Mandatory Activity 2. Object Oriented Programming

This activity must be autonomously done by the student. **It must be done prior to the following laboratory class**. It will be used as part of the following laboratory.

Activity 1:

Enhance the `Filter` method that we saw in the laboratory class by implementing a new search condition that return all `Employee` objects that have a non-empty `Comments` property. Use the provided extension method that count words. Test this functionality.

Please note that the provided `Employee` creation method always creates an empty `Comments` property for Employees. You can change it if you want.

Activity 2:

Create a new version of the `List` class of the previous laboratory to implement a polymorphic (simply) linked list capable of collecting **any object**, implementing **at least** the following methods:

- Add
- Remove
- Contains
- ToString
- GetElement
- And the `NumberOfElements` property

Think carefully about the signature of the methods and properties (read-only, write-only, or read and write).

Test its correct behaviour by using the testing tool of Visual Studio. Test the list with the `String`, `Employee`, `Videogame`, `int` and `double` types.

Think carefully about how to use all the programming language features learned so far.

Activity 3 (Optional):

The following activity is not mandatory.

Activity

Using the previous class, implement a new `Set` class in a different assembly. A set is a collection **that contains no duplicate elements**.

Using operator overload, implement the following operators and methods:

- + operator to add elements
- - operator to remove elements
- [ ]operator to get the i_{th} element in a set
- | operator for the union operation
- & operator for the intersection operation
- - operator for the difference operation
- ^ operator to know whether an element is contained in a set
- The `NumerOfElements` property
- ToString

Use the following link as a guide about how the `Set` methods should work: http://en.wikipedia.org/wiki/Set_theory