بررسی الگوهای طراحی–
Observer

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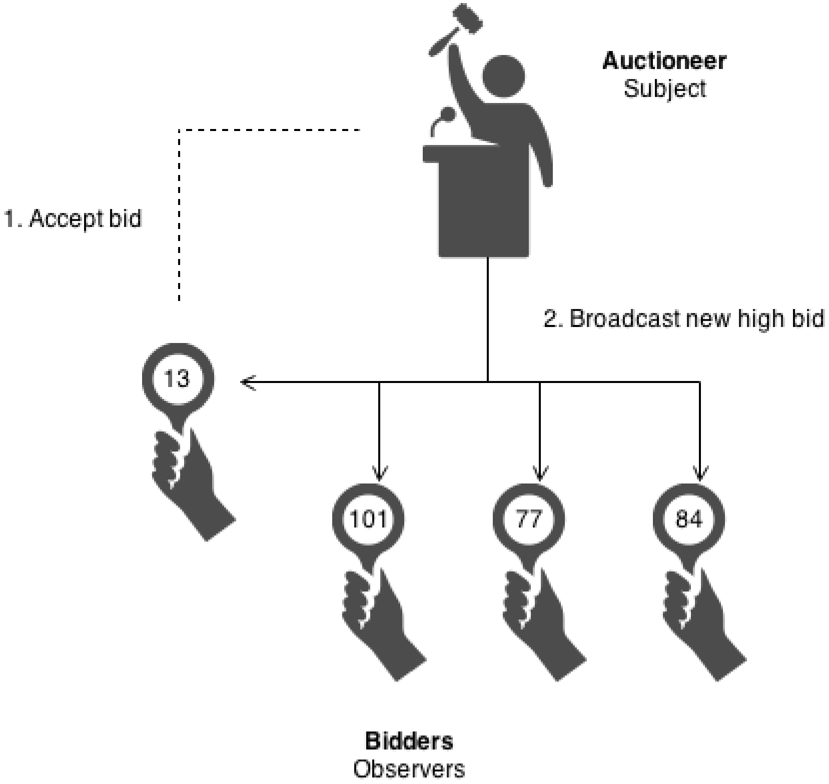
مفاهیم

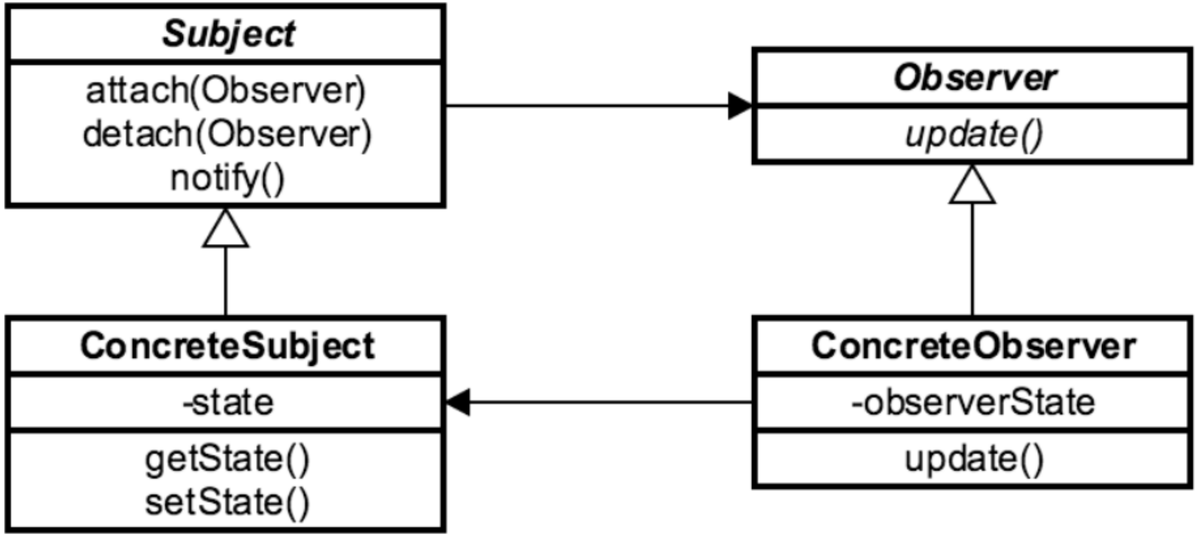
- رابطه یک به چند
- decoupling
- استفاده از Event Handling
- PUB / SUB
- نمونه ها
  - □ java.util.Observer
  - □ java.util.EventListener
  - □ javax.jms.Topic

مفاهيم


Auctioneer
Subject
1. Accept bid
2. Broadcast new high bid
13
101
77
84
Bidders
Observers

طراحی

- Subject
- Observer



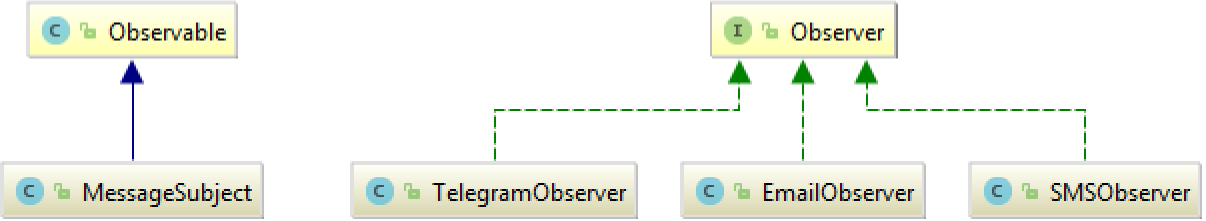
مثال 1

```java
@Component
class Subject{
    @Autowired
    ApplicationEventPublisher applicationEventPublisher;

    public void tellAllYouAreShuttingDown(){
        applicationEventPublisher.publishEvent(new ShutDownEvent());
    }
}

class ShutDownEvent{
}
```

مثال 1

```java
@Component
class Observer{
    @EventListener
    public void onShutDown(ShutDownEvent shutDownEvent){
        System.out.println("SHUT DOWN");
    }

    @EventListener
    public void onShutDown2(ShutDownEvent shutDownEvent){
        System.out.println("SHUT DOWN 2");
    }
}
```

یک نمونه



Observable
MessageSubject
Observer
TelegramObserver
EmailObserver
SMSObserver

یک نمونه

```java
public class MessageSubject extends Observable {

    public void sendMessage(String message){
        setChanged();
        notifyObservers(message);
    }
}
```

یک نمونه

```java
public class EmailObserver implements Observer {

    public String[] emailAddresses;

    public EmailObserver(String... emailAddresses) {
        this.emailAddresses = emailAddresses;
    }

    @Override
    public void update(Observable o, Object arg) {
        Arrays.stream(emailAddresses).forEach( str -> {
        System.out.println(
                String.format("SENDING EMAIL TO : %s . MESSAGE : %s" , str , arg));});
    }
}
```

یک نمونه

```
MessageSubject messageSubject = new MessageSubject();

messageSubject.addObserver(
new EmailObserver("aa@bb.com","ww@hh.com"));

messageSubject.sendMessage("Hey this is me! , Please Call.");
```

جمع بندی

- Decouple کردن نحوه ارتباط اشیاء
- روش پیام رسانی broadcasting
- پیاده سازی مدل publish/subscriber
- دیباگ سختی دارد