

Postman Pattern

*Advance Observer pattern for Mobile
by Jiahao Liu*



Police pattern
Ad mobile

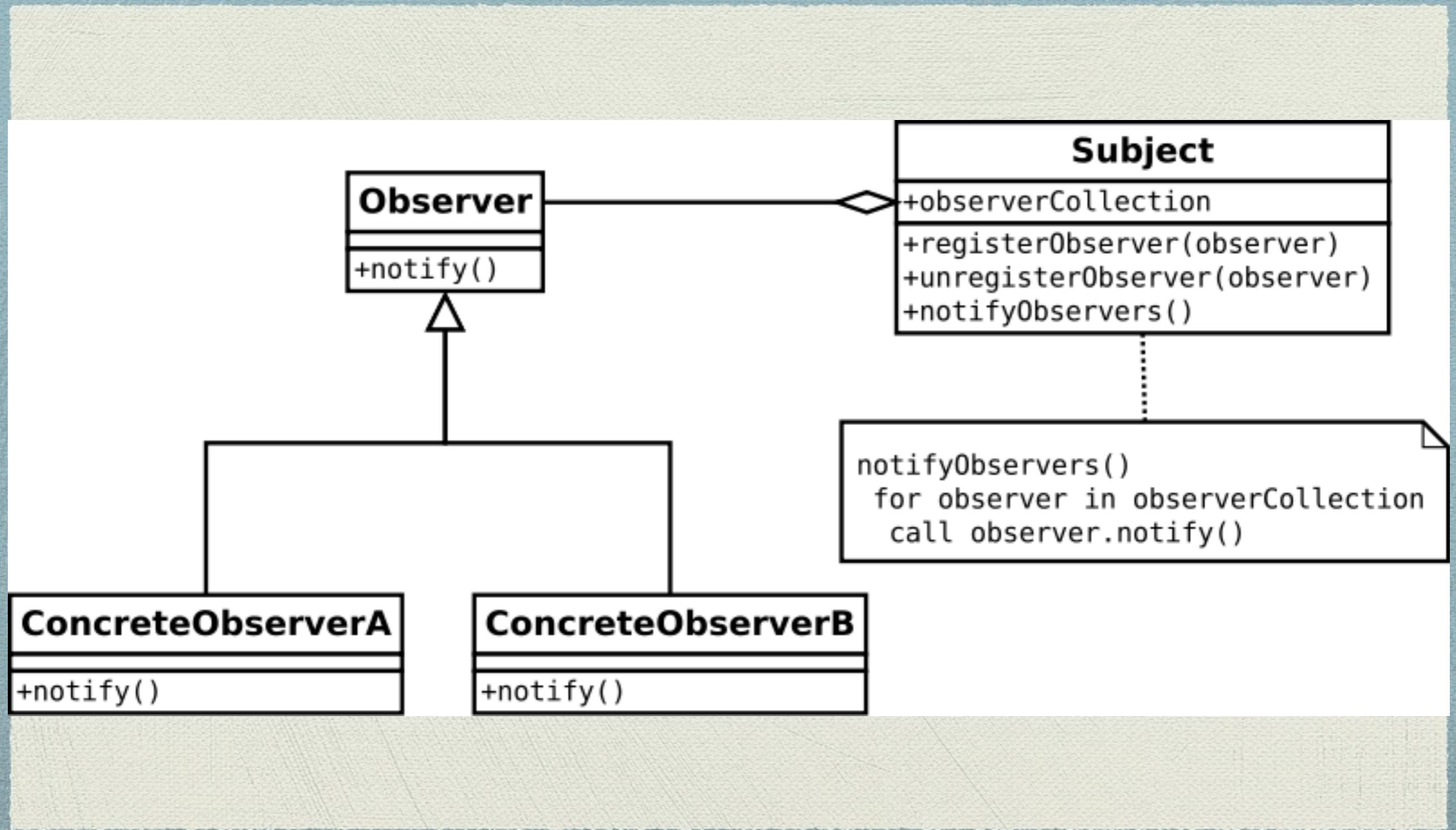
Index

- ◆ The problem
- ◆ Postman pattern
- ◆ Further improvement



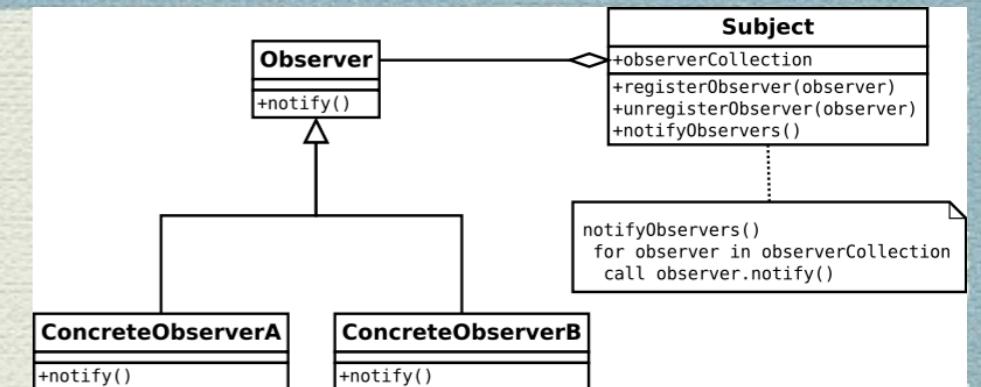
The Problem

Observer pattern



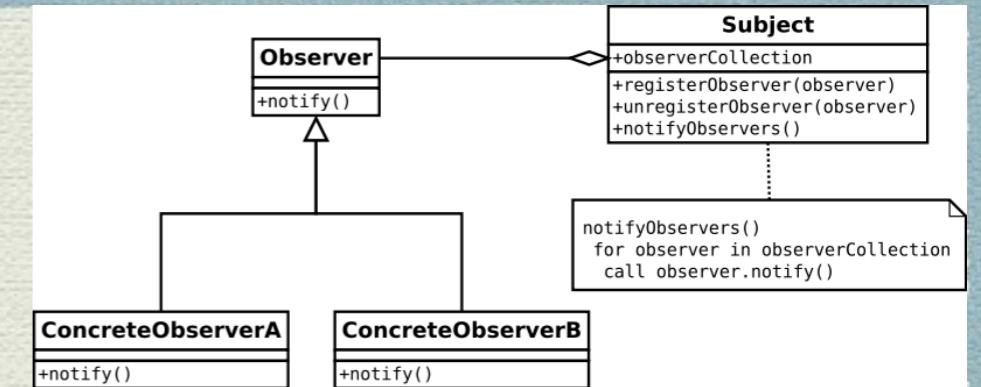
Observer

- ◆ Ask observable about data
- ◆ Notified when the data is available
- ◆ Can unregister itself



Observable

- ◆ Register observer
- ◆ Contains a list of observer
- ◆ Notify observers when data is ready



Problem with mobile

- ◆ UI screen as observer
- ◆ Observable could return data in any moment
 - ◆ UI screen could not be in foreground
 - ◆ It cannot modify the view of another UI screen



Postman pattern

Real world example

Postman



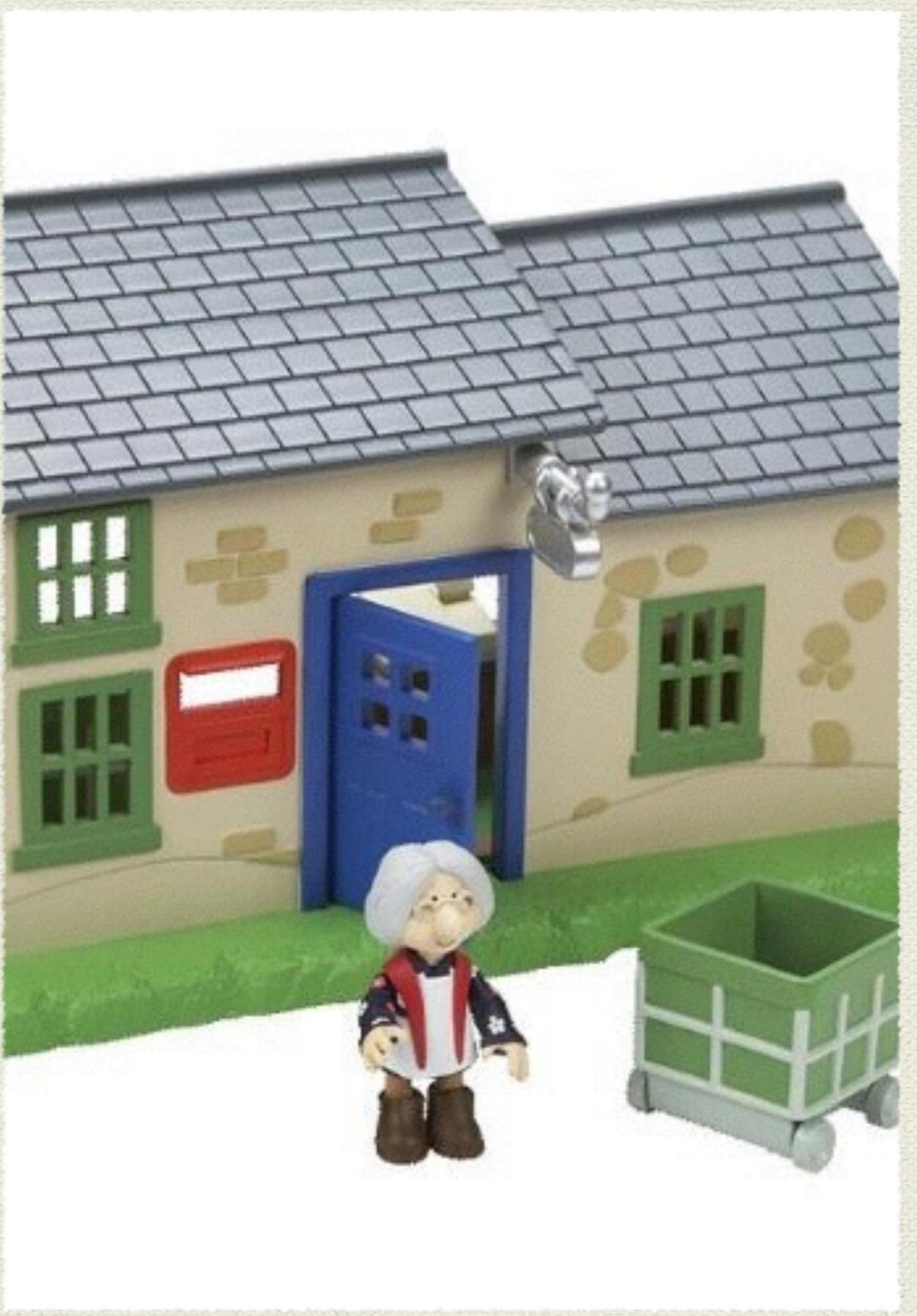


Request

*Imagine you have have a shop and
you request a package*

Preparation

The sender takes some time to prepare the package and send it to the post office





Reception

When the postman delivers the package to your shop, the shop could be open or close

Shop open

Direct deliver





Shop closed

*Just leave the package in the mail
box.*

*When the shop opens again, the
package will be checked*

Sample code

Sample project on Android



Postman Activity

- ◆ Abstract class
- ◆ Implements Observer
- ◆ *protected boolean isInForeground*
- ◆ Updated by *onResume()* and *onPause()*

Postman Activity

- ◆ *protected abstract void processDataIfExists()*
- ◆ *Called onResume()*
 1. If the data does not exists, finish
 2. Otherwise, process the data
 3. And remove the data

Activities

- ◆ Extends from PostmanActivity
- ◆ Implements *processDataIfExists()*
- ◆ Implements *update(Observable, Object)*
 - ◆ If (*isInForeground*) *processDataIfExists()*
 - ◆ *observable.deleteObserver(this)*

Postman Observable

- ◆ Extends from Observable
- ◆ Add Observer
- ◆ Get data
- ◆ Notify observer
- ◆ ~~delete observer~~

User case



User case

- ◆ MainActivity extends from PostmanActivity
1. MainActivity request data to PostmanObservable
 2. PostmanObservable register the observer
 3. PostmanObservable prepare the data and notify to MainActivity

User case

- ◆ Update from MainActivity is called
 - 1. Save the data
 - 2. If MainActivity is in foreground
 - ◆ Invoke processDataIfExist()

User case

- ◆ Update from MainActivity is called
 - 3. If MainActivity is not in foreground
 - ◆ Do nothing
 - ◆ When the MainActivity goes on foreground
 - ◆ Invoke processDataIfExist()
 - 4. Delete itself from the observable

Sample code here

[https://github.com/jiahaoliuliu/
PostmanPattern/tree/simplePostmanPattern](https://github.com/jiahaoliuliu/PostmanPattern/tree/simplePostmanPattern)



Further improvement

Multiple data needed

If multiple data is needed from the same observable, it is not possible.

The observer is removed from observable after first result

