Design Pattern Notes

* Memento
  + Use for tracking the history of an object
  + You have 3 classes
    - Originator – The primary class that you are tracking the state history of
    - Memento – a state of the object at that particular time
    - Caretaker – Also known as the history, will keep a list of memento’s to return should the developer require this
* State
  + When you want to track the state of a particular object without needing to constantly update that object
  + You can implement an interface that the primary class will use and call the same “use this object” function on it
  + That way you can just keep creating new tools/objects but the primary class does not need to change
  + Diagram

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  + Example is painting software and tracking what tool the user is currently using
    - You just need to have each tool inherit a “tool” interface that the primary class can call functions on
      * Click to start
      * Release to finish etc
* Iterator
  + When you want to iterate through something like a browser history
  + You don’t want to for, loop through the list in the main function because if you happen to change the list/array you would need to change the main functionality as well
  + To resolve this we can create an iterator the browser history can use that will have iterator functionality
  + This way we can iterate, and still change the list properties without needing to change our main functionality
  + Diagram

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* Strategy
  + We have an image storage that has a compressor and filter attached to it
  + We want to make sure that if we change or add a compressor or filter, it doesn’t change what the image storage has to do for that
  + the polymorphism principle to variable types
  + Creating a new class that implements an interface so we don’t have to change anything
  + Diagram

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* Template Method Pattern
  + Diagram

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  + If we want certain task logic to happen on all sub tasks we can use an abstract implementation to always handle the primary task logic, and then let the sub tasks (classes that inherit task) continue the rest of their necessary logic after