**Exercise 7: Implementing the Observer Pattern**

CODE:

import java.util.ArrayList;

import java.util.List;

public class ObserverPatternExample {

interface Stock {

void registerObserver(Observer o);

void removeObserver(Observer o);

void notifyObservers();

}

static class StockMarket implements Stock {

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

private String stockName;

private double stockPrice;

public StockMarket(String stockName, double initialPrice) {

this.stockName = stockName;

this.stockPrice = initialPrice;

}

public void setStockPrice(double price) {

this.stockPrice = price;

System.*out*.println("\n" + stockName + " price updated to Rs." + 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);

}

}

}

interface Observer {

void update(String stockName, double newPrice);

}

static class MobileApp implements Observer {

private String appName;

public MobileApp(String name) {

this.appName = name;

}

public void update(String stockName, double newPrice) {

System.*out*.println(appName + " Mobile App: " + stockName + " new price = Rs." + newPrice);

}

}

static class WebApp implements Observer {

private String appName;

public WebApp(String name) {

this.appName = name;

}

public void update(String stockName, double newPrice) {

System.*out*.println(appName + " Web App: " + stockName + " updated to Rs." + newPrice);

}

}

public static void main(String[] args) {

StockMarket teslaStock = new StockMarket("TSLA", 1000.00);

Observer mobileUser = new MobileApp("InvestorX");

Observer webUser = new WebApp("StockTracker");

teslaStock.registerObserver(mobileUser);

teslaStock.registerObserver(webUser);

teslaStock.setStockPrice(1025.75);

teslaStock.setStockPrice(998.40);

teslaStock.removeObserver(mobileUser);

teslaStock.setStockPrice(1050.00);

}

}

OUTPUT:

