Mandatory Activities. Functional Paradigm. Lab 07.

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

The extension methods of `IEnumerable<T>` provide the following higher-order functions used in LINQ:

http://msdn.microsoft.com/en-us/library/system.linq.enumerable.aspx

Analyze these functions and identify the following functions we implemented in previous laboratory classes: `Find`, `Filter`, `Reduce` and `Map`. Afterwards, test the identified functions using the testing tool of Visual Studio. At least, this must be the tests to be performed (taken from a previous laboratory class):

1. `Find`:
   - Test it to search for people by name and by id numbers ending in a given letter.
   - Test it to search for right angles, and angles in a given quadrant.
2. `Filter`:
   - Test the same scenarios described for `Find`.
3. `Reduce`
   - Test it to compute the summation of all the degrees in an `Angle` collection and to compute its maximum sine.
   - Test it to compute group people by name; e.g., 10 people named María, 3 people named Pedro…)
4. `Map`
   - Test it to obtain the "surname, name" string from each person in the collection
   - Test it to obtain the list of quadrants of the angles in the collection

Activity 2

Add the following higher order methods to your last version of linked `List` (the generic one that implements `IEnumerable<T>`):

- `Find`
- `Filter`
- `Reduce` (from left to right, and with and without seed)
- `Invert` to, combined with `Reduce`, allow reducing from right to left
- `Map`
- `ForEach`

Test its correct behavior by using the testing tool of Visual Studio (existing tests from previous laboratory classes could be adapted).