
Press any key to continue . . .
```

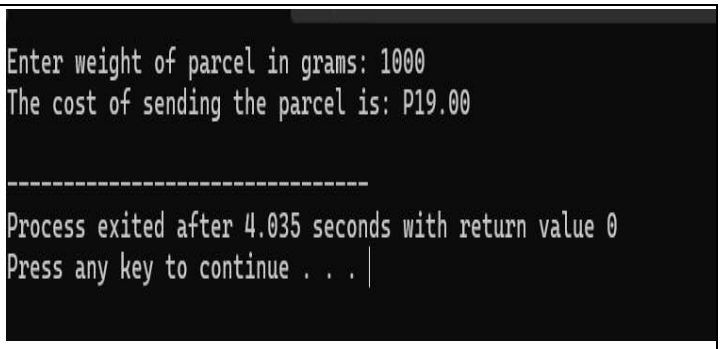
C:\Dev-Cpp\CPE11S1_TOBIAS_

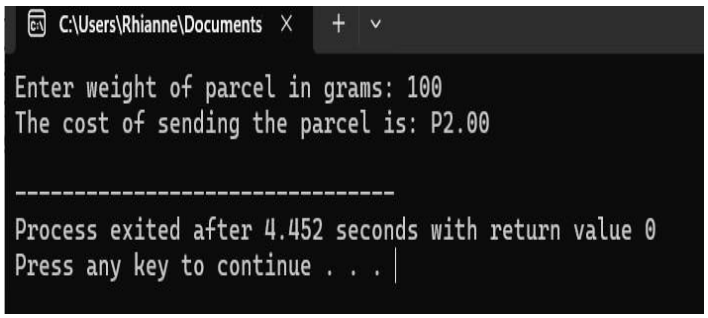
```
Enter weight of parcel in grams: 100
The cost of sending the parcel is: P2.00

--------------------------------
Process exited after 30.41 seconds with return value 0
Press any key to continue . . .
```

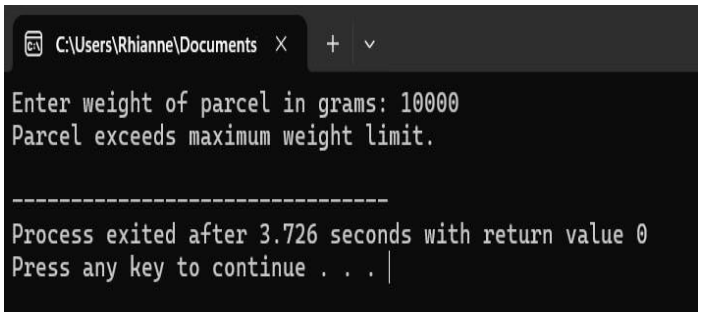
C:\Dev-Cpp\CPE11S1_TOBIAS_

```
Enter weight of parcel in grams: 13000
parcel exceeds maximum weight limit.

--------------------------------
Process exited after 7.704 seconds with return value 0
Press any key to continue . . .
```







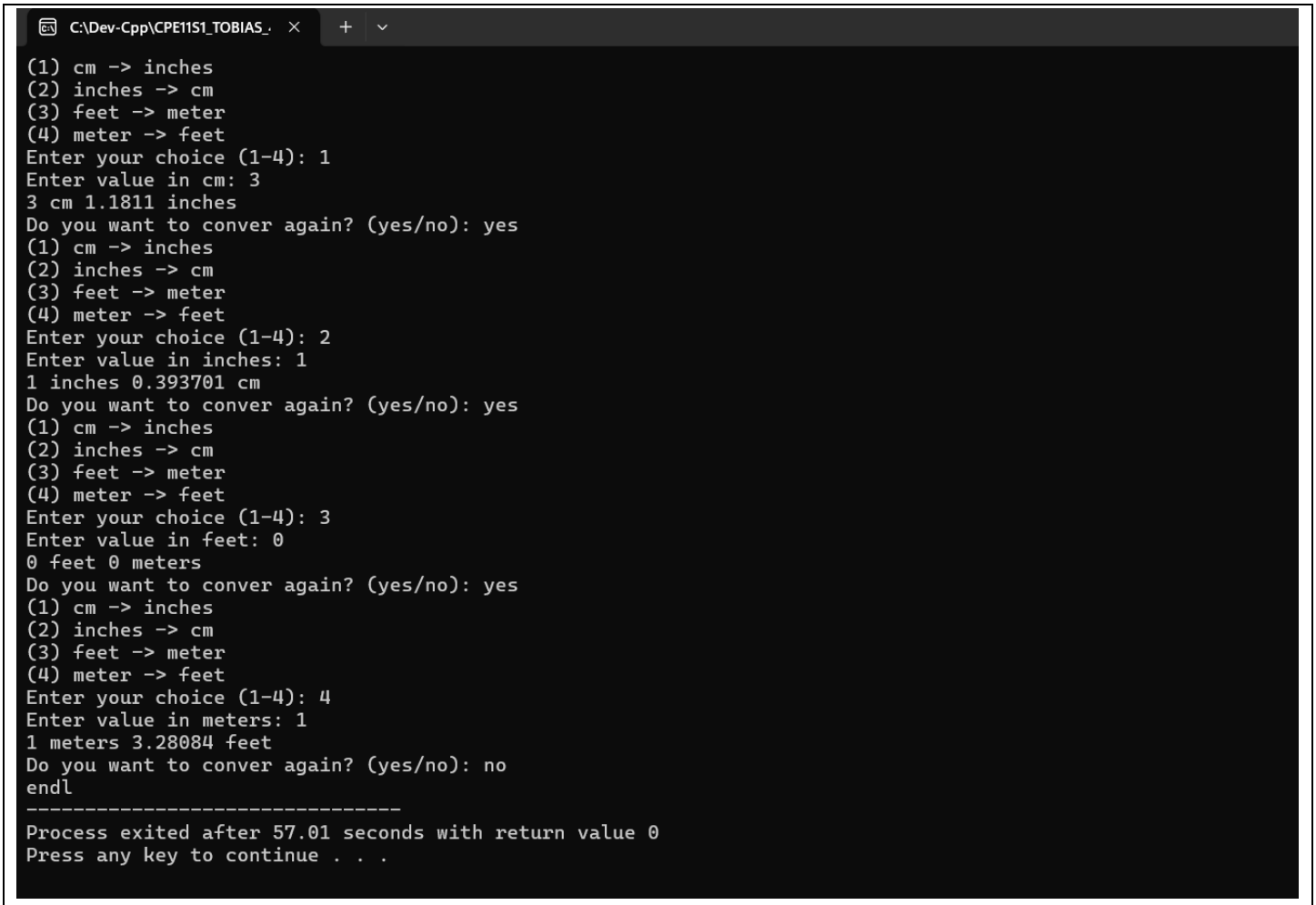


4

```
start
   do
      output "(1) cm -> inches"
      output "(2) inches -> cm"
      output "(3) feet -> meter"
      output "(4) meter -> feet"
      output "Enter your choice (1-4): "
      input choice
      if choice == 1 then
         output "Enter value in cm: "
         input value
         result = value / 2.54
         output value, " cm = ", result, " inches"
      else if choice == 2 then
         output "Enter value in inches: "
         input value
         result = value * 2.54
         output value, " inches = ", result, " cm"
      else if choice == 3 then
         output "Enter value in feet: "
         input value
         result = value * 0.3048
         output value, " feet = ", result, " meters"
      else if choice == 4 then
         output "Enter value in meters: "
         input value
         result = value / 0.3048
         output value, " meters = ", result, " feet"
      else
         output "Invalid choice. Please select 1-4."
 end if

      output "Do you want to convert again? (yes/no): "
      input again
   while again == "yes" or again == "Yes"
```

CPE11S1_TOBIAS_1.cpp | CPE11S1_TOBIAS_2.cpp | CPE11S1_TOBIAS_3.cpp | CPE11S1_TOBIAS_4.cpp

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

int main() {
    int choice;
    float value, result;
    string again;

    do {
        cout << "(1) cm -> inches\n";
        cout << "(2) inches -> cm\n";
        cout << "(3) feet -> meter\n";
        cout << "(4) meter -> feet\n";
        cout << "Enter your choice (1-4): ";
        cin >> choice;

        if (choice == 1) {
            cout << "Enter value in cm: ";
            cin >> value;
            result = value / 2.54;
            cout << value << " cm " << result << " inches\n";
        }
        else if (choice == 2) {
            cout << "Enter value in inches: ";
            cin >> value;
            result = value / 2.54;
            cout << value << " inches " << result << " cm\n";
        }
        else if (choice == 3) {
            cout << "Enter value in feet: ";
            cin >> value;
            result = value / 0.3048;
            cout << value << " feet " << result << " meters\n";
        }
        else if (choice == 4) {
            cout << "Enter value in meters: ";
            cin >> value;
            result = value / 0.3048;
            cout << value << " meters " << result << " feet\n";
        }
        else {
            cout << "invalid choice. Please select 1-4.\n";
        }

        cout << "Do you want to conver again? (yes/no): ";
        cin >> again;

    } while (again == "yes" || again == "yes");

    cout << "endl";
    return 0;
}
```



5.

```
Start
  Repeat
    Output "(1) Area of Circle"
    Output "(2) Area of Rectangle"
    Output "(3) Area of Triangle"
    Output "(4) Area of Square"
    Output "Enter your choice (1-4): "
    Input choice

    If choice = 1 then
       Output "Enter radius:"
       Input radius
       area = 3.1416 * radius * radius
        Output "Area of Circle = ", areaElse if choice = 2 then
    Output "Enter length: "
       Input length
       Output "Enter width: "
       Input width
       area = length * width
       Output "Area of Rectangle = ", area
    Else if choice = 3 then
       Output "Enter base:"
       Input base
       Output "Enter height:"
       Input height
```

```
        area = 0.5 * base * height
        Output "Area of Triangle = ", area
    Else if choice = 4 then
        Output "Enter side: "
        Input side
        area = side * side
        Output "Area of Square =", area
    Else
        Output "Invalid choice. Please select 1-4."
    End if

    Output "Do you want to compute again? (yes/no): "
    Input again
  Until again # "yes" and again # "Yes"|

  Output "End"
Stop
```

CPE11S1_TOBIAS_1.cpp | CPE11S1_TOBIAS_2.cpp | CPE11S1_TOBIAS_3.cpp | CPE11S1_TOBIAS_4.cpp | CPE11S1_TOBIAS_5.cpp

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

int main() {
    int choice;
    float area;
    string again;

    cout << fixed << setprecision(2);

    do {

        cout << "\nSelect an option to calculate area:\n";
        cout << "(1) area of Circle\n";
        cout << "(2) area of Rectangle\n";
        cout << "(3) area of Triangle\n";
        cout << "(4) area of Square";
        cout << "Enter your choice (1-4): ";
        cin >> choice;

        if (choice == 1) {
            float radius;
            cout << "Enter the radius: ";
            cin >> radius;
            area = M_PI * radius * radius;
            cout << " area of Circle = " << area << endl;
        }
        else if (choice == 2) {
            float length, width;
            cout << "Enter the length: ";
            cin >> length;
            cout << "Enter the width: ";
            cin >> width;
            area = length * width;
            cout << " area of Rectangle " << area << endl;
        }
        else if (choice == 3) {
            float base, height;
            cout << "Enter the base: ";
            cin >> base;
            cout << "Enter the height: ";
            cin >> height;
```

```
45              area = 0.5 * base * height;
46              cout << " area of Triangle = " << area << endl;
47          }
48          else if (choice == 4) {
49              float side;
50              cout << "Enter the side: ";
51              cin >> side;
52              area = side * side;
53              cout << " area of Square " << area << endl;
54          }
55          else {
56              cout << "invalid choice. Please select 1-4.\n";
57          }
58
59          cout << "\nDo you want to conver again? (yes/no): ";
60          cin >> again;
61
62      } while (again == "yes" || again == "yes");
63
64      cout << "endl";
65      return 0;
66  }
67
```

```
C:\Dev-Cpp\CPE11S1_TOBIAS_

Select an option to calculate area:
(1) area of Circle
(2) area of Rectangle
(3) area of Triangle
(4) area of SquareEnter your choice (1-4): 1
Enter the radius: 13
 area of Circle = 530.93

Do you want to conver again? (yes/no): yes

Select an option to calculate area:
(1) area of Circle
(2) area of Rectangle
(3) area of Triangle
(4) area of SquareEnter your choice (1-4): 2
Enter the length: 13
Enter the width: 10
 area of Rectangle 130.00

Do you want to conver again? (yes/no): yes

Select an option to calculate area:
(1) area of Circle
(2) area of Rectangle
(3) area of Triangle
(4) area of SquareEnter your choice (1-4): 3
Enter the base: 13
Enter the height: 70
 area of Triangle = 455.00

Do you want to conver again? (yes/no): yes

Select an option to calculate area:
(1) area of Circle
(2) area of Rectangle
(3) area of Triangle
(4) area of SquareEnter your choice (1-4): 4
Enter the side: 13
 area of Square 169.00


Do you want to conver again? (yes/no): no
endl
--------------------------------
Process exited after 127.2 seconds with return value 0
Press any key to continue . . .
```

7. Supplementary Activity

8. Conclusion

When I was making the pseudocode, I figured out how important it is to arrange the steps properly so the program makes sense. It helped me see how the computer takes the inputs, checks the choices, and then computes the area of the shape. Doing this made me practice organizing my ideas before writing real code. I realized that if the instructions are clear, the program becomes much easier to understand and follow.

9. Assessment Rubric

Rubric for SO 7 (6)

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