Cabrera_Pablo_Cop1334C_Hw3

Duplicate figures:

- 4.1

// This program displays the values of true and false states.

#include <iostream>

using namespace std;

int main()

{

   bool trueValue, falseValue;

   int x = 5, y = 10;

   trueValue = x < y;

   falseValue = y == x;

   cout << "True is " << trueValue << endl;

   cout << "False is " << falseValue << endl;

   return 0;

}


```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"
True is 1
False is 0

Process returned 0 (0x0)    execution time : 0.012 s
Press any key to continue.
```

- 4.5

// This program averages 3 test scores. The if statement

// uses the = operator, but the == operator was inteded.

#include <iostream>

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

int main()
{
    int score1, score2, score3; // To hold three test scores
    double average;             // To hold the average score

    // Get the three test scores.
    cout << "Enter 3 test scores and I will average them: ";
    cin >> score1 >> score2 >> score3;

    // Calculate and display the average score,
    average = (score1 + score2 + score3) / 3.0;
    cout << fixed << showpoint << setprecision(1);
    cout << "Your average is " << average << endl;

    // Our intention is to congratulate the user
    // for having a perfect score. But, this doesn't work.
    if (average = 100) // WRONG! This is an assigment!
        cout << "Congratulations! That's a perfect score!\n";
    return 0;
}
```

```
Enter 3 test scores and I will average them: 80
90
70
Your average is 80.0
Congratulations! That's a perfect score!

Process returned 0 (0x0)    execution time : 4.084 s
Press any key to continue.
```

- 4.6

```cpp
// This program averages 3 test scores.

// It demonstrates an if statement executing

// a block of statements.

#include <iostream>

#include <iomanip>

using namespace std;


int main()

{

    const int HIGH_SCORE = 95;      // A high score is 95 or greater

    int score1, score2, score3;     // To hold three test scores

    double average;                 // To hold the average score


    //Get the three test scores.

    cout << "Enter 3 test scores and i will average them: ";

    cin >> score1 >> score2 >> score3;


    // Calculate and display the average score.

    average = (score1 + score2 + score3) / 3.0;

    cout << fixed << showpoint << setprecision(1);

    cout << "Your average is " << average << endl;
```
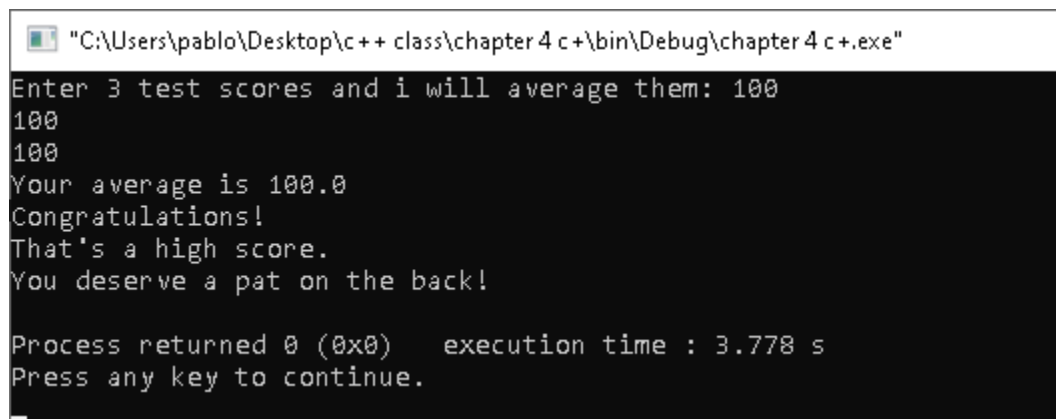
```cpp
    // If the average is higher, congratulate the user.

    if (average > HIGH_SCORE)

    {

        cout << "Congratulations!\n";

        cout << "That's a high score.\n";

        cout << "You deserve a pat on the back!\n";

    }

    return 0;

}
```


- 4.7

```cpp
// This program averages 3 test scores. The braces

// were inadvertently left out of the id statement.

#include <iostream>

#include <iomanip>

using namespace std;


int main()

{

    const int HIGH_SCORE = 95;     // A high score is 95 or greater

    int score1, score2, score3;    // To hold three test scores
```

```cpp
    double average;                // To hold the average score

    //Get the three test scores.
    cout << "Enter 3 test scores and i will average them: ";
    cin >> score1 >> score2 >> score3;

    // Calculate and display the average score.
    average = (score1 + score2 + score3) / 3.0;
    cout << fixed << showpoint << setprecision(1);
    cout << "Your average is " << average << endl;

    // ERROR! This if statement is missing its braces!
    if (average > HIGH_SCORE)
        cout << "Congratulations!\n";
        cout << "That's a high score.\n";
        cout << "You deserve a pat on the back!\n";
    return 0;
}
```

```
 ■ "C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

Enter 3 test scores and i will average them: 80
90
70
Your average is 80.0
That's a high score.
You deserve a pat on the back!

Process returned 0 (0x0)    execution time : 8.165 s
Press any key to continue.
```

- 4.9

// This program ask the user for two number num1 and num2.

// num1 is divided by num2 and the result is displayed.

```cpp
// Before the division operation, however, num2 is tested
// for the value 0. if ti contains 0, the division does not
// take place.
#include <iostream>
using namespace std;

int main()
{
    double num1, num2, quotient;

    // Get the first number.
    cout << "Enter a number: ";
    cin >> num1;

    // Get the second number.
    cout << "Enter another number: ";
    cin >> num2;

    // If num2 is not zero, perform the division.
    if (num2 == 0)
    {
        cout << "Division by zero is not possible.\n";
        cout << "Please run the program again and enter\n";
        cout << "a number other than zero.\n";
    }
    else
    {
        quotient = num1 / num2;
```
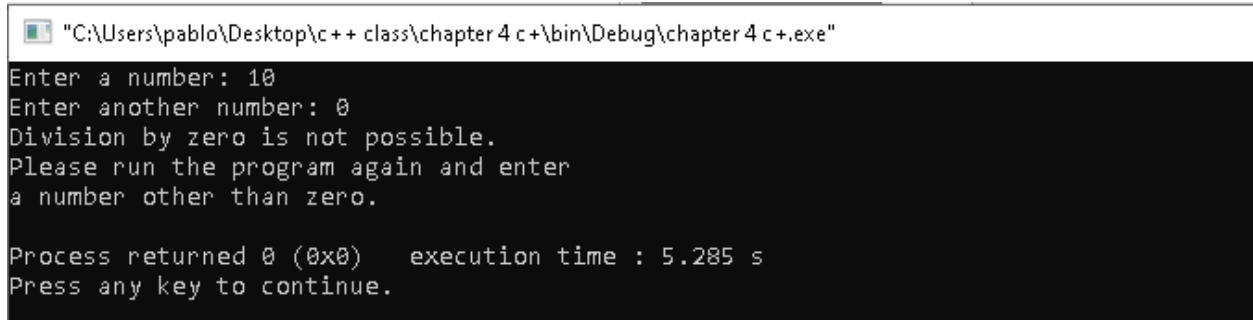
```
    cout << "The quotient of " << num1 << " divided by ";

    cout << num2 << "is" << quotient << ".\n";

  }

  return 0;

}
```



```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"
Enter a number: 10
Enter another number: 0
Division by zero is not possible.
Please run the program again and enter
a number other than zero.

Process returned 0 (0x0)   execution time : 5.285 s
Press any key to continue.
```

- 4.11

```
// This program demonstrates the nested if statement.

#include <iostream>

using namespace std;


int main()

{

  char employed,   // Currently employed, Y or N

    recentGrad; // Recent graduate, Y or N


  // Is the user employed and a recent graduate?

  cout << "Answer the following questions\n";

  cout << "with either Y for yes or ";

  cout << "N for no.\n";

  cout << "Are you employed? ";

  cin >> employed;

  cout << "Have you graduated from college";

  cout << "in the past two years? ";
```

```cpp
    cin >> recentGrad;


    // Determine the user's loan qualifications.
    if (employed == 'Y')
    {
        if (recentGrad == 'Y') // Nested if
        {
            cout << "You qualify for the special ";
            cout << "interest rate.\n";
        }
        else // Not a recent grad, but employed
        {
            cout << "You must have graduated from ";
            cout << "college in the past two\n";
            cout << "years to qualify.\n";
        }
    }
    else // Not employed
    {
        cout << "You must be employed to qualify.\n";
    }
    return 0;
}
```

```
Answer the following questions
with either Y for yes or N for no.
Are you employed? N
Have you graduated from collegein the past two years? Y
You must be employed to qualify.

Process returned 0 (0x0)    execution time : 7.391 s
Press any key to continue.
```

- 4.12

// This program uses nested if/else statements to assign a

// letter grade (A, B, C , D, or F) to a numeric test score.

#include <iostream>

using namespace std;

int main()

{

   // Constants for grade thresholds

   const int A_SCORE = 90,

       B_SCORE = 80,

       C_SCORE = 70,

       D_SCORE = 60;

   int testScore; // To hold a numeric test score

   // Get the numeric test score.

   cout << "Enter your numeric test score and I will\n";

   cout << "tell you the letter grade you earned: ";

   cin >> testScore;

   // Determine the letter grade.

```cpp
if (testScore >= A_SCORE)
{
    cout << "Your grade is A.\n";
}
else
{
    if (testScore >= B_SCORE)
    {
        cout << "Your grade is B.\n";
    }
    else
    {
        if (testScore >= C_SCORE)
        {
            cout << "Your grade is C.\n";
        }
        else
        {
            if (testScore >= D_SCORE)
            {
                cout << "Your grade is D.\n";
            }
            else
            {
                cout << "Your grade is F.\n";
            }
        }
    }
}
```

```
    }
    return 0;

}
```

```
Enter your numeric test score and I will
tell you the letter grade you earned: 78
Your grade is C.

Process returned 0 (0x0)    execution time : 2.244 s
Press any key to continue.
```

```
Enter your numeric test score and I will
tell you the letter grade you earned: 84
Your grade is B.

Process returned 0 (0x0)    execution time : 1.742 s
Press any key to continue.
```

Solve Problems:

4.13

```cpp
// 4.13

#include <iostream>

using namespace std;


int main()

{

    const int Books0 = 0, books1 = 1, books2 = 2, books3 = 3, books4 = 4;

    int books; // We will hold the books


    // Get the input for the number of books

    cout << "How many books have you purchased? ";

    cin >> books;
```

```cpp
// We create the conditions for the amount of points.


if (books >= 4)

{

    cout << "You have obtained 60 points!";

}

else

{

    if (books >= 3)

    {

        cout << "You have obtained 30 points! Next time buy one more book for double the
points!";

    }

    else

    {

        if (books >= 2)

        {

        cout << "You have obtained 15 points! Thank you for you purchase, remember more
books more points!";

        }

        else

        {

            if (books >= 1)

            {

                cout << "You have obtained 5 points! The more you buy the more points come back
for more rewards! Thank you for your purchase.";

            }

            else
```

```
        {
            cout <<"You have obtained 0 points try buying some books first, no freebies for
you...";
        }
    }
  }
}


    return 0;

}
```


- 4.23

// 4.23

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

int main()
{
    int operat; // We hold type of operation.
    double base, height, radius;

    cout << "1. Calculate the area of a Circle.\n";
    cout << "2. Calculate the area of a Rectangle.\n";
    cout << "3. Calculate the area of a Triangle.\n";
    cout << "4 Quit.\n";
    cin >> operat;

    if (operat >= 5)
    {
        cout << "ERROR!!! Learn to read instructions... You need to input a number from 1 to 4 not higher nor lower mate...";
        return 0;
    }
    else
    {
        if (operat >= 4)
        {
            cout << "Alright time to move on chimp, press any key to close the program.";
        }
        else
        {
```

```cpp
if (operat >= 3)
{
    cout << "Please enter the base of the triangle:\n"; // We get the base
    cin >> base;

    if (base <= 0)
    {
        cout << "Please enter a value that is not negative or zero.";
        return 0;
    }

    cout << "Please enter the height of the triangle:\n"; // We get the height
    cin >> height;

    if (height <= 0)
    {
        cout << "Please enter a value that is not negative or zero.";
        return 0;
    }

    double triangle = base * height * 0.5;

    cout << "Your triangle area is " << triangle << ".\n";
}
else
{
    if (operat >= 2)
    {
```

```cpp
        cout << "Please enter the width of the Rectangle:\n"; // We get the width
        cin >> base;


        if (base <= 0)
        {
            cout << "Please enter a value that is not negative or zero.";
            return 0;
        }


        cout << "Please enter the height of the rectangle:\n"; // We get the height
        cin >> height;


        if (height <= 0)
        {
            cout << "Please enter a value that is not negative or zero.";
            return 0;
        }


        double rectangle = base * height;


        cout << "Your rectangle area is " << rectangle << ".\n";
    }
    else
    {
        if (operat >= 1)
        {
            cout << "Please enter the radius of the Circle:\n"; // We get the radius
            cin >> radius;
```

```cpp
            if (base <= 0)
            {
                cout << "Please enter a value that is not negative or zero.";
                return 0;
            }

            double circle = radius * radius * 3.14159;

            cout << "Your circle area is " << circle << ".\n";
        }

        else
        {
            if (operat <= 0)
            {
                cout << "ERROR!!! Learn to read instructions... You need to input a number
from 1 to 4 not higher nor lower mate...";
                return 0;
            }
        }
    }
}
}

    return 0;
}
```

```
1. Calculate the are of a Circle.
2. Calculate the are of a Rectangle.
3. Calculate the are of a Triangle.
4 Quit.
1
Please enter the radius of the Circle:
5
Your circle area is 78.5397.

Process returned 0 (0x0)   execution time : 2.508 s
Press any key to continue.
```

```
1. Calculate the are of a Circle.
2. Calculate the are of a Rectangle.
3. Calculate the are of a Triangle.
4 Quit.
2
Please enter the width of the Rectangle:
5
Please enter the height of the rectangle:
2
Your rectangle area is 10.

Process returned 0 (0x0)   execution time : 3.505 s
Press any key to continue.
```

```
1. Calculate the are of a Circle.
2. Calculate the are of a Rectangle.
3. Calculate the are of a Triangle.
4 Quit.
3
Please enter the base of the triangle:
15
Please enter the height of the triangle:
2
Your triangle area is 15.

Process returned 0 (0x0)   execution time : 7.197 s
Press any key to continue.
```

"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

```
1. Calculate the are of a Circle.
2. Calculate the are of a Rectangle.
3. Calculate the are of a Triangle.
4 Quit.
4
Alright time to move on chimp, press any key to close the program.
Process returned 0 (0x0)   execution time : 1.501 s
Press any key to continue.
```


"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

```
1. Calculate the are of a Circle.
2. Calculate the are of a Rectangle.
3. Calculate the are of a Triangle.
4 Quit.
10
ERROR!!! Learn to read instructions... You need to input a number from 1 to 4 not higher nor lower mate...
Process returned 0 (0x0)   execution time : 1.575 s
Press any key to continue.
```


"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

```
1. Calculate the are of a Circle.
2. Calculate the are of a Rectangle.
3. Calculate the are of a Triangle.
4 Quit.
-5
ERROR!!! Learn to read instructions... You need to input a number from 1 to 4 not higher nor lower mate...
Process returned 0 (0x0)   execution time : 2.310 s
Press any key to continue.
```

- 4.26

// 4.26

#include <iostream>

#include <cmath>

using namespace std;

int main()

{

 char operat; // We hold type of operation.

 double rateExtra1, rateExtra2, gigabyte,extra, total;

 rateExtra1 = 10;

 rateExtra2 = 5;

```cpp
    cout << "What is you package?\n";

    cout << "You can choose between A, B or C.\n";

    cin >> operat;


    if (operat == 'A')

    {

        cout << "Please tell us the amount of extra gigabytes used.\n";

        cin >> gigabyte;                              // forgot of character as it is null


        if (gigabyte <= 0)

        {

            cout << "Please enter a positive number." << endl;

            return 0;

        }


        extra = rateExtra1 * (gigabyte - 4);


        if (extra <= 0)                               // If gigabyte is negative we do not give money
back to the user to we make the input 0.

        {

            extra = 0;

        }


        // We calculate the total with the possible extra money.

        total = 39.99 + extra;


        if (total <= 59.999)                          // if total $ is less than 59.99
display the normal bill rate.

        {
```

```cpp
        cout << "Your monthly bill will be $" << total << endl;

    }
    else if (total <= 69.999)                              // if total $ is less than
69.99 display the best savings option.

        {
            cout << "Your monthly bill will be $" << total << endl;


            double savings;
            savings = 69.999  - total;


            cout << "You could save $" << savings << " with plan B." << endl;

        }
    else if (total > 70.000)                               // if total $ over 70 display
the best savings option.

        {
            cout << "Your monthly bill will be $" << total << endl;


            double savings;
            savings = total - 69.99;


            cout << "You could save $" << savings << " with plan C." << endl;

        }
    }
    else if (operat == 'B')

        {
            cout << "Please tell us the amount of extra gigabytes used.\n";
            cin >> gigabyte;


            if (gigabyte <= 0)
```

```cpp
    {
        cout << "Please enter a positive number." << endl;

        return 0;

    }


    extra = rateExtra2 * (gigabyte - 8);


    if (extra <= 0)                          // If gigabyte is negative we do not give
money back to the user to we make the input 0.

    {
    extra = 0;

    }


    // We calculate the total with the possible extra money.

    total = 59.99 + extra;


    if (total <= 69.999)                          // if total $ less than 69.99
display the best savings option.

    {
        cout << "Your monthly bill will be $" << total << endl;

    }
    else if (total >= 70.00)                          // if total $ over 70 display
the best savings option.

        {
        cout << "Your monthly bill will be $" << total << endl;


        double savings;

        savings = total - 69.99;
```

```cpp
                cout << "You could save $" << savings << " with plan C." << endl;

                return 0;

            }

        }

        else if (operat == 'C')                                    // If they choose C the rate is
fixed.

            {

                cout << "Your monthly bill is $69.99\n";

                return 0;

            }

            else if (operat != 'A' || 'B' || 'C')                  // We use this last if
statement to cancel other possible commands in prompt.

                {

                    cout << "Please enter A, B or C. In caps otherwise it will not work";


                }


    return 0;

}
```
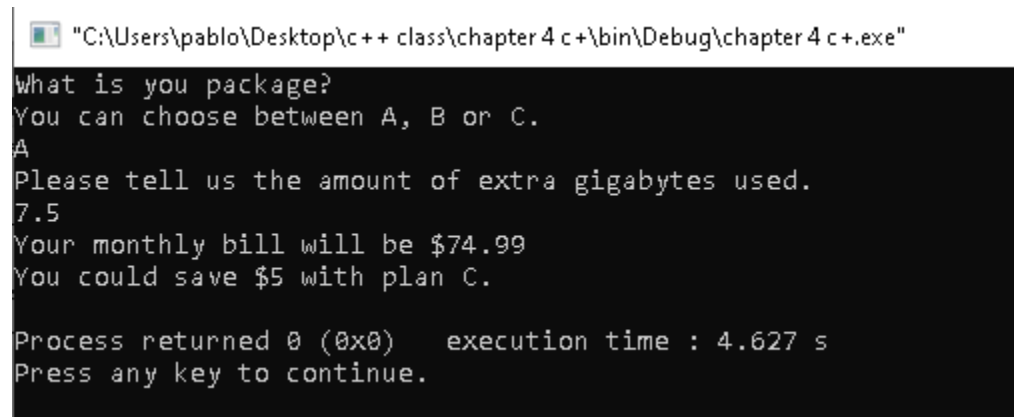
```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

What is you package?
You can choose between A, B or C.
A
Please tell us the amount of extra gigabytes used.
7.5
Your monthly bill will be $74.99
You could save $5 with plan C.

Process returned 0 (0x0)   execution time : 4.627 s
Press any key to continue.
```

```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

What is you package?
You can choose between A, B or C.
B
Please tell us the amount of extra gigabytes used.
11
Your monthly bill will be $74.99
You could save $5 with plan C.

Process returned 0 (0x0)   execution time : 3.209 s
Press any key to continue.
```



```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

What is you package?
You can choose between A, B or C.

C
Your monthly bill is $69.99

Process returned 0 (0x0)   execution time : 3.138 s
Press any key to continue.
```



```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

What is you package?
You can choose between A, B or C.
j
Please enter A, B or C. In caps otherwise it will not work
Process returned 0 (0x0)   execution time : 1.512 s
Press any key to continue.
```



```
"C:\Users\pablo\Desktop\c++ class\chapter 4 c+\bin\Debug\chapter 4 c+.exe"

What is you package?
You can choose between A, B or C.
A
Please tell us the amount of extra gigabytes used.
-5
Please enter a positive number.

Process returned 0 (0x0)   execution time : 4.007 s
Press any key to continue.
```

- **4.28**

#include <iostream>

#include <iomanip>

```cpp
using namespace std;

int main()

{
    string vegetarian, vegan, gluten_free;

    cout << "Is anyone in your party vegetarian?\n";
    cin >> vegetarian;

    if (vegetarian == "yes")
    {
        cout << "Is anyone in your party vegan?\n";
        cin >> vegan;

        if (vegan == "yes")
        {
            cout << "Is anyone in your party gluten free?\n";
            cin >> gluten_free;

            if (gluten_free == "yes" || gluten_free == "no" )
            {
                cout << "These are your options Corner Cafe ,The Chef's Kitchen";
            }
            else
            {
                cout << "Error, please enter either 'yes' or 'no' as an option.";
            }
        }
        else if (vegan == "no")
```

```cpp
    {
        cout << "Is anyone in your party gluten free?\n";

        cin >> gluten_free;


        if (gluten_free == "yes")

        {
            cout << "These are your options Main Street Pizza Company ,Corner Cafe, The Chef's
Kitchen";

        }
        else if (gluten_free == "no")

        {
            cout << "These are your options Main Street Pizza Company, Corner Cafe, Mama's
Fine Italian, The Chef's Kitchen";

        }
        else

        {
            cout << "Error, please enter either 'yes' or 'no' as an option.";

        }
    }
    else

    {
        cout << "Error, please enter either 'yes' or 'no' as an option.";

    }
}
else if (vegetarian == "no")

{
    cout << "Is anyone in your party vegan?\n";

    cin >> vegan;
```

```cpp
    if (vegan == "yes")

    {

        cout << "Is anyone in your party gluten free?\n";

        cin >> gluten_free;


        if (gluten_free == "yes" || "no")

        {

            cout << "These are your options Corner Cafe, The Chef's Kitchen";

        }

        else

        {

            cout << "Error, please enter either 'yes' or 'no' as an option.";

        }

    }

    else if (vegan == "no")

    {

        cout << "Is anyone in your party gluten free?\n";

        cin >> gluten_free;


        if (gluten_free == "yes")

        {

            cout << "These are your options Main Street Pizza Company ,Corner Cafe, The Chef's
Kitchen";

        }

        else if (gluten_free == "no")

        {

            cout << "These are your options Joe's Gourmet Burgers, Main Street Pizza Company,
Corner Cafe, Mama's Fine Italian ,The Chef's Kitchen";

        }
```

```
        else

        {

            cout << "Error, please enter either 'yes' or 'no' as an option.";

        }

    }

    else

    {

        cout << "Error, please enter either 'yes' or 'no' as an option.";

    }

}

else

{

    cout << "Error, please enter either 'yes' or 'no' as an option.";

}

return 0;

}
```



```
 "C:\Users\pablo\Desktop\c++ class\4.28\main.exe"

Is anyone in your party vegetarian?
yes
Is anyone in your party vegan?
no
Is anyone in your party gluten free?
yes
These are your options Main Street Pizza Company ,Corner Cafe, The Chef's Kitchen
Process returned 0 (0x0)    execution time : 3.724 s
Press any key to continue.
```



```
 Select "C:\Users\pablo\Desktop\c++ class\4.28\main.exe"

Is anyone in your party vegetarian?
yes
Is anyone in your party vegan?
yes
Is anyone in your party gluten free?
yes
These are your options Corner Cafe ,The Chef's Kitchen
Process returned 0 (0x0)    execution time : 4.272 s
Press any key to continue.
```