Lab 2. LINQ exercises. Part 1

Exersise 1

1. Write a program in C# to find numbers which produce the remainder 0 after divided by 2

Expected Output

```
 0 2 4 6 8....
```

2. Write a program in C# to find the numbers from a list of numbers using two where conditions in LINQ Query, (by example, numbers within the range of 1 to 11)

Expected Output

```
1 3 6 9 10
```

3. Write a program in C# to find the number of an array and the square of each number.

Expected Output:

```
{ Number = 9, SqrNo = 81 }
{ Number = 8, SqrNo = 64 }
{ Number = 6, SqrNo = 36 }
{ Number = 5, SqrNo = 25 }
```

4. Write a program in C# to create a list of numbers and display the numbers greater than 80 as output.

Test Data

```
The members of the list are :
55 200 740 76 230 482 95
```

Expected Output

The numbers greater than 80 are :

```
200
740
230
482
95
```

5. Write a program in C# to display the number and frequency of number from giving array.

Expected Output:

```
The number and the frequency are :
Number 5 appears 3 times
Number 9 appears 2 times
Number 1 appears 1 times
```

6. Write a program in C# to display the characters and frequency of character from giving string.

Test Data: Input the string: apple

Expected Output:

```
The frequency of the characters are :
 Character a: 1 times
```

```
Character p: 2 times
Character l: 1 times
Character e: 1 times
```

7. Write a program in C# to accept the members of a list through the keyboard and display the members more than a specific value.

Test Data :

```
Input the number of members on the List : 5
Member 0 : 10
Member 1 : 48
Member 2 : 52
Member 3 : 94
Member 4 : 63
```

Input the value above you want to display the members of the List : 59

Expected Output :

```
The numbers greater than 59 are :
94
63
```

8. Write a program in C# to display the name of the days of a week.

Expected Output:

```
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
```

9. Write a program in C# to display numbers, multiplication of number with frequency and frequency of a number of giving array.

The numbers in the array are :

5, 1, 9, 2, 3, 7, 4, 5, 6, 8, 7, 6, 3, 4, 5, 2

Expected Output :

```
Number Number*Frequency Frequency
-------------------------------------------------
5          15              3
1          1               1
9          9               1
2          4               2
```

10. Write a program in C# to accept the members of a list through the keyboard and display the members less than a specific value.

Test Data :

```
Input the number of members on the List : 5
Member 0 : 10
```

```
Member 1 : 48
Member 2 : 52
Member 3 : 94
Member 4 : 63
```

Input the value above you want to display the members of the List : 59

Expected Output :

```
The numbers greater than 59 are :
94
63
```

Exercise 2

1. Write a program in C# to remove items from list using remove function by passing the object.

Test Data :

```
Here is the list of items :
Char: m
Char: n
Char: o
Char: p
Char: q
```

Expected Output:

```
Here is the list after removing the item 'o' from the list :
Char: m
Char: n
Char: p
Char: q
```

2. Write a program in C# to remove items from List by creating an object internally by filtering.

Test Data :

```
Here is the list of items :
Char: m
Char: n
Char: o
Char: p
Char: q
```

Expected Output :

```
Here is the list after removing the item 'p' from the list :
Char: m
Char: n
Char: o
Char: q
Click me to see the solution
```

3. Write a program in C# to remove items from List by passing filters.

Test Data :

```
Here is the list of items :
Char: m
Char: n
Char: o
Char: p
Char: q
```

Expected Output :

```
Here is the list after removing item 'q' from the list :
Char: m
Char: n
Char: o
Char: p
```

4. Find the number and its square of an array which is more than 20.

Test Data :

```
Here is the list of items :
Char: m
Char: n
Char: o
Char: p
Char: q
```

Expected Output:

```
Here is the list after removing item index 3 from the list :
Char: m
Char: n
Char: o
Char: q
```

5. Write a program in C# to remove a range of items from a list by passing the start index and number of elements to remove.

Test Data :

Here is the list of items :

```
Char: m
Char: n
Char: o
Char: p
Char: q
```

Expected Output:

```
Here is the list after removing the three items starting from the item index 1
from the list:
Char: m
Char: q
```

6. Write a program in C# to display the top of n records.

Test Data :

```
The members of the list are :
5 7 13 24 6 9 8 7
How many records you want to display ? : 3
```

Expected Output :

```
The top 3 records from the list are : 24 13 9
```

Exercise 3

1. Write a program in C# to find the string which starts and ends with a specific character.

Test Data :

```
The cities are : 'ROME','LONDON','NAIROBI','CALIFORNIA','ZURICH','NEW
DELHI','AMSTERDAM','ABU DHABI','PARIS'
Input starting character for the string : A
Input ending character for the string : M
```

Expected Output :

```
The city starting with A and ending with M is : AMSTERDAM
```

2. Write a program in C# to display the list of items in the array according to the length of the string then by name in ascending order.

Expected Output :

```
Here is the arranged list :
ROME
PARIS
LONDON
ZURICH
NAIROBI
ABU DHABI
AMSTERDAM
NEW DELHI
CALIFORNIA
```

3. Write a program in C# to count file extensions and group it using LINQ.

Test Data :

```
The files are : aaa.frx, bbb.TXT, xyz.dbf,abc.pdf
aaaa.PDF,xyz.frt, abc.xml, ccc.txt, zzz.txt
```

Expected Output :

```
Here is the group of extension of the files :
1 File(s) with .frx Extension
3 File(s) with .txt Extension
1 File(s) with .dbf Extension
2 File(s) with .pdf Extension
1 File(s) with .frt Extension
1 File(s) with .xml Extension
```

4. Write a program in C# to find the uppercase words in a string.

Test Data :

```
Input the string : this IS a STRING
```

Expected Output :

```
The UPPER CASE words are :
IS
STRING
```

5. Write a program in C# to convert a string array to a string.

Test Data :

```
Input number of strings to store in the array :3
Input 3 strings for the array :
Element[0] : cat
Element[1] : dog
Element[2] : rat
```

Expected Output:

```
Here is the string below created with elements of the above array :
cat, dog, rat
```

6. Write a program in C# to find the strings for a specific minimum length.

Test Data :

```
Input number of strings to store in the array :4
Input 4 strings for the array:
Element[0] : this
Element[1] : is
Element[2] : a
Element[3] : string
Input the minimum length of the item you want to find : 5
```

Expected Output:

```
The items of minimum 5 characters are :
Item: string
```

7. Write a program in C# to calculate size of file using LINQ

Expected Output :

The Average file size is 3.4 MB

Exercise 4

1. Write a program in C# to generate an Inner Join between two data sets.

Expected Output :

```
Item ID          Item Name          Purchase Quantity
1                Biscuit                  458
2                Chocolate                650
3                Butter                   800
3                Butter                   900
3                Butter                   900
4                Brade                    700
```

```
4                    Brade                    650
```

2. Write a program in C# to generate a Left Join between two data sets.

Expected Output :

Here is the list after joining

```
Item ID          Item Name          Purchase Quantity
1                Biscuit                   458
2                Chocolate                 650
3                Butter                    800
3                Butter                    900
3                Butter                    900
4                Brade                     700
4                Brade                     650
5                Honey                       0
```

3. Write a program in C# to generate a Right Outer Join between two data sets.

Expected Output :

```
Here is the list after joining  :

Item ID          Item Name          Purchase Quantity
3                Butter                    800
5                Honey                     650
3                Butter                    900
4                Brade                     700
3                Butter                    900
4                Brade                     650
1                Biscuit                   458
```

4. Write a program in C# to generate a Cartesian Product of two sets.

Expected Output :

```
The Cartesian Product are :
{ letterList = X, numberList = 1 }
{ letterList = X, numberList = 2 }
{ letterList = X, numberList = 3 }
{ letterList = X, numberList = 4 }
```

5. Write a program in C# to generate a Cartesian Product of three sets.

Expected Output :

The Cartesian Product are :

```
{ letter = X, number = 1, colour = Green }
{ letter = X, number = 1, colour = Orange }
{ letter = X, number = 2, colour = Green }
{ letter = X, number = 2, colour = Orange }
{ letter = X, number = 3, colour = Green }
{ letter = X, number = 3, colour = Orange }
{ letter = Y, number = 1, colour = Green }
{ letter = Y, number = 1, colour = Orange }
```

6. Write a program in C# to arrange the distinct elements in the list in ascending order.
Expected Output :

```
Biscuit
Brade
Butter
Honey
```

7. Write a program in C# to split a collection of strings into some groups.

Expected Output :

```
Here is the group of cities :
ROME; LONDON; NAIROBI
-- here is a group of cities --
CALIFORNIA; ZURICH; NEW DELHI
-- here is a group of cities --
AMSTERDAM; ABU DHABI; PARIS
-- here is a group of cities --
NEW YORK
-- here is a group of cities --
```

8. Write a program in C# to find the maximum grade point achieved by the students from the list of students.

Expected Output:

```
Id : 7, Name : David, achieved Grade Point : 750
Id : 10, Name : Jenny, achieved Grade Point : 750
```

Links

If you can't find solutions of your tasks, follow to the links below. There are placed very interesting things. Good luck! ☺ .