Softimize Development Exercise – Homework Version

Guidelines

- You may implement your solution in Java/C#.
- Your solution should be well-designed according to *OO principles*.
- Send your solution to jobs@softimize.co
    - Email subject should be as follows: "<<Your Full Name>> - Homework Exercise"
- If you should have any questions please send them to jobs@softimize.co

Assumptions

The following **interface** is given (in Java):

```
Public interface Person

{

        Public int getId();

        Public String getFirstName();

        Public String getLastName();

        Public Date getDateOfBirth();

        Public int getHeight();

        // etc… there may be more such get property methods

}
```

Requirements

1. You are asked to implement a new **class** called PersonCollection.
2. Your implementation should support the following operations:
    a. Add - adds the person object which is given as input.
       This operation may be performed in WC time complexity of **O(n)**
    b. Remove - removes the person object with the **maximum** value and returns it.
       This operation must be performed in WC time complexity of **O(1)**
    c. Publish - publishes a **notification** to subscriber objects upon any Add/Remove.

3. What does it mean that a person has the maximum value?
    a. There may be many possible "algorithms" to determine that e.g. by first name/ last name/ height/ or any new properties of this interface **that will be added in the future**; you do **not** know in advance what algorithms may apply and which one should be used. Therefore, design your implementation to be as flexible as possible by supporting **all** potential algorithms. For example: if the developer of Person interface somehow changes its properties, then this should still **not** affect your implementation of PersonCollection in any way!
    b. For a single instance of PersonCollection, there will be only a single matching algorithm i.e. there is no need to change the algorithm in between operations.
4. Your implementation should be **thread-safe**.

Good luck! ☺