Programming 3

UCN – Computer Science - C#

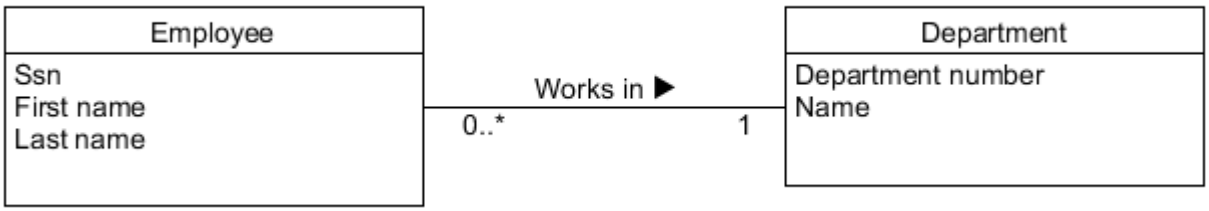
Implement small domain model

Topics:

- Classes and objects
- Properties
- ToString method
- Collections

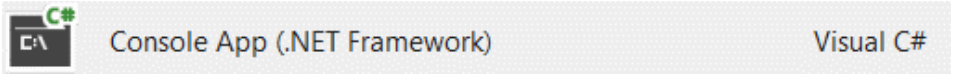
Domain model

Normally we use a Design Class Diagram when we implement code, but in this exercise we use a domain model instead:



1. Implement the Employee and Department classes

Create a console project. Project type:



Implement the class Employee with:

- Private attributes as in the domain model
- A property for each private attribute
- A constructor
- A ToString method

The ToString method should represent the content of the class.
It overrides the ToString method from the Object superclass.

Implement the class Department as you did the Employee class:

- Private attributes as in the domain model
- A property for each private attribute
- A constructor
- A ToString method

But as a department can have 0..* employees, the Department class must also hold a collection with its employees.
To be able to create a collection you need one of these using statements:

- `using System.Collections;`
- `using System.Collections.Generic;`

2. Instantiate the classes and call methods

Locate the Main method and try to put some print in the Main model – and then run the program.

Then in the Main method create some Employee objects.
And then some Department objects. Each Department object must hold 0..* Employee objects in a collection.

Now use the ToString methods to print data in the Console Window:

1. All data about all Employee
2. All data about all Departments – including their employees

Example output:

Employees:
Employee [ssn=273-44-2738, firstName=Joe, lastName=Doe]
Employee [ssn=273-44-2739, firstName=Lyndon, lastName=Johnson]
Employee [ssn=273-44-2741, firstName=Edwin, lastName=Cole]

Departments:
Department [number=1, name=Administration, departmentEmployees=[Employee [ssn=273-44-2738, firstName=Joe, lastName=Doe]]]
Department [number=2, name=Production, departmentEmployees=[Employee [ssn=273-44-2739, firstName=Lyndon, lastName=Johnson], Employee [ssn=273-44-2741, firstName=Edwin, lastName=Cole]]]
Department [number=2, name=Research, No employees]

3. Reflections

- How is the multiplicity from the domain model implemented in your C# code?
- How did you put data in the collection / retrieve data from the collection?
- What happens if you leave out the overridden ToString methods?
  Explain!
- Does your collection use generics?