



**CSE443 Object Oriented Analysis and Design**

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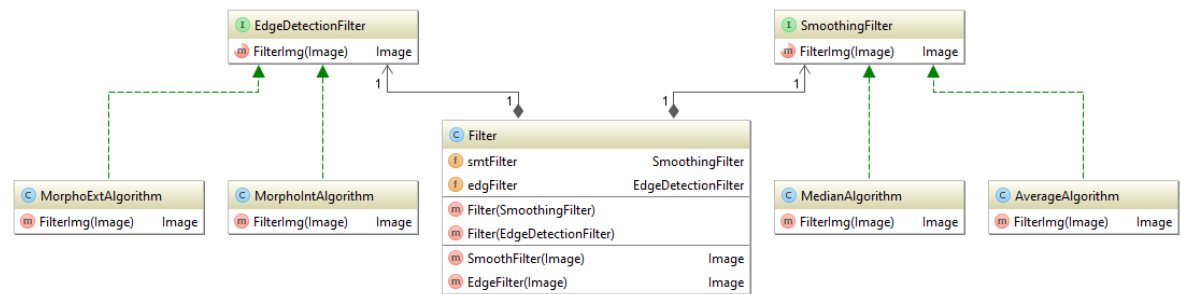
**Homework 01**

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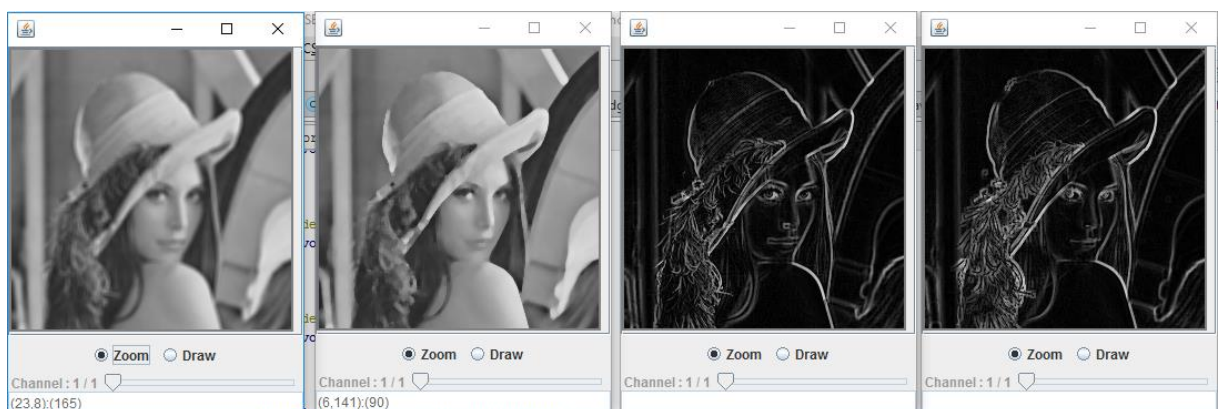
## Answers

1. If I am solving an object-oriented design problem I do not have to use any design pattern. Maybe it is not necessary for that problem or it is not big enough any design pattern. A design solution can be a design pattern if it applicable for same problem.
2. I have two interfaces for our filters. They have a function which is “FilterImg”. It takes a parameter that “Image” has already given to us. Also, I have a class which includes objects of EdgeDetectonFilter and SmoothingFilter. This calls composition. My other algorithms for EdgeDetectionFilter implements EdgeDetectionFilter interface and its function. Also, same for SmoothingFilter algorithms. If I wanted to add any algorithms I can create an interface, then I put it to Filter class as composition then I can implement it for any algorithms. Here is class diagram of my implementation.



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3. My design is satisfying each of customers. Because they can apply all algorithms to images. In the future, they can add different algorithms and different filters to implementation. So, my design can be extended and provides easy to use.
4. Code implementations is in attachment.  
Outputs of filters are below.



5. I prefer to use my own observer design pattern. I have a “Detect” interface and there are two class that implements it. On the other hand, there is a “FancyDetector” class which is sensitively check detection and changes the detector type. Also, it implements an interface which is “Subject” interface. “Subject” interface for observers handling and notifying them. When any detection realized “Fire” and “Police” class getting notify by “contact” interface.

