

Memento Design Pattern



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Memento pattern falls under behavioral pattern category. Memento pattern is used to restore state of an object to a previous state.



Memento pattern uses three actor classes: Memento, Originator and CareTaker

Actor Classes



Memento - The basic object that is stored in different states.

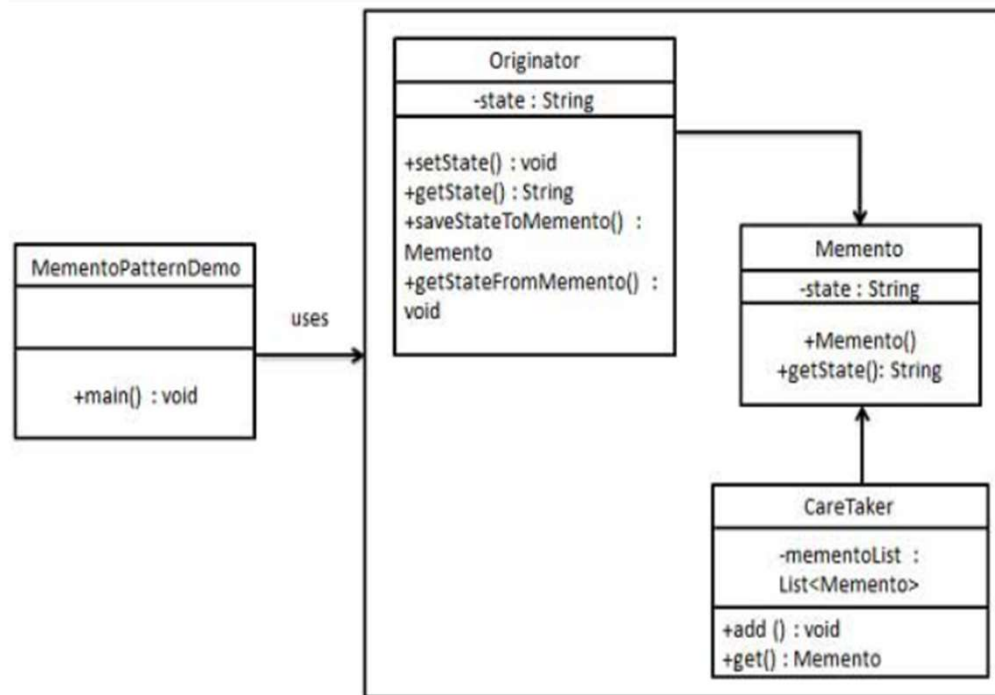


Originator - Sets and Gets the values from the currently targeted Memento. Creates new Mementos and assigns current values to them.



CareTaker - Holds a list that contains all the previous versions of Memento. It can store and retrieve the stored Mementos.

Example



Create Memento class.

Memento.java

```
public class Memento {  
    private String state;  
  
    public Memento(String state){  
        this.state = state;  
    }  
  
    public String getState(){  
        return state;  
    }  
}
```

Create Originator class

Originator.java

```
public class Originator {  
    private String state;  
  
    public void setState(String state){  
        this.state = state;  
    }  
  
    public String getState(){  
        return state;  
    }  
  
    public Memento saveStateToMemento(){  
        return new Memento(state);  
    }  
  
    public void getStateFromMemento(Memento memento){  
        state = memento.getState();  
    }  
}
```

Create CareTaker class

CareTaker.java

```
import java.util.ArrayList;
import java.util.List;

public class CareTaker {
    private List<Memento> mementoList = new ArrayList<Memento>();

    public void add(Memento state){
        mementoList.add(state);
    }

    public Memento get(int index){
        return mementoList.get(index);
    }
}
```

Use *CareTaker* and *Originator* objects.

MementoPatternDemo.java

```
public class MementoPatternDemo {
    public static void main(String[] args) {

        Originator originator = new Originator();
        CareTaker careTaker = new CareTaker();

        originator.setState("State #1");
        originator.setState("State #2");
        careTaker.add(originator.saveStateToMemento());

        originator.setState("State #3");
        careTaker.add(originator.saveStateToMemento());

        originator.setState("State #4");
        System.out.println("Current State: " + originator.getState());

        originator.getStateFromMemento(careTaker.get(0));
        System.out.println("First saved State: " + originator.getState());
        originator.getStateFromMemento(careTaker.get(1));
        System.out.println("Second saved State: " + originator.getState());
    }
}
```


Verify the output.

```
Current State: State #4  
First saved State: State #2  
Second saved State: State #3
```