

MEMENTO DESIGN PATTERN

Joel Vargas Jr.

HISTORY

Created by:

- Noah Thompson
- Dr. Drew Clinkenbeard

Made as a solution for older HP Products

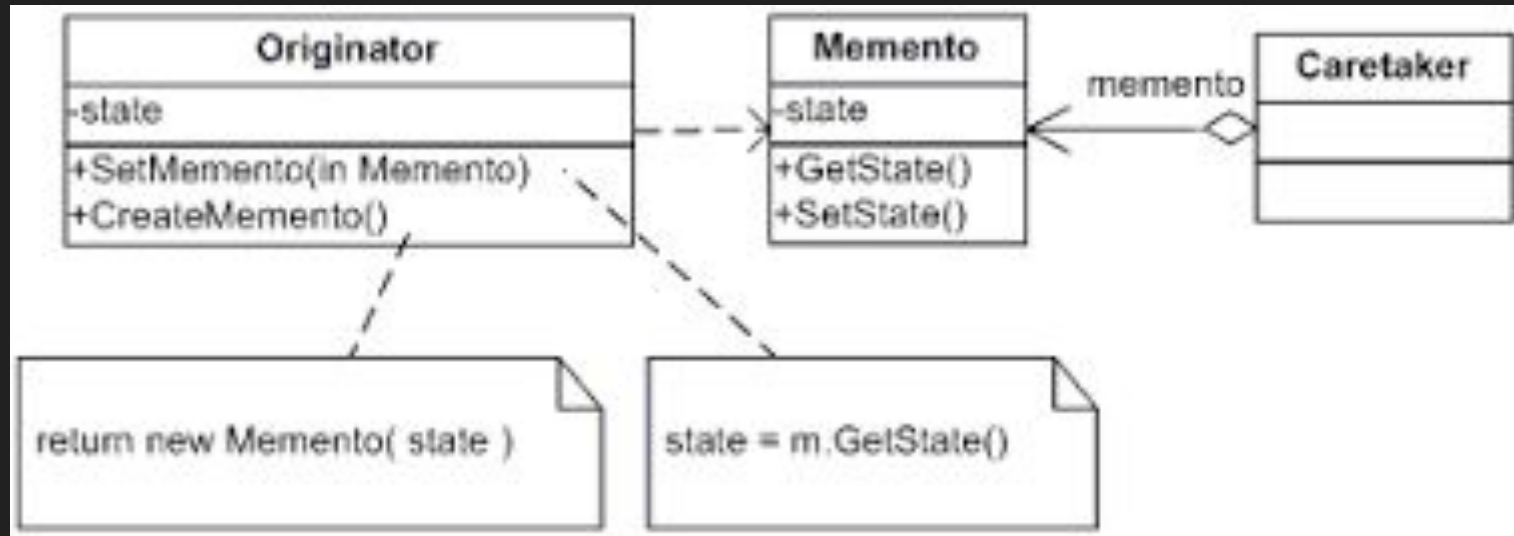
Previous Successor:

- Pseudorandom Number Generator
 - Produces the same sequence of numbers after a state is initialized
 - Finite State Machine

WHY USE THE MEMENTO PATTERN?

- This pattern gives the functionality to “roll back” to a previous state.
- As an application is progressing, you may want to have checkpoints in your application to be able to roll back to later on.

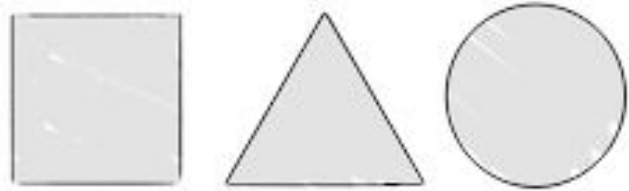
MEMENTO PATTERN STRUCTURE



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THREE COMPONENTS

- Originator
- Memento
- Caretaker



MEMENTO PATTERN STRUCTURE

ORIGINATOR

- Creates a Memento that contains a snapshot of its current internal state.
- It uses the memento to go back to its previous state



MEMENTO PATTERN STRUCTURE

MEMENTO

- Stores the internal state of the originator object
- Protects access against any other object except the originator



MEMENTO PATTERN STRUCTURE

CARETAKER

- Responsible for the safekeeping of the memento
- Knows when and why the originator needs to save and restore itself.



PROBLEMS WITH MEMENTO

- If an object is designed well enough, the object is encapsulated so that internal data structures may be hidden and cannot be accessed from an outside object.
- To battle this, an internal state could be saved externally which can then be stored back to its internal state
 - An Objects encapsulation must never be violated or altered.

RULES OF THUMB

FOR THE PERFECT MEMENTO:

- Identify the roles of the “Caretaker” and the “Originator”
- Create a Memento class and declare the Originator as a “friend
- Caretaker will know when to take a snapshot of the Originator
- The Originator will have to create a Memento and copy its state to that particular Memento
- Make sure is that the Caretaker hold on to the Memento without looking into its class
- The Caretaker will then need to know when to roll back the Originator
- The Originator will reinstate itself using the saved state of the Memento

REAL WORLD APPLICATION

Changing the brakes of a classic vehicle from drum brakes to disc brakes.



REAL WORLD APPLICATION

DEMO

Q&A

Questions?

RESOURCES

https://wikivisually.com/wiki/Memento_pattern

https://sourcemaking.com/design_patterns/memento

https://en.wikipedia.org/wiki/Memento_pattern

<http://www.design-patterns-stories.com/patterns/Memento/>