Write a C++ program to ask user to enter his/her average marks in DCS1101. The program prints "You pass" if a student's average marks is 50 and above, otherwise display "You Fail".

```
1
     // Question 1
 2
 3
     #include <iostream>
 4
     using namespace std;
 5
     int main()
 6
 7 - {
         double avg;
 8
 9
10
         // infinite loop while avg less than 0 or more than 100
11 -
         do {
12
              cout << "Enter your average mark: ";
13
             cin >> avg;
14
15
              if(avg < 0 || avg > 100)
                  cout << "Invalid average mark.\n" << endl;
16
17
         while(avg < 0 || avg > 100);
18
19
20
         if(avg >= 50)
21
              cout << "\nYou pass." << endl;
22
         else
              cout << "\nYou fail." << endl;
23
24
25
         return 0;
26
```

### Sample program run 1:

```
C:\Users\User\Downloads\Lab 5 Question\Question 1.exe

Enter your average mark: 10

You fail.

Process exited after 6.796 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 2:

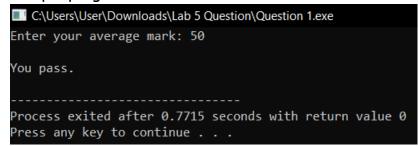
```
☐ C:\Users\User\Downloads\Lab 5 Question\Question 1.exe

Enter your average mark: 90

You pass.

Process exited after 0.9598 seconds with return value 0

Press any key to continue . . .
```



### Validation:

Write a C++ program to ask user input the age of Sam and Ryan. The program shall determine who is younger or they have same age.

```
1
     // Question 2
 2
 3
     #include <iostream>
 4
     using namespace std;
 5
     int main()
 6
 7 🖃 {
          int aS, aR;
 8
 9
10
          // infinite loop while age is wrong
11 =
          do{
12
              cout << "Enter the age of Sam and Ryan: ";</pre>
13
              cin >> aS >> aR;
14
15
              if(aS < 0 | | aS > 150 | | aR < 0 | | aR > 150)
              cout << "Invalid age.\n" << endl;
16
17
         while(aS < 0 || aS > 150 || aR < 0 || aR > 150);
18
19
20
          if(aS == aR)
21
              cout << "Sam and Ryan have same age." << endl;</pre>
          else if (aS > aR)
22
              cout << "Ryan is younger than Sam." << endl;
23
         else
24
25
              cout << "Sam is younger than Ryan" << endl;</pre>
26
27
         return 0;
28
29
```

### Sample program run 1:

### Sample program run 2:

```
C:\Users\User\Downloads\Lab 5 Question\Question 2.exe

Enter the age of Sam and Ryan: 25 18

Ryan is younger than Sam.

Process exited after 1.947 seconds with return value 0

Press any key to continue . . .
```

■ C:\Users\User\Downloads\Lab 5 Question\Question 2.exe

Enter the age of Sam and Ryan: 19 19

Sam and Ryan have same age.

-----
Process exited after 4.417 seconds with return value 0

Press any key to continue . . .

### Validation:

# Enter the age of Sam and Ryan: -1 10 Invalid age. Enter the age of Sam and Ryan: -1 151 Invalid age. Enter the age of Sam and Ryan: 10 151 Invalid age. Enter the age of Sam and Ryan: 10 151 Invalid age. Enter the age of Sam and Ryan: 100 101 Sam is younger than Ryan Process exited after 41.54 seconds with return value 0 Press any key to continue . . .

Write a C++ program to calculate the total expenses. Quantity and price per item are input by the user and discount of 10% is offered if the expenses is more than RM50.

```
1
     // Question 3
 2
     #include <iostream>
 3
     #include <iomanip>
4
 5
     using namespace std;
 6
7
     int main()
8 - {
9
                      // quantity
         int q;
         double p;
10
                      // price
         cout << setprecision(2) << fixed;
11
12
         // infinite loop while quantity less than 0
13
14
         // or price is 0 or lesser
15 =
         do {
16
             cout << "Enter the quantity and price of the item: ";
17
             cin >> q >> p;
18
             if(q < 0)
19
20
                  cout << "\nInvalid quantity." << endl;
21
              else if(p \ll 0)
                  cout << "\nInvalid price." << endl;</pre>
22
23
24
         while(q < 0 \mid\mid p <= 0);
25
26
         p = p * q;
                             // calc price
27
         // discount 10% for price => 50
28
29
         if(p >= 50)
30
             p = p * 0.9;
31
         cout << "The total expenses is RM" << p;</pre>
32
33
34
         return 0;
35
36 L }
```

### Sample program run 1:

```
C:\Users\User\Downloads\Lab 5 Question\Question 3.exe

Enter the quantity and price of the item: 10 2.5

The total expenses is RM25.00

------

Process exited after 11.65 seconds with return value 0

Press any key to continue . . .
```

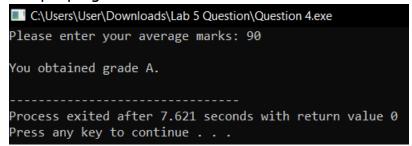
### Validation:

(a) Write a C++ program to accept average marks from the user. Display the appropriate message based on the following criteria:

Average	Categories (to display as message)
Above 100	Invalid data
90 - 100	Α
80 and Above (but less than 90)	В
60 and Above (but less than 80)	You Pass
Below 60	You Fail

(b) Enhance the program to display "Invalid data" if the average marks is negative value.

```
// Question 4
 1
 2
     #include <iostream>
 3
 4
     using namespace std;
 5
     int main()
 6
 7 🖃 {
                               // average
 8
         double avg;
                               // categories
 9
         string c;
10
         // infinite loop while avg < 0
11
         // or avg > 0
12
13 -
         do{
14
              cout << "Please enter your average marks: ";</pre>
15
              cin >> avg;
16
              if(avg < 0 \mid \mid avg > 100)
17
                  cout << "Invalid data.\n" << endl;</pre>
18
19
         while(avg < 0 \mid \mid avg > 100);
20
21
22
         // determine categories
23
         if(avg >= 90)
              c = "You obtained grade A.";
24
          else if(avg >= 80)
25
              c = "You obtained grade B.";
26
27
          else if(avg >= 60)
              c = "You Pass.";
28
29
          else
30
              c = "You Fail.";
31
32
         cout << endl << c << endl;
33
34
         return 0;
35
36 L }
```



### Sample program run 2:

```
C:\Users\User\Downloads\Lab 5 Question\Question 4.exe

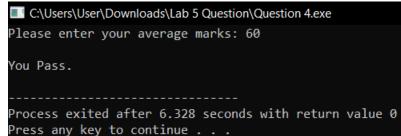
Please enter your average marks: 80

You obtained grade B.

Process exited after 1.642 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 3:



### Sample program run 4 + Validation:

```
C:\Users\User\Downloads\Lab 5 Question\Question 4.exe

Please enter your average marks: -1
Invalid data.

Please enter your average marks: 101
Invalid data.

Please enter your average marks: 100.0001
Invalid data.

Please enter your average marks: -0.00001
Invalid data.

Please enter your average marks: 23

You Fail.

Process exited after 17.28 seconds with return value 0

Press any key to continue . . .
```

Write a C++ program to calculate the gross pay of an education consultant for a month based on the following information given:

- An education consultant will have a basic pay of RM1500
- If the consultant manage to recruite more than 5 students within a month, he will get an additional RM60 for each recruite beyond the 5
- If less than 2 students leave the college within a month, he will entitle for additional bonus of RM100.

```
// Ouestion 5
1
     #include <iostream>
3
4
     #include <iomanip>
5
    using namespace std;
6
7
     int main()
8 🗏 {
         const int bp = 1500;
                                 // basic pay
9
         int r, l, rb, lb, gp; // declare recruite, leave, recruite bonus, leave bonus and gross pay
10
         unsigned int padding; // for table spacing
11
12
         // infinite loop while recruit < 0
13
14 🗀
15
             cout << "How many students did you recruited in this month?" << endl;</pre>
             cin >> r;
16
17
18
             if(r < 0)
                 cout << "Invalid number of student. Please try again." << endl;</pre>
19
20
21
         while(r < 0);
22
         // infinite loop while leave < 0
23
24 🗀
             cout << "How many students leave the college within a month?" << endl;</pre>
25
26
             cin >> l;
27
             if(l < 0)
28
                 cout << "Invalid number of student. Please try again." << endl;</pre>
29
30
         while(l < 0);
31
32
33
         // reward 60 per student after 5 students
34
         if(r > 5)
35
             rb = 60 * (r - 5);
         else
```

```
37
            rb = 0:
38
        // reward 100 if leaver < 2
39
40
        if(l < 2)
41
           lb = 100;
42
        else
43
           lb = 0;
44
45
        gp = bp + rb + lb;
                           // total up
46
47
        cout << endl << "----" << endl:
48
49
        // output gross pay details
50
51
        cout << "|" << setw(padding = 14) << "Salary"</pre>
                                                          << setw(padding = 9) << "|" << setw(padding = 8) << "Amount" << setw(padding = 3) << "|" << endl;
52
        cout << "|" << setw(padding = 16) << "Basic Pay"</pre>
                                                          << setw(padding = 7) << "|" << setw(padding = 8) << bp
53
                                                                                                                   << setw(padding = 3) << "|" << endl;
54
        cout << "|" << setw(padding = 18) << "Recruite Bonus" << setw(padding = 5) << "|" << setw(padding = 8) << rb
                                                                                                                   << setw(padding = 3) << "|" << endl;
55
        cout << "|" << setw(padding = 17) << "Leaver Bonus"</pre>
                                                          << setw(padding = 6) << "|" << setw(padding = 8) << lb
                                                                                                                   << setw(padding = 3) << "|" << endl;
56
        cout << "_____ << endl;
57
        cout << "|" << setw(padding = 16) << "Gross Pay"</pre>
                                                          << setw(padding = 7) << "|" << setw(padding = 8) << gp
                                                                                                                   << setw(padding = 3) << "|" << endl;
58
59
        return 0;
60
61 L }
```

```
C:\Users\User\Downloads\Lab 5 Question\Question 5.exe
How many students did you recruited in this month?
How many students leave the college within a month?
 ----- YOUR PAYMENT ------
        Salary
                         Amount
       Basic Pay
                            1500
    Recruite Bonus
                               0
     Leaver Bonus
                             100
                            1600
       Gross Pay
Process exited after 11.29 seconds with return value 0
Press any key to continue . . .
```

C:\Users\User\Downloads\Lab 5 Question\Question 5.exe		
How many students did you recruited in this month?		
12		
How many students leave the college within a month?		
3		
VOLD DAVMENT		
YOUR PAYMENT		
Basic Pay   1500		
Recruite Bonus   420		
Leaver Bonus   0		
Gross Pay   1920		
Process exited after 6.167 seconds with return value 0		
Press any key to continue		

# Sample program run 3 + Validation:

■ C:\Users\User\Downloads\Lab 5 Question\Question 5.exe		
How many students did you recruited in this month? -1		
Invalid number of student. Please try again.		
How many students did you recruited in this month? 34		
How many students leave the college within a month? -4		
Invalid number of student. Please try again.		
How many students leave the college within a month? 0		
YOUR PAYMENT		
Salary   Amount		
Recruite Bonus   1740		
Leaver Bonus   100		
Process exited after 32.05 seconds with return value 0 Press any key to continue		

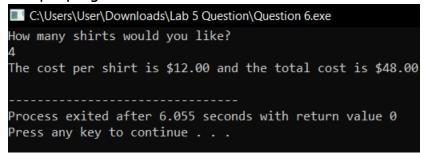
The local t-shirt shop sells shirts that retail for \$12. Quantity discounts are given as follow:

### Number of Shirts Discount

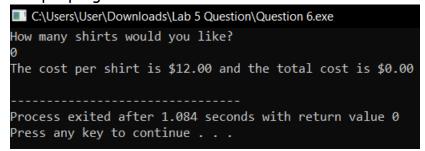
```
5-10 10%
11-20 15%
21-30 20%
31 or more 25%
```

Write a program that prompts the user for the number of shirts required and then computes the total price. Make sure the program accepts only nonnegative input.

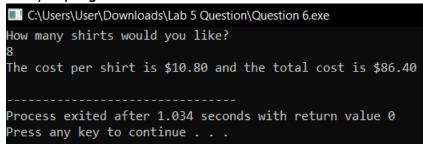
```
1
      // Question 6
 2
 3
      #include <iostream>
 4
      #include <iomanip>
 5
      using namespace std;
 6
 7
      int main()
 8 🗌 {
                                                // shirt
 9
          int s:
10
          double p = 12, t;
                                               // price, total
11
          cout << setprecision(2) << fixed; // output in 2 d.p.</pre>
12
          // infinite loop while s < 0
13
14 -
              cout << "How many shirts would you like?" << endl;</pre>
15
16
              cin >> s;
17
18
              if(s < 0)
              cout << "Invalid Input: Please enter a nonnegative integer.\n" << endl;</pre>
19
20
21
          while(s < 0);
22
23
          // determine discount
24
          if(s > 30)
25
              p = p * 0.75;
26
          else if(s > 21)
27
              p = p * 0.86;
28
          else if(s > 11)
29
              p = p * 0.85;
30
          else if(s > 4)
              p = p * 0.96;
31
32
33
              p = p * 1.06;
34
35
                               // calc total
          t = s * p;
36
          cout << "The cost per shirt is $" << p << " and the total cost is $" << t << endl;
37
38
39
          return 6;
40
41
```



### Sample program run 2:



### Sample program run 3:



### Sample program run 4 (Validation):

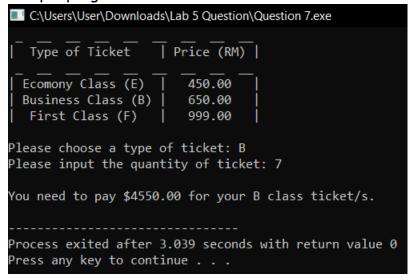
Write a C++ program by using switch statement. The program shall ask user to input the type of the ticket and quantity, then display the total amount to be paid.

Use the letter given in the bracket to represent the type of the ticket.

Type of Ticket	Price (RM)
Economy Class (E)	450.00
Business Class (B)	650.00
First Class (F)	999.00

```
1 // Question 7
 2
    #include <iostream>
 3
    #include <iomanip>
5 #include <limits> // get numeric limits
6 #include <ios> // get stream size
                       // get stream size
    using namespace std;
    int main()
10 🗏 {
                                             // type of ticket
11
        double ec = 450, bc = 650, fc = 999, t; // ec price, bc price, fc price cout << setprecision(2) << fixed;
13
14
        unsigned int padding; // for table spacing
15
        // output ticket details
17
                                               __" << endl;
18
        cout <<
        cout << "|" << setw(padding = 16) << "Type of Ticket"
                                                              << setw(padding = 5)
        20
21
23
24
25
        // infinite loop while x is not E, B or F
27 🖨
           cout << "\nPlease choose a type of ticket: ";</pre>
28
29
           cin.ignore(numeric_limits<streamsize>::max(), '\n');
                                                                  // fetch first char only - prevent execute all
31
32
          if(x != 'E' && x != 'B' && x != 'F')
           cout << "Please choose either 'E', 'B' or 'F'." << endl;
33
34
35
        while(x != 'E' && x != 'B' && x != 'F');
36
37
        // infinite loop while q < 0
38 🖹
            cout << "Please input the quantity of ticket: ";</pre>
39
40
41
           if(q < 0)
42
          cout << "Invalid quantity.\n" << endl;</pre>
44
45
        while(q < 0);
46
47
        // calculate total price based on classes
48
        switch(x)
49 🖨
            case 'E':
                       t = ec * q;
51
                       break;
52
            case 'B': t = bc * q;
53
                       break;
            case 'F':
55
                       break;
56
57
        cout << "\nYou need to pay \" << t << " for your " << x << " class ticket/s." << endl;
59
60
        return 0:
```

### Sample program run 2:



### Sample program run 3:

```
C:\Users\User\Downloads\Lab 5 Question\Question 7.exe

Type of Ticket | Price (RM) |

Ecomony Class (E) | 450.00 |

Business Class (B) | 650.00 |

First Class (F) | 999.00 |

Please choose a type of ticket: F

Please input the quantity of ticket: 10

You need to pay $9990.00 for your F class ticket/s.

Process exited after 2.499 seconds with return value 0

Press any key to continue . . .
```

### Validation:

```
C:\Users\User\Downloads\Lab 5 Question\Question 7.exe
 Type of Ticket | Price (RM) |
Ecomony Class (E)
                         450.00
 Business Class (B)
                         650.00
  First Class (F)
                         999.00
Please choose a type of ticket: X
Please choose either 'E', 'B' or 'F'.
Please choose a type of ticket: EBAA
Please input the quantity of ticket: -121
Invalid quantity.
Please input the quantity of ticket: 1
You need to pay $450.00 for your E class ticket/s.
Process exited after 32.44 seconds with return value 0
Press any key to continue . . .
```

Write a C++ program to provide 2 option menu for the user: Convert Celcius to Fahrenheit and Convert Fahrenheit to Celcius. The program shall perform the converstion based on the option selected.

```
fahrenheit = (9 / 5) x celsius + 32
celsius = (fahrenheit -32) / (9/5)
(Reminder: mixed data type rule eq: 5/2 = 2, 5.0 / 2 = 2.5)
```

```
// Question 8
 2
     #include <iostream>
 3
     #include <iomanip>
 5
     using namespace std;
 6
     int main()
 7
 8 🗏 {
 9
          int x;
10
          double celcius, fahrenheit;
11
          cout << setprecision(2) << fixed;</pre>
12
13
          cout << "Conversion Program" << endl;</pre>
14
          cout << "1. Convert Celcius to Fahrenheit" << endl;</pre>
15
          cout << "2. Convert Fahrenheit to Celcius" << endl;</pre>
16
17
          // infinite loop while x is not 1 or 2
18 🗀
          do{
19
              cout << "\nPlease enter an option: ";</pre>
20
              cin >> x;
21
22
              if(x != 1 \&\& x!= 2)
23
                  cout << "Invalid option" << endl;</pre>
24
25
          while(x != 1 \&\& x!= 2);
26
          // execution of selection
27
          if(x == 1)
28
29 -
30
              cout << "\nEnter the temperature in Celcius: ";</pre>
              cin >> celcius;
31
32
33
              fahrenheit = (9.0 / 5) * celcius + 32;
34
              cout << celcius << " Celcius is " << fahrenheit << " Fahrenheit" << endl;</pre>
35
36
37
          else
38 -
39
              cout << "\nEnter the temperature in Fahrenheit: ";</pre>
40
              cin >> fahrenheit;
41
42
              celcius = (fahrenheit - 32) / (9.0 / 5);
43
              cout << fahrenheit << " Fahrenheit is " << celcius << " celcius" << endl;</pre>
44
45
46
47
          return 0;
48
49 └ }
```

C:\Users\User\Downloads\Lab 5 Question\Question 8.exe

Conversion Program

1. Convert Celcius to Fahrenheit

2. Convert Fahrenheit to Celcius

Please enter an option: 1

Enter the temperature in Celcius: 100

100.00 Celcius is 212.00 Fahrenheit

Process exited after 8.647 seconds with return value 0

Press any key to continue . . .

### Sample program run 2:

C:\Users\User\Downloads\Lab 5 Question\Question 8.exe

Conversion Program

1. Convert Celcius to Fahrenheit

2. Convert Fahrenheit to Celcius

Please enter an option: 2

Enter the temperature in Fahrenheit: 300

300.00 Fahrenheit is 148.89 celcius

Process exited after 2.131 seconds with return value 0

Press any key to continue . . .

### Validation:

# C:\Users\User\Downloads\Lab 5 Question\Question 8.exe Conversion Program 1. Convert Celcius to Fahrenheit 2. Convert Fahrenheit to Celcius Please enter an option: 3 Invalid option Please enter an option: 0 Invalid option Please enter an option: 123 Invalid option Please enter an option: 2 Enter the temperature in Fahrenheit: -1 -1.00 Fahrenheit is -18.33 celcius Process exited after 10.68 seconds with return value 0 Press any key to continue . . .

Write a C++ program to calculate the monthly telephone bills based on the following criteria:

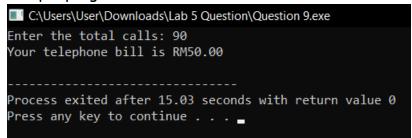
Minimum RM50 for up to 100 calls.

Plus RM0.60 per call for next 50 calls.

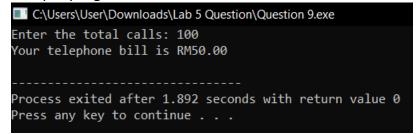
Plus RM0.50 per call for next 30 calls.

Plus RM0.40 per call for any call beyond 180 calls.

```
// Question 9
 2
     #include <iostream>
 3
     #include <iomanip>
 4
 5
     using namespace std;
 6
 7
     int main()
8 = {
                          // calls
9
         int c;
         double bp = 50, p, b; // base price, price, tel bill
10
         cout << setprecision(2) << fixed;</pre>
11
12
         // infinite loop while calls < 0
13
14 -
         do {
             cout << "Enter the total calls: ";
15
16
             cin >> c;
17
18
             if(c < 0)
19
                 cout << "Invalid input\n" << endl;
20
         while(c < 0);
21
22
         // calc tel bill
23
24
         if(c <= 100)
             b = bp;
25
         else if(c <= 150)
26
27
             b = bp + 0.6 * (c - 100);
         else if(c <= 180)
28
29
             b = bp + 0.6 * 50 + 0.5 * (c - 150);
30
         else
             b = bp + 0.6 * 50 + 0.5 * 30 + 0.4 * (c - 180);
31
32
         cout << "Your telephone bill is RM" << b << endl;</pre>
33
34
         return 0;
35
36
37 - }
```



### Sample program 2:



### Sample program 3:

```
C:\Users\User\Downloads\Lab 5 Question\Question 9.exe

Enter the total calls: 130

Your telephone bill is RM68.00

Process exited after 1.664 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 4:

```
C:\Users\User\Downloads\Lab 5 Question\Question 9.exe

Enter the total calls: 150

Your telephone bill is RM80.00

Process exited after 1.185 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 5:

```
C:\Users\User\Downloads\Lab 5 Question\Question 9.exe

Enter the total calls: 170

Your telephone bill is RM90.00

Process exited after 0.9094 seconds with return value 0

Press any key to continue . . . _
```

```
C:\Users\User\Downloads\Lab 5 Question\Question 9.exe

Enter the total calls: 200

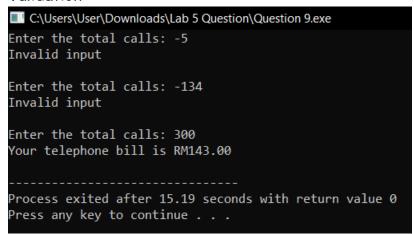
Your telephone bill is RM103.00

------

Process exited after 1.004 seconds with return value 0

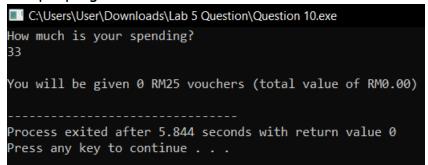
Press any key to continue . . .
```

### Validation:

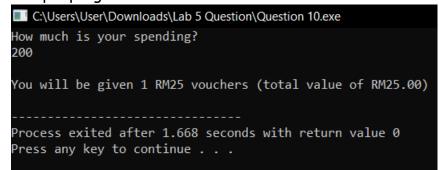


Write a C++ program to determine the number of RM25 vouchers and total voucher values a member is entitled to based on the member's total spending in the recent member day event in a shopping mall. For each RM200 spending, the member will be given one RM25 voucher. The total spending for more than RM600, additional one RM25 voucher will be given. For example, if the total spending is RM450, then total of 2 RM25 vouchers (total value RM50) will be given. However, if the total spending is RM650, then total of 4 RM25 vouchers (total value RM100) will be given.

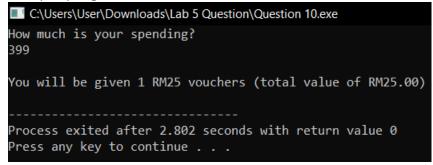
```
// Question 10
1
    #include <iostream>
 3
 4 #include <iomanip>
    using namespace std;
 7
    int main()
 8 🖵 {
 9
         // counter
10
         int y;
         // spending, voucher requirement, total value of voucher
11
         double s, x = 200, z;
12
         cout << setprecision(2) << fixed;</pre>
13
14
15
         // infinite loop while s < 0
16 🖃
         do{
             cout << "How much is your spending?" << endl;</pre>
17
18
             cin >> s;
19
20
             if(s < 0)
                cout << "Invalid amount.\n" << endl;</pre>
21
22
         while(s < 0);
23
24
         // add 1 voucher for every RM200
25
26
27
             if(s >= x)
28 🗀
29
                 y = y + 1;
30
                 x = x + 200;
31
32
33
         while(s >= x);
34
         // additional 1 voucher for s >= 600
35
         if(s >= 600)
36
37
         y = y + 1;
38
         // total value of voucher
39
40
         z = y * 25;
41
         cout << "\nYou will be given " << y << " RM25 vouchers (total value of RM" << z << ")"<< endl;
42
43
44
         return 0;
45
46 L }
```



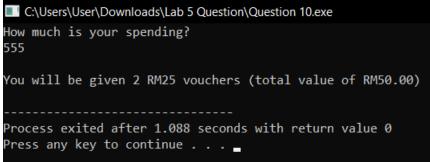
### Sample program run 2:

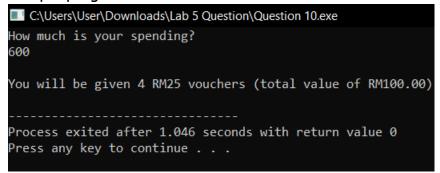


### Sample program run 3:

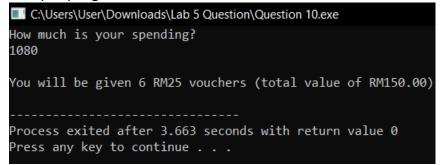


### Sample program run 4:

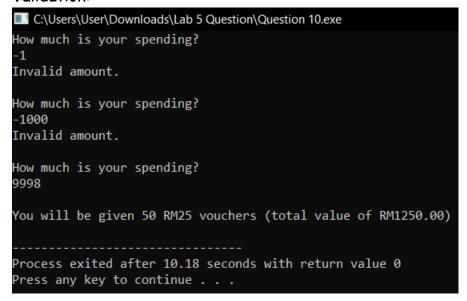




### Sample program run 6:



### Validation:



### Question 11 (Optional)

A parking charges a RM2.00 minum fee to park for up to three hours. An additioanl RM0.50 per hour for each hour or part thereof in exceess of three hours is charged further. The maxim charge for any given 24-hour period is RM10.00.

Assume that no car parks for longer than 24 hours at a time. Write a program that accepts total hours parked, then calculates and prints the parking charges.

```
1
      // Question 11
 2
 3
      #include <iostream>
 4
     #include <iomanip>
 5
      #include <cmath>
 6
      using namespace std;
 7
 8
      int main()
9 - 1
10
          // hours, basic charge, total
          double h, bc = 2, t;
11
          cout << setprecision(2) << fixed;
12
13
14
          // infinite loop while h < 0 or h > 24
15 -
             cout << "Total hours parked: ";
16
17
             cin >> h:
             h = ceil(h):
                                          // round up (+1 hour if exceeds)
18
19
              if(h < 0 || h > 24)
20
                 cout << "Invalid hour.\n" << endl;
21
22
23
          while(h < 0 || h > 24);
                                         // assume no h > 24
24
25
          // calculate parking charge
          if(h <= 3)
26
27
              t = bc;
28
          else
29 -
              t = bc + (h - 3) * 0.5;
30
              // hard cap at 10
31
              if(t > 16)
32
33
                 t = 16:
34
35
36
              cout << "The parking charges are RM" << t << endl;
37
38
          return 6;
39
40
```

### Sample program run 1:

```
C:\Users\User\Downloads\Lab 5 Question\Question 11.exe

Total hours parked: 3

The parking charges are RM2.00

------

Process exited after 4.927 seconds with return value 0

Press any key to continue . . .
```

```
C:\Users\User\Downloads\Lab 5 Question\Question 11.exe

Total hours parked: 3.01

The parking charges are RM2.50

------

Process exited after 3.886 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 3:

```
C:\Users\User\Downloads\Lab 5 Question\Question 11.exe

Total hours parked: 4

The parking charges are RM2.50

------

Process exited after 1.504 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 4:

```
C:\Users\User\Downloads\Lab 5 Question\Question 11.exe

Total hours parked: 4.5

The parking charges are RM3.00

------

Process exited after 1.239 seconds with return value 0

Press any key to continue . . . _
```

### Sample program run 5:

```
C:\Users\User\Downloads\Lab 5 Question\Question 11.exe

Total hours parked: 23

The parking charges are RM10.00

------

Process exited after 2.534 seconds with return value 0

Press any key to continue . . .
```

### Validation:

```
C:\Users\User\Downloads\Lab 5 Question\Question 11.exe

Total hours parked: 24.01

Invalid hour.

Total hours parked: 25

Invalid hour.

Total hours parked: 30

Invalid hour.

Total hours parked: -1

Invalid hour.

Total hours parked: 20

The parking charges are RM10.00

Process exited after 21.54 seconds with return value 0

Press any key to continue . . .
```

### Question 12 (Optional)

Write a C++ program that will help standard 1 student to learn multiplication. Use rand and srand to produce two positive integers randomly with one digit. The program then display a question such as: How much is 5 times 3? The program will verify the answer entered by the student and prints "Very Good" if the answer is correct, otherwise, prints "Sorry, incorrect answer", then reveal the answer to student.

(Hints: use % to ensure one digit integer)

```
// Question 12
3
    #include <iostream>
4
    #include <iomanip>
5
    using namespace std;
6
7
     int main()
8 🗏 {
9
         int a, b, x, y;
10
11
        srand(time(0));
         a = (rand() % 12) + 1;
12
         b = (rand() % 12) + 1;
13
14
         x = a * b;
15
         cout << "How much is " << a << " times " << b << " ? ";
16
17
         cin >> y;
18
19
         if(y == x)
            cout << "Very Good." << endl;
20
21
         else
22 🚍
23
             cout << "Sorry, incorrect answer." << endl;</pre>
             cout << a << " x " << b << " = " << x;
24
25
26
27
         return 0;
28
```

### Sample program run 1:

```
C:\Users\User\Downloads\Lab 5 Question\Question 12.exe

How much is 1 times 5 ? 5

Very Good.

Process exited after 2.54 seconds with return value 0

Press any key to continue . . .
```

### Sample program run 2: