**Exercise 7: Implementing the Observer Pattern**

**Scenario:**

You are developing a stock market monitoring application where multiple clients need to be notified whenever stock prices change. Use the Observer Pattern to achieve this.

**File Structure:**

1. Stock.java – Subject interface
2. Observer.java – Observer interface
3. StockMarket.java – Concrete subject
4. MobileApp.java – Concrete observer
5. WebApp.java – Another concrete observer
6. TestObserver.java – Main class

**Codes:**

//Stock.java

public interface Stock {

void registerObserver(Observer o);

void removeObserver(Observer o);

void notifyObservers();

}

//Observer.java

public interface Observer {

void update(String stockName, double stockPrice);

}

// StockMarket.java

import java.util.\*;

public class StockMarket implements Stock {

private List<Observer> observers = new ArrayList<>();

private String stockName;

private double stockPrice;

public void setStock(String stockName, double stockPrice) {

this.stockName = stockName;

this.stockPrice = stockPrice;

notifyObservers();

}

@Override

public void registerObserver(Observer o) {

observers.add(o);

}

@Override

public void removeObserver(Observer o) {

observers.remove(o);

}

@Override

public void notifyObservers() {

for (Observer observer : observers) {

observer.update(stockName, stockPrice);

}

}

}

//MobileApp.java

public class MobileApp implements Observer {

private String appName;

public MobileApp(String appName) {

this.appName = appName;

}

@Override

public void update(String stockName, double stockPrice) {

System.out.println(appName + " Mobile App - Stock Updated: " + stockName + " at ₹" + stockPrice);

}

}

//WebApp.java

public class WebApp implements Observer {

private String appName;

public WebApp(String appName) {

this.appName = appName;

}

@Override

public void update(String stockName, double stockPrice) {

System.out.println(appName + " Web App - Stock Updated: " + stockName + " at ₹" + stockPrice);

}

}

// TestObserver.java

public class TestObserver {

public static void main(String[] args) {

StockMarket market = new StockMarket();

Observer mobileObserver = new MobileApp("InvestorPro");

Observer webObserver = new WebApp("TradeView");

market.registerObserver(mobileObserver);

market.registerObserver(webObserver);

market.setStock("TCS", 3570.25);

market.setStock("INFY", 1462.80);

market.removeObserver(webObserver);

market.setStock("WIPRO", 435.60);

}

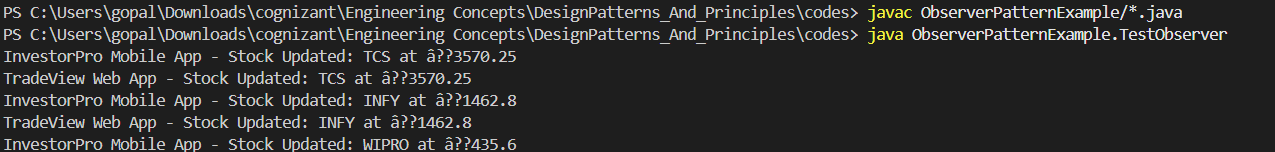
}

**Compile and Run:**

javac ObserverPatternExample/\*.java

java ObserverPatternExample.TestObserver

**Output:**

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