**Design Pattern And Principles**

**EXERCISE 7: Implementing the Observer Pattern**

**Source Code**

// Main.java

import java.util.\*;

// Step 2: Subject Interface

interface Stock {

void registerObserver(Observer o);

void removeObserver(Observer o);

void notifyObservers();

}

// Step 3: Concrete Subject

class StockMarket implements Stock {

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

private String stockName;

private double stockPrice;

public StockMarket(String stockName) {

this.stockName = stockName;

}

public void setStockPrice(double price) {

this.stockPrice = price;

System.out.println("\n[StockMarket] " + stockName + " updated to ₹" + price);

notifyObservers();

}

public void registerObserver(Observer o) {

observers.add(o);

}

public void removeObserver(Observer o) {

observers.remove(o);

}

public void notifyObservers() {

for (Observer o : observers) {

o.update(stockName, stockPrice);

}

}

}

// Step 4: Observer Interface

interface Observer {

void update(String stockName, double price);

}

// Step 5: Concrete Observers

class MobileApp implements Observer {

private String name;

public MobileApp(String name) {

this.name = name;

}

public void update(String stockName, double price) {

System.out.println("[MobileApp - " + name + "] " + stockName + " price updated to ₹" + price);

}

}

class WebApp implements Observer {

private String name;

public WebApp(String name) {

this.name = name;

}

public void update(String stockName, double price) {

System.out.println("[WebApp - " + name + "] " + stockName + " price updated to ₹" + price);

}

}

// Step 6: Test the Observer Implementation

public class Main {

public static void main(String[] args) {

StockMarket reliance = new StockMarket("ITC Limited");

Observer mobileUser = new MobileApp("Sohan");

Observer webUser = new WebApp("InvestWatch");

reliance.registerObserver(mobileUser);

reliance.registerObserver(webUser);

reliance.setStockPrice(5782.75);

reliance.setStockPrice(5782.00);

System.out.println("\n[Removing WebApp observer]\n");

reliance.removeObserver(webUser);

reliance.setStockPrice(5800.10);

}

}

**OUTPUT**

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