Instructions: This quiz is to be taken in silence, without notes, books, or electronic devices (including "smart" watches or earbuds). The time limit to complete it is **15 minutes**. Answer the following questions, trying to be as clear and as accurate as possible. Take your time to read the statements carefully before trying to answer them. If you need more space, write on the back of your test page and indicate it clearly. When writing code, make sure your special punctuation characters are legible, and your lowercase and uppercase letters are easy to distinguish. As usual, every statement or series of statement is assumed to be in a valid class and method, and you can use the `C.RL()`, `C.W()` and `C.WL()` abbreviations.

____ / **8 pts.** **Question 1** Given the usual implementation of `Cell` and `CList`:

```
public class CList<T>{
    private Cell first;
    private class Cell{
        public T Data { get; set; }
        public Cell Next { get; set; }
        public Cell(T dataP, Cell nextP){Data = dataP; Next = nextP;}
    }
    public CList(){first = null;}
}
```

Write…

1. … an `IsEmpty` property that is **`true`** if the `CList` calling object is empty.

2. … an `AddF` method that adds an element at the beginning of the CList (to the left), using the value passed as an argument.

3. … a series of statements, to be inserted in a `Main` method, that 1. create a `CList` object capable of containing `char` elements, 2. insert the elements `'w'` and `'%'` in it, 3. displays whether it is empty using `IsEmpty`.

____ / **5 pts.** **Question 2** Put a checkmark in the box corresponding to true statements about the list abstract data type.

- ☐ A list contains a finite or infinite collection of elements.
- ☐ The elements in a list are stored in no particular order.
- ☐ A list cannot contain multiple elements with the same value.
- ☐ A list must have a fixed number of elements.
- ☐ A list is generally endowed with an operation to test for emptiness.
- ☐ Only the element at the beginning of a list can be removed.

____ / **3 pts.** **Question 3** Briefly explain the purpose of the `IsReadonly` property from the `ICollection<T>` interface, and list at least two methods in a list implementation realizing `ICollection<T>` that should use it.

____ / **4 pts.** **Question 4** Explain the main differences between singly linked list and doubly linked list, and name a few methods that need to be implemented differently.

____ / **2 pts.** **(bonus)** For what operation(s) does doubly linked list provide a complexity gain over singly linked list?