

INSTRUCTIONS

Please read the instructions carefully before doing the questions.

- You can use materials in your computer, notebook and text book.
- You are **NOT allowed** to use any device to share data with others.

Beside the above conditions, students must follow the following requirements:

1. The work must complete by using Visual Studio 2022++
2. The Framework must be .NET 8.0
3. **THIS PART IS VERY IMPORTANT, PLEASE READ IT CAREFULLY AND FOLLOW THE INSTRUCTIONS.**
 - You are given a database script (.sql file) in Zip file. Execute the script before doing questions.
 - You must use the given solution.
 - You are not allowed to add any more libraries via NuGet Package Manager into the given solution.
 - Just one of above requirements is violated, your work will be considered as invalid.

On completion, submit the **whole solution folder**.

Before submitting, you can delete the folder [bin] in each project to reduce the size of the solution. to

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solution.

- Just one of above requirements is violated, your work will be considered as invalid.

On completion, submit the **whole solution folder**.

Before submitting, you can delete the folder [bin] in each project to reduce the size of the solution, to fit the requirements of PEA_Client.

Question 1. (4 points)

You are asked to write a console application that includes:

(0.5 point) The delegate named **TaxCalculation** that take a Product as input parameter and return one double.

(3.5 point) The class **Product** that contains:

- Four **public properties** (not public fields): Id (int), Name (string), Type (string) and Price (double).
- Necessary constructors.
- Two public methods:

```
public void Display(TaxCalculation c)
```

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(3.5 point) The class **Product** that contains:

- Four **public properties** (not public fields;: Id (int), Name (string), Type (string) and Price (double).
- Necessary constructors.
- Two public methods:
 public void **Display**(TaxCalculation c)
 that display information of product with the tax calculated in the way of delegate c.
 public static double **Display**(List<Product> products, TaxCalculation c)
 using the method Display(TaxCalculation) above to display information of all products in list *products*.

With the main function given in Figure 1 below, your code must have the same result as the Figure 2.

(You can find this code in the Given Materials.)

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```

36 Console.WriteLine("\nTestcase 2:");
37 List<Product> products = new List<Product> {
38     new Product(2, "Dell Inspiron 15 5505", "Computer", 850),
39     new Product(2, "Dell XPS 15 9550", "Computer", 2500),
40     new Product(2, "Inspot 5.7L", "Houseware", 200)
41 };
42 Product.Display(products,
43     (x => (x.Type.Equals("Computer") ? x.Price * 0.15 : x.Price * 0.05))
44 );
45 }

```

Figure 1: Main function

The output should be the same as below

```

Testcase 1:
Product: Id:1 - Name:Dell XPS 13 7390 - Type:Computer - Price:1000 - Tax:100

Testcase 2:
List of products:
Product: Id:2 - Name:Dell Inspiron 15 5505 - Type:Computer - Price:850 - Tax:127,5
Product: Id:2 - Name:Dell XPS 15 9550 - Type:Computer - Price:2500 - Tax:375
Product: Id:2 - Name:Inspot 5.7L - Type:Houseware - Price:200 - Tax:10

```

Figure 2: Output screen

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```
Product: Id:2 - Name:Inspot 5.7L - Type:Houseware - Price:200 - Tax:10
```

Figure 2: Output screen

Question 2. (6 points)

You are asked to write a windows form application that allows listing, adding, and editing employee's information in the database.

Note:

- In this question you are required to access database using **Entity Framework Core**.
- 0 will be given to the work that not using database connection string in the file **appsettings.json**

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ID	Name	Sex	DOB	Position
1	Tran Bao Han	Female	12/09/1980	Developer
2	Quach Phu Thanh	Male	19/01/1987	Developer
3	Chu Thanh Quang	Male	23/05/1984	Leader
4	Trinh Tien Dung	Male	14/06/1990	Developer
5	Phan Thu Thao	Female	12/03/1990	Tester
6	Nguyen Xuan Quang	Male	19/01/1987	Leader
7	Trinh Thu Hang	Female	12/05/2000	Developer
8	Tran Hong Quan	Male	16/04/1998	Leader
9	Pham The Tung	Male	12/09/1984	Manager
10	Tran Manh Chien	Male	21/10/1983	Manager

ID	<input type="text"/>
Name	<input type="text"/>
Sex	<input type="radio"/> Male <input type="radio"/> Female
DOB	<input type="text" value="14 Tháng Mười Hai 2021"/>
Position	<input type="text" value="Developer"/>
<input type="button" value="Refresh"/> <input type="button" value="Add"/> <input type="button" value="Edit"/>	

Figure1 - Required form

- The form is designed as shown in Figure 1. The textbox of ID must be disable.
- (1.5 point) Load list of all employees in database into the datagridview.
- (2 point)

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- **(1.5 point)** Load list of all employees in database into the datagridview.

- **(2 point)**

In the combobox [Position] (in groupbox [Current Employee]), load all **distinct position** values that appear in table Employee in database.

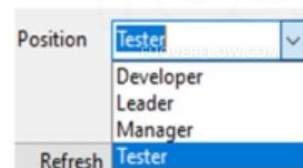


Figure 2 – Items of combobox [Position]

When user enters the employee's information into controls in groupbox [Current Employee] and presses the button Add, insert one more employee into database. The data of datagridview must be reloaded.

- **(2 point)** When user click on one cell in the datagridview, load data of corresponding employee into controls in groupbox [Current Employee]. User can use Edit button for updating information of this employee in database. The data of datagridview must be reloaded.

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information in the database.

Note:

- In this question you are required to access database using **Entity Framework Core**.
- 0 will be given to the work that not using database connection string in the file **appsettings.json**

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2	Quach Phu Thanh	Male	19/01/1987	Developer
3	Chu Thanh Quang	Male	23/05/1984	Leader
4	Trinh Tien Dung	Male	14/06/1990	Developer
5	Phan Thu Thao	Female	12/03/1990	Tester
6	Nguyen Xuan Quang	Male	19/01/1987	Leader
7	Trinh Thu Hang	Female	12/05/2000	Developer
8	Tran Hong Quan	Male	16/04/1998	Leader
9	Pham The Tung	Male	12/09/1984	Manager
10	Tran Manh Chien	Male	21/10/1983	Manager

Name:
Sex: ☐ Male ☐ Female
DOB:
Position:

Figure1 - Required form

- The form is designed as shown in Figure 1. The textbox of ID must be disable.
- (1.5 point) Load list of all employees in database into the datagridview.
- (2 point)
In the combobox [Position] (in groupbox [Current Employee]), load all distinct position values that appear in table Employee in database.

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In the combobox [Position] (in groupbox [Current Employee]), load all **distinct position values** that appear in table Employee in database.

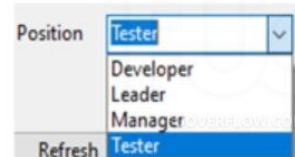


Figure 2 – Items of combobox [Position]

When user enters the employee's information into controls in groupbox [Current Employee] and presses the button Add, insert one more employee into database. The data of datagridview must be reloaded.

- **(2 point)** When user click on one cell in the datagridview, load data of corresponding employee into controls in groupbox [Current Employee]. User can use Edit button for updating information of this employee in database. The data of datagridview must be reloaded.

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id	fullname	gender	dateofbirth	position
3	Chu Thanh Quang	Male	23/05/1984	Leader
4	Trinh Tien Dung	Male	14/06/1990	Developer
5	Phan Thu Thao	Female	12/03/1990	Tester
6	Nguyen Xuan Quang	Male	19/01/1987	Leader
7	Trinh Thu Hang	Female	12/05/2000	Developer
8	Tran Hong Quan	Male	16/04/1998	Leader
9	Pham The Tung	Male	12/09/1984	Manager
10	Tran Manh Chien	Male	21/10/1983	Manager

Name:

Sex: ☐ Male ☒ Female

DOB:

Position:

Figure 3 – Loading of employee's detail information.

- (0.5 point) When user click on button Refresh, clear all employee's detail information and reset this form back to Figure 1.