

PE5

Question 1. (5 points)

You are asked to write a console application that includes:

- A class `Employee` that has four public properties: `Id (int)`, `Name (string)`, `Dob (DateOnly)`, `IsMale (bool)`, along with necessary constructors and methods.
- A generated delegate: `void Presentation<T>(T item)`.
- A generic class `Department<T>` that has:
 - A public property `Title (string)`.
 - A private member that can store a list of type `T`.
 - A necessary constructor.
 - Three public methods:
 - `void Add(T item)`: Adds a new item of type `T` into the private list.
 - `bool Contains(T item)`: Checks if the `item` is in the private list.
 - `void Display(Presentation<T> presentation)`: Displays the `Title` and items in the private list to the console. Each item in the list must be displayed according to the definition of the `presentation`.

Using everything you have defined, the `Program` class (shown in Figure 1) will produce the result as shown in Figure 2. Note that two employees are considered equal if all their information is the same.

Program.cs

```
namespace Question1
{
    internal class Program
    {
        private static void Main(string[] args)
        {
            Console.WriteLine("Requirement 1:");
            Employee s = new Employee(1, "Nguyen Van A", new DateOnly(1999, 10, 20), false);
            Console.WriteLine("You have entered:");
            Console.WriteLine(s);

            Console.WriteLine(Environment.NewLine + "-----");
            Console.WriteLine("Requirement 2:");
            Department<Employee> department = new Department<Employee>("Accounting Department");
            department.Add(new Employee(2, "Nguyen Van B", new DateOnly(1999, 10, 20), false));
            department.Add(new Employee(3, "Nguyen Van C", new DateOnly(1989, 11, 15), true));
            department.Add(new Employee(4, "Nguyen Van D", new DateOnly(2000, 4, 2), true));
            department.Display(DisplaysFullInfoOfEmployee);

            Console.WriteLine(Environment.NewLine + "-----");
            Console.WriteLine("Requirement 3:");
            Employee employee = new Employee(3, "Nguyen Van C", new DateOnly(1989, 11, 15), true);
            if (department.Contains(employee))
                Console.WriteLine("The employee you are looking for belongs to the department");
        }
    }
}
```

```

        else Console.WriteLine("The employee you are looking for does not belong to the department");

        Console.WriteLine(Environment.NewLine + "-----");
        Console.WriteLine("Requirement 4:");
        department.Display(DisplaysBriefInfoOfEmployee);
    }

    private static void DisplaysFullInfoOfEmployee(Employee employee)
    {
        Console.WriteLine($"{employee.Id} - {employee.Name} - {employee.Dob.ToLongDateString()} - IsMale: {employee.IsMale}");
    }

    private static void DisplaysBriefInfoOfEmployee(Employee employee)
    {
        Console.WriteLine($"{employee.Id} - {employee.Name}");
    }
}

```

Results

```

Microsoft Visual Studio Debug Console
Requirement 1:
You have entered:
Employee: 1 - Nguyen Van A - 10/20/1999 - Female

-----
Requirement 2:
Department "Accounting Department" has 3 employees. List of employees:
2 - Nguyen Van B - Wednesday, October 20, 1999 - IsMale: False
3 - Nguyen Van C - Wednesday, November 15, 1989 - IsMale: True
4 - Nguyen Van D - Sunday, April 2, 2000 - IsMale: True

-----
Requirement 3:
The employee you are looking for belongs to the department

-----
Requirement 4:
Department "Accounting Department" has 3 employees. List of employees:
2 - Nguyen Van B
3 - Nguyen Van C
4 - Nguyen Van D

D:\PRN212_ALL\1_PRN212\PRN212_GivenSolution\Question1\bin\Debug\net8.0\Question1.exe (process 31488) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

```

Question 2

CourseId	Title	Description	InstructorId	InstructorName
1	Data Science 101	Introduction to Data Science	1	Dr. Smith
7	Software Engineering	Principles of Software Engineering	7	Dr. Davis

CourseId:

CourseTitle:

Description:

Instructor:

Figure 2. The required window.

When the window is loaded, display a list of all categories and instructors in the two ComboBoxes labeled 1 and 2 (see Figure 2), respectively. By default, the first category is selected (see Figure 3).

- Data Science
- Data Science
- Machine Learning
- Web Development
- Artificial Intelligence
- Cybersecurity
- Cloud Computing
- Software Engineering

Figure 3. ComboBox labeled as 1 displays a list of all categories.

Instructor:

- When the window is loaded, display a list of all categories and instructors in the two ComboBoxes labeled 1 and 2 (see Figure 2), respectively. By default, the first category is selected (see Figure 3).

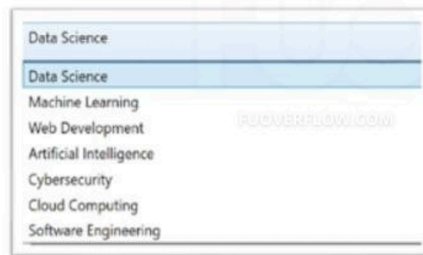


Figure 3. ComboBox labeled as 1 displays a list of all categories.

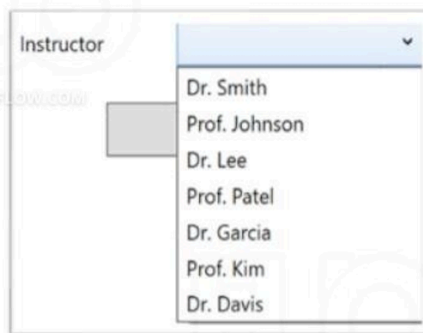


Figure 4. ComboBox labeled as 2 displays a list of all instructors.

- Display a list of all courses belonging to the first category.