Assignment 3: Architecture patterns and styles

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4. Comment on the advantages and disadvantages of the 3 approaches.

- **First approach:**
  - The first approach would be the quickest and has the chance to work well with small scale applications, but as you scale up it becomes difficult to maintain and cause more tightly coupled than the other two methods. With a lot of complex dependencies this can lead to more issues and reduces the code's flexibility to changes.

- **Second approach:**
  - As for approaches 2 and 3, abstract classes may be useful in adding separation but run into the roadblock that you can only extend 1 class whereas you are able to extend multiple interfaces. Using an interface allows you to define functionality, where the abstract class allows you to group several related classes together making a more organized and efficient code.

- **Third approach:**
  - Advantages of the Subject / Observer pattern to invert the dependency between the Model and View would include how easily Observers can be added/removed at any time. It's able to send data to other objects effectively without any changes in the observer class. Also it is very flexible and able to set up relationships at runtime between objects. The disadvantages would be that if it's not properly implemented then can lead to high complexity causing large performance issues. This can also lead to a memory leak problem due to the observer's design pattern.