

Hands-on Activity 2.1	
Control Structures	
Course Code: CPE007	Program: Computer Engineering
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6. Output	
<p>1.</p> <p>Start</p> <p> Input accountNumber</p> <p> While accountNumber is not -1</p> <p> Input beginningBalance</p> <p> Input totalCharges</p> <p> Input totalCredits</p> <p> Input creditLimit</p> <p> Set newBalance = beginningBalance + totalCharges - totalCredits</p> <p> If newBalance > creditLimit then</p> <p> Output "Account: ", accountNumber</p> <p> Output "Credit limit: ", creditLimit</p> <p> Output "Balance: ", newBalance</p> <p> Output "Credit Limit Exceeded."</p> <p> Else</p> <p> Output "Account: ", accountNumber</p> <p> Output "Credit limit: ", creditLimit</p> <p> Output "Balance: ", newBalance</p> <p> Output "Within credit limit."</p> <p> End if</p> <p> Input accountNumber</p> <p> End while</p> <p> Output "Program ends."</p> <p>Stop</p>	

The screenshot shows a code editor interface with a toolbar at the top containing icons for file operations, run, share, and clear. The left sidebar lists supported file types: main.cpp, JSON, XML, CSS, LESS, SCSS, SASS, LESS, SCSS, SASS, JS, TS, and GO. The main area displays a C++ program named 'main.cpp' with line numbers 1 through 29. The code includes #include directives for iostream and iomanip, uses namespace std, and defines a main function that reads account number, beginning balance, total charges, total credits, and credit limit from the user. It then calculates the new balance and checks if it exceeds the credit limit. The output window shows several runs of the program with different input values and resulting account details.

```

1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4
5 int main() {
6     int accountNumber;
7     float beginningBalance;
8     float totalCharges;
9     float totalCredits;
10    float creditLimit;
11    float newBalance;
12
13    cout << fixed << setprecision(2);
14
15    cout << "Enter account number (-1 to stop):";
16    cin >> accountNumber;
17
18    while (accountNumber != -1) {
19        cout << "Enter beginning balance: ";
20        cin >> beginningBalance;
21
22        cout << "Enter total charges: ";
23        cin >> totalCharges;
24
25        cout << "Enter total credits: ";
26        cin >> totalCredits;
27
28        cout << "Enter credit limit: ";
29        cin >> creditLimit;
30

```

Output:

```

Account: 100
Credit limit: 100000.00
Balance: 6752945.00
Credit Limit Exceeded.

Enter account number (-1 to stop): 200
Enter beginning balance: 78364873
Enter total charges: 400
Enter total credits: 500
Enter credit limit: 5500
Account: 200
Credit limit: 5500.00
Balance: 78364768.00
Credit Limit Exceeded.

Enter account number (-1 to stop): 330
Enter beginning balance: 79875
Enter total charges: 777
Enter total credits: 444
Enter credit limit: 90000
Account: 330
Credit limit: 90000.00
Balance: 80208.00
Within credit limit.

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

==== Code Execution Successful ===

```

2.

Start

Set totalMiles = 0
Set totalGallons = 0

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

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

Set milesPerGallon = milesDriven / gallonsUsed
Output "The miles/gallon for this tank was ", milesPerGallon

totalMiles = totalMiles + milesDriven
totalGallons = totalGallons + gallonsUsed

Output "Enter the gallons used (-1 to end): "
Input gallonsUsed
End while
If totalGallons > 0 then
 Set overallAverage = totalMiles / totalGallons
 Output "The overall average miles/gallon was ", overallAverage
End if
Stop

```

main.cpp

1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4
5 int main() {
6     float gallonsUsed;
7     float milesDriven;
8     float milesPerGallon;
9     float totalMiles = 0;
10    float totalGallons = 0;
11
12    cout << fixed << setprecision(6);
13
14    cout << "Enter the gallons used (-1 to end):";
15    cin >> gallonsUsed;
16
17    while (gallonsUsed != -1) {
18        cout << "Enter the miles driven: ";
19        cin >> milesDriven;
20
21        milesPerGallon = milesDriven / gallonsUsed;
22        cout << "The miles / gallon for this tank was " <<
23            milesPerGallon << endl;
24
25        totalMiles += milesDriven;
26        totalGallons += gallonsUsed;
27
28        cout << "\nEnter the gallons usd (-1 to end): ";
29        cin >> gallonsUsed;
30    }
}

```

Enter the gallons used (-1 to end):15
Enter the miles driven: 300
The miles / gallon for this tank was 20.000000

Enter the gallons usd (-1 to end): 10
Enter the miles driven: 30
The miles / gallon for this tank was 3.000000

Enter the gallons usd (-1 to end): -1
The overall average miles/gallon was 13.200000

== Code Execution Successful ==

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

The screenshot shows a code editor interface with a toolbar at the top. The file tab shows "main.cpp". The toolbar includes icons for copy, paste, share, run, and clear. The code editor area contains the following C++ code:

```
1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4
5 int main() {
6     int weight;
7     float cost;
8
9     cout << fixed << setprecision(2);
10
11    cout << "Enter weight of parcel in grams:";
12    cin >> weight;
13
14    if (weight > 100) {
15        cout << "Parcel exceeds maximum weight limit." << endl;
16    } else {
17        if (weight <= 100) {
18            cost = 2.00;
19        }
20        else if (weight <= 300) {
21            cost = 5.00;
22        }
23        else {
24            cost = 5.00;
25            int extremeweight = weight - 300;
26            int extraunits = extremeweight / 100;
27
28            if (extremeweight % 100 != 0) {
29                extraunits += 1;
30            }
31        }
32    }
33}
```

The output window shows the results of running the code with an input of 100 and 300 grams.

Output:
Enter weight of parcel in grams:100
The cost of sending the parcel is: P2.00
==== Code Execution Successful ===

Output

```
Enter weight of parcel in grams:300
The cost of sending the parcel is: P5.00

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

Output

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

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

Output

```
Enter weight of parcel in grams:20202020
Parcel exceeds maximum weight limit.
```

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

```
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"
output "End"
stop

```

```

main.cpp | Run | Output
1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4
5 int main() {
6     int choice;
7     float value, result;
8     string again;
9
10    do {
11        cout << "(1) cm -> inches\n";
12        cout << "(2) inches - cm\n";
13        cout << "(3) feet -> meter\n";
14        cout << "(4) meter -> feet\n";
15        cout << "Enter your choice (1-4): ";
16        cin >> choice;
17
18        if (choice == 1) {
19            cout << "Enter value in cm: ";
20            cin >> value;
21            result = value / 2.54;
22            cout << value << " cm = " << result << " inches\n";
23        }
24        else if (choice == 2) {
25            cout << "Enter value in inches: ";
26            cin >> value;
27            result = value * 2.54;
28            cout << value << " inches = " << result << " cm\n";
29        }
30        else if (choice == 3) {
31            cout << "Enter value in feet: ";
32            cin >> value;
33            result = value / 0.3048;
34            cout << value << " meters = " << result << " meters\n";
35        }
36        else if (choice == 4) {

```

(1) cm -> inches
(2) inches - cm
(3) feet -> meter
(4) meter -> feet
Enter your choice (1-4): 1
Enter value in cm: 20
20 cm = 7.87402 inches
Do you want to convert again? (yes/no): yes
(1) cm -> inches
(2) inches - cm
(3) feet -> meter
(4) meter -> feet
Enter your choice (1-4): 2
Enter value in inches: 6
2.54 inches = 2.54 cm
Do you want to convert again? (yes/no): yes
(1) cm -> inches
(2) inches - cm
(3) feet -> meter
(4) meter -> feet
Enter your choice (1-4): 3
Enter value in feet: 6
6 meters = 19.685 meters
Do you want to convert again? (yes/no): yes
(1) cm -> inches
(2) inches - cm
(3) feet -> meter
(4) meter -> feet
Enter your choice (1-4): 4
Enter the value in meters:40
40 meters = 131.234 feet/nDo you want to convert again? (yes/no): no
End

==== Code Execution Successful ===|

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 = ", area

Else 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

```

```

main.cpp | Run | Output
1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4
5 int main() {
6     int choice;
7     float radius, lenght, width, base, height, side, area;
8     string again;
9
10    do {
11        cout << "(1) Area of Circle\n";
12        cout << "(2) Area of Rectangle\n";
13        cout << "(3) Area of Triangle\n";
14        cout << "(4) Area of Square\n";
15        cout << "Enter your choice (1-4): ";
16        cin >> choice;
17
18        if (choice == 1) {
19            cout << "Enter radius: ";
20            cin >> radius;
21            area = 3.1416 * radius * radius;
22            cout << "Area of Circle = " << area << endl;
23        }
24        else if (choice == 2) {
25            cout << "Enter length: ";
26            cin >> lenght;
27            cout << "Enter width: ";
28            cin >> width;
29            area = lenght * width;
30            cout << "Area of Rectangle = " << area << endl;
31        }
32        else if (choice == 3) {
33            cout << "Enter base: ";
34            cin >> base;
35            cout << "Enter height: ";
36            cin >> height;
37            area = 0.5 * base * height;
38            cout << "Area of Triangle = " << area << endl;
39        }
40        else if (choice == 4) {
41            cout << "Enter side: ";
42            cin >> side;
43            area = side * side;
44            cout << "Area of Square = " << area << endl;
45        }
46    }
47
48    cout << "Do you want to compute again? (yes/no): ";
49    cin >> again;
50
51    if (again != "yes" & again != "Yes")
52        break;
53}

```

(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter your choice (1-4): 1
Enter radius: 10
Area of Circle = 314.16
Do you want to compute again? (yes/no): yes
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter your choice (1-4): 2
Enter length: 20
Enter width: 30
Area of Rectangle = 600
Do you want to compute again? (yes/no): yes
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter your choice (1-4): 3
Enter base: 66
Enter height: 90
Area of Triangle = 2970
Do you want to compute again? (yes/no): yes
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter your choice (1-4): 4
Enter side:30
Area of Square = 900
Do you want to compute again? (yes/no): no
End
==== Code Execution Successful ===

7. Supplementary Activity

8. Conclusion

I learned while typing the pseudo codes how to arrange and rearrange certain steps to make a program. While it was tough making this, I still learned something in the process

9. 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