

Activity No. 3.1	
Control Structures (part 2)	
Course Code: CPE007	Program: Computer Engineering
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6. Output	

1.

Pseudocode:

start

set accNo as int

set beginBal, totalCrg, totalCred, credLim, finalBal as float

output "Enter account number (-1 to end): "

input accNo

while accNo \neq -1

output "Enter beginning balance: "

input beginBal

output "Enter total charges: "

input totalCrg

output "Enter total credits: "

input totalCred

output "Enter credit limit: "

input credLim

set finalBal = beginBal + totalCrg - totalCred

if finalBal > credLim

then

output "Account: ", accNo

output "Credit limit: ", credLim

output "Balance: ", finalBal

output "Credit Limit Exceeded."

stop if

output "Enter account number (-1 to end): "

input accNo

while stop

output "Program ended."

stop

```

1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4 int main()
5 {
6     int accNo;
7     float beginBal, totalCrg, totalCred, credLim, finalBal;
8     cout << "Enter account number (-1 to end): ";
9     cin >> accNo;
10
11     while (accNo != -1)
12     {
13         cout << "Enter beginning balance: ";
14         cin >> beginBal;
15         cout << "Enter total charges: ";
16         cin >> totalCrg;
17         cout << "Enter total credits: ";
18         cin >> totalCred;
19         cout << "Enter credit limit: ";
20         cin >> credLim;
21
22         finalBal = beginBal + totalCrg - totalCred;
23
24         if (finalBal > credLim)
25         {
26             cout << "Account: " << accNo << endl;
27             cout << "Credit limit: " << credLim << endl;
28             cout << "Balance: " << finalBal << endl;
29             cout << "Credit Limit Exceeded." << endl;
30         }
31         cout << endl;
32         cout << "Enter account number (-1 to end): ";
33         cin >> accNo;
34     }
35     cout << "Program ended.";
36     return 0;
37 }

```

Program:

```

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
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 ended.

```

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

2.

Pseudocode:

start

set gal, mil, totalGal=0, totalMil=0 as float

```

output "Enter the gallons used (-1 to end): "
input gal
while gal != -1
    output "Enter the miles driven: "
    input mil

    set mpg = mil / gal
    output "The miles / gallon for this tank was ", mpg
    totalGal = totalGal + gal
    totalMil = totalMil + mil

    output "Enter the gallons used (-1 to end): "
    input gal
while stop

if totalGal > 0
    then
        set finalMpg = totalMil / totalGal
        output "The overall average miles/gallon was ", finalMpg
    if stop
stop

```

```

1  #include <iostream>
2  #include <iomanip>
3  using namespace std;
4  int main()
5  {
6      float gal, mil, totalGal=0, totalMil=0;
7      cout << fixed << setprecision(6);
8      cout << "Enter the gallons used (-1 to end): ";
9      cin >> gal;
10
11     while (gal != -1)
12     {
13         cout << "Enter the miles driven: ";
14         cin >> mil;
15
16         float mpg = mil/gal;
17         cout << "The miles / gallon for this tank was " << mpg << endl;
18         cout << endl;
19         totalGal += gal;
20         totalMil += mil;
21
22         cout << "Enter the gallons used (-1 to end): ";
23         cin >> gal;
24     }
25     if (totalGal > 0)
26     {
27         float finalMpg = totalMil / totalGal;
28         cout << endl;
29         cout << "The overall average miles/gallon was " << finalMpg << endl;
30     }
31     return 0;
32 }

```

Program:

```

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 ===

```

Execution:

3.

Pseudocode:

start

set weight, cost as float

output "Enter parcel weight in g: "

input weight

if weight > 1000

then

output "Parcel exceeds maximum weight of 1000g."

else

if weight <= 300

then

cost = 5.00

else

add = weight - 300

rounded = rounded (add / 100)

ost = 5.00 + (rounded * 2.00)

if stop

output "Cost of sending the parcel is P", cost

if stop

stop

```

1 #include <iostream>
2 #include <iomanip>
3 using namespace std;
4 int main()
5 {
6     float weight, cost;
7     cout << fixed << setprecision(2);
8     cout << "Enter parcel weight in g: ";
9     cin >> weight;
10
11     if (weight > 1000)
12     {
13         cout << "Parcel exceeds maximum weight of 1000g." << endl;
14     }
15
16     else
17     {
18         if (weight <= 300)
19         {
20             cost = 5.00;
21         }
22
23         else
24         {
25             int add = weight - 300;
26             int rounded = (add / 100.0);
27             cost = 5.00 + (rounded * 2.00);
28         }
29
30         cout << "Cost of sending the parcel is P" << cost << endl;
31     }
32     return 0;
33 }

```

Program:

```

Enter parcel weight in g: 200
Cost of sending the parcel is P5.00
Enter parcel weight in g: 300
Cost of sending the parcel is P5.00
Enter parcel weight in g: 500
Cost of sending the parcel is P9.00
Enter parcel weight in g: 700
Cost of sending the parcel is P13.00
Enter parcel weight in g: 900
Cost of sending the parcel is P17.00
Enter parcel weight in g: 1000
Cost of sending the parcel is P19.00
Enter parcel weight in g: 1100
Parcel exceeds max weight of 1000g.

```

Execution:

4.

Pseudocode:

start

set choice, value, result

set repeat = 'y'

while repeat == 'y'

output "Unit Converter"

output "(1) cm - inches"

output "(2) inches - cm"

output "(3) feet - meter"

output "(4) meter - feet"

output "Enter choice (1-4): "

input choice

switch choice

case 1:

output "Enter value in cm: "

input value

result = value / 2.54

```
        output value, " cm = ", result, " inches"
        break
    case 2:
        output "Enter value in inches: "
        input value
        result = value * 2.54
        output value, " inches = ", result, " cm"
        break
    case 3:
        output "Enter value in feet: "
        input value
        result = value * 0.3048
        output value, " feet = ", result, " meters"
        break
    case 4:
        output "Enter value in meters: "
        input value
        result = value / 0.3048
        output value, " meters = ", result, " feet"
        break
    default:
        output "Invalid. Choose 1-4."
switch stop

    output "Convert another? (y/n): "
    input repeat
while stop
    output "Program ended."
stop
```

```

1  #include <iostream>
2  #include <iomanip>
3  using namespace std;
4  int main()
5  {
6      int choice;
7      float value, result;
8      char repeat = 'y';
9      cout << fixed << setprecision(4);
10
11     while (repeat == 'y')
12     {
13         cout << "Choose unit to convert" << endl;
14         cout << "(1) cm - inches" << endl;
15         cout << "(2) inches - cm" << endl;
16         cout << "(3) feet - meter" << endl;
17         cout << "(4) meter - feet" << endl;
18         cout << "Enter choice (1-4): ";
19         cin >> choice;
20
21         switch (choice)
22         {
23             case 1:
24                 cout << "Enter value in cm: ";
25                 cin >> value;
26                 result = value/2.54;
27                 cout << value << " cm = " << result << " inches" << endl;
28                 break;
29             case 2:
30                 cout << "Enter value in inches: ";
31                 cin >> value;
32                 result = value * 2.54;
33                 cout << value << " inches = " << result << " cm" << endl;
34                 break;
35             case 3:
36                 cout << "Enter value in feet: ";
37                 cin >> value;
38                 result = value * 0.3048;
39                 cout << value << " feet = " << result << " meters" << endl;
40                 break;
41             case 4:
42                 cout << "Enter value in meters: ";
43                 cin >> value;
44                 result = value/0.3048;
45                 cout << value << " meters = " << result << " feet" << endl;
46                 break;
47             default:
48                 cout << "Invalid. Choose 1-4." << endl;
49         }
50         cout << endl;
51         cout << "Convert another? (y/n): ";
52         cin >> repeat;
53     }
54     cout << "Program ended." << endl;
55     return 0;
56 }

```

Program:


```

Choose unit to convert
(1) cm - inches
(2) inches - cm
(3) feet - meter
(4) meter - feet
Enter choice (1-4): 1
Enter value in cm: 38
38.0000 cm = 14.9606 inches

Convert another? (y/n): y
Choose unit to convert
(1) cm - inches
(2) inches - cm
(3) feet - meter
(4) meter - feet
Enter choice (1-4): 2
Enter value in inches: 15
15.0000 inches = 38.1000 cm

Convert another? (y/n): y
Choose unit to convert
(1) cm - inches
(2) inches - cm
(3) feet - meter
(4) meter - feet
Enter choice (1-4): 3
Enter value in feet: 6
6.0000 feet = 1.8288 meters

Convert another? (y/n): y
Choose unit to convert
(1) cm - inches
(2) inches - cm
(3) feet - meter
(4) meter - feet
Enter choice (1-4): 4
Enter value in meters: 2
2.0000 meters = 6.5617 feet

Convert another? (y/n): n
Program ended.

```

Execution:

5.

Pseudocode:

start

set choice, area, radius, length, width, base, height, side

set repeat = 'y'

while repeat == 'y'

output "Choose area to calculate"

output "(1) Area of Circle"

output "(2) Area of Rectangle"

output "(3) Area of Triangle"

output "(4) Area of Square"

output "Enter choice (1-4): "

input choice

switch choice

case 1:

```
    output "Enter radius: "
    input radius
    area = 3.1415927 * radius * radius
    output "Area of Circle = ", area
    break
case 2:
    output "Enter length: "
    input length
    input "Enter width: "
    input width
    area = length * width
    output "Area of Rectangle = ", area
    break
case 3:
    output "Enter base: "
    input base
    output "Enter height: "
    input height
    area = (base * height) / 2
    output "Area of Triangle = ", area
    break
case 4:
    output "Enter side length: "
    input side
    area = side * side
    output "Area of Square = ", area
    break
default
    output "Invalid. Choose 1-4."
switch stop

    output "Compute another? (y/n): "
    input repeat
while stop
    output "Program ended."
stop
```

```

1  #include <iostream>
2  #include <iomanip>
3  using namespace std;
4  int main()
5  {
6      int choice;
7      float radius, length, width, base, height, side, area;
8      char repeat = 'y';
9      cout << fixed << setprecision(4);
10
11     while (repeat == 'y')
12     {
13         cout << "Choose area to calculate" << endl;
14         cout << "(1) Area of Circle" << endl;
15         cout << "(2) Area of Rectangle" << endl;
16         cout << "(3) Area of Triangle" << endl;
17         cout << "(4) Area of Square" << endl;
18         cout << "Enter choice (1-4): ";
19         cin >> choice;
20
21         switch (choice)
22         {
23             case 1:
24                 cout << "Enter radius: ";
25                 cin >> radius;
26                 area = 3.1415927 * radius * radius;
27                 cout << "Area of Circle = " << area << endl;
28                 break;
29             case 2:
30                 cout << "Enter length: ";
31                 cin >> length;
32                 cout << "Enter width: ";
33                 cin >> width;
34                 area = length * width;
35                 cout << "Area of Rectangle = " << area << endl;
36                 break;
37             case 3:
38                 cout << "Enter base: ";
39                 cin >> base;
40                 cout << "Enter height: ";
41                 cin >> height;
42                 area = (base * height)/2;
43                 cout << "Area of Triangle = " << area << endl;
44                 break;
45             case 4:
46                 cout << "Enter side length: ";
47                 cin >> side;
48                 area = side * side;
49                 cout << "Area of Square = " << area << endl;
50                 break;
51             default:
52                 cout << "Invalid. Choose 1-4." << endl;
53         }
54         cout << endl;
55         cout << "Compute another? (y/n): ";
56         cin >> repeat;
57     }
58     cout << "Program ended." << endl;
59     return 0;
60 }

```

Program:

```

Choose area to calculate
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter choice (1-4): 1
Enter radius: 8
Area of Circle = 201.0619

Compute another? (y/n): y
Choose area to calculate
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter choice (1-4): 2
Enter length: 6
Enter width: 4
Area of Rectangle = 24.0000

Compute another? (y/n): y
Choose area to calculate
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter choice (1-4): 3
Enter base: 5
Enter height: 7
Area of Triangle = 17.5000

Compute another? (y/n): y
Choose area to calculate
(1) Area of Circle
(2) Area of Rectangle
(3) Area of Triangle
(4) Area of Square
Enter choice (1-4): 4
Enter side length: 3
Area of Square = 9.0000

Compute another? (y/n): n
Program ended.

```

Execution:

7. Supplementary Activity

8. Conclusion

Concluding this activity, I learned the newer control structures such as the while and switch-case structures which allowed me to use more variables and processes. These selection and iteration loops allowed my code to perform multiple actions within the program. I also learned how to manipulate and insert other parts of the codes inside the while and switch variables, which in this case, allowed me to place the choices alongside the processes. The class discussion weeks before this activity also taught me that you can make combinations of control structures inside a program to solve the more complex problems.

9. Assessment Rubric