Assignment 2

Time to practice LINQ and Operator overloading (15%)

DUE DATE

Session 13

OBJECTIVE

The main objectives of this assignment are to:

- Interpret specifications and analysis performed
- Design a solution based on the requirements and specifications
- Design the logic required
- Use of LINQ
- Use of operator overloading
- Copy, Read and write files
- Translate design documents and algorithms into source code
- Implement data validation and handle edge cases
- Use debugging tools, and error-handling techniques
- Integrate the knowledge acquired thus far
- Have fun while programming with C#

DESCRIPTION

This Assignment required you to work on different concepts covered so far. It contains total 4 questions. You are required to work on understanding the problem statement, building logic for that and then finally implementation of the specifications or features.

REQUIRED MATERIAL/SOFTWARE
You will need the following material to complete this project:

- Microsoft Visual Studio.NET (specifically C#.NET)
- Visio (Standard or Professional version)
- Microsoft Visual Studio.NET documentation or any other reference material suggested or provided by your instructor

INSTRUCTIONS

Question 1: We have learnt about LINQ query and how easy it to use, now you are required to build the mini customer console application which have bunch of customers, and apply LINQ query to get the required results
Specifications:

- Create customer class with the following properties like id, first name, last name and date of birth.
- Store 7 customer into the array
- Write a method that can take id as input from the user and searches the customer from the array of customer and returns that customer first name and last name and if it doesn't exist return the message "Customer doesn't exist"
- Write a method that can take first name as input from the user and searches the customer from the array of customer and returns that customer date of birth
- Write a method that can sort the array of customer by first name and prints the result
- Write a method that can sort the array of customer by first name and prints the result

Question 2: Create two list item name and item price. Item_name list contains following fields Iname, id, s.no where as item_price list contains id and price (refer to image below)

Item name list

Iname	id	s.no
milk	1	S456
bread	2	B34

Item price list

id	price
1	7.99
2	3.15

Specifications:

- Insert dummy data in the list and write a join query to print the item name with item price.
- Take item name as in input from the user and print the price

Question 3: The Fibonacci Numbers is a sequence of numbers in the following order: 1, 1, 2, 3, 5, 8, 13, 21, 34... The next number is found by adding up the two numbers before it. The formula for calculating these numbers is:

F(n) = F(n-1) + F(n-2)
where:
F(n) is the term number.
F(n-1) is the previous term (n-1).

F(n-2) is the term before that (n-2).

The first two numbers in the Fibonacci Sequence are 1 and 1, each subsequent number is the sum of the previous two numbers.

Develop your algorithm that can generate Fibonacci. Write a C# program to implement your Algorithm. Once you do that, follow the next steps.

A user-defined type can overload a predefined C# operator such as +, -, * , /. That is, a type can provide the custom implementation of an operation in case one or both of the operands are of that type. The Overloadable operators section shows which C# operators can be overloaded.

https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/operators/operator-overloading

Rewrite the above solution byoverloading operators + and ++? For a given nth order Fibonacci Number "Fib":

- Fib++ gives (n+1)th order of the Fibonacci Number
- Fib+m giv es (n+m)th order of the Fibonacci Number

Question 4: Write a program to create a new file and copy the content of file 1 to file 2.

SUBMISSION INSTRUCTIONS

Work must be submitted in the correct file type and be properly labelled as per the College naming convention:
NAME_COURSE_ASSIGNMENT. E.g. XuXiaLing_FM50D_A01.

Sumit all things together in one single zipped file as NAME_COURSE_ASSIGNMENT1 and include following:

- Submit screenshots of input and output of your code in one single pdf file named as NAME_COURSE_ASSIGNMENT_code_screenshots
- Submit your code, each question code should be placed in a separate folder NAME_COURSE_ASSIGNMENT_code
- Submit your diagrams, pseudocode and flowcharts in separate folder NAME_COURSE_ASSIGNMENT_design

GRADING CRITERIA

Assignment Value: 15**%**

Grading Criteria	Grading
Question 1	25
Correctness of code	10
Right use of LINQ query	15
Question 2	25
Correctness of code	10
Right use of LINQ query and list management	15
Question 3	25
Correctness of code	10
Right use of Operator overloading	15
Question 4	25
Correctness of code	10
Right use of file management	15
TOTAL	**/100**