

1

```

int buyStock(String stockCode, int stockQuantity, int stockPrice) {
    for (int i=0; i<stockCodes.length; i++) {
        if (stockCode.equals(stockCodes[i])) {
            //stock exists
            stockQuantities[i] = stockQuantities[i] + stockQuantity;
            return stockQuantities[i];
        }
    }

    for (int i=0; i<stockCodes.length; i++) {
        if (stockCodes[i].equals("XXXX")) {
            //stock doesn't exist but have a place
            stockCodes[i] = stockCode;
            stockQuantities[i] = stockQuantity;
            stockPrices[i] = stockPrice;
            return stockQuantities[i];
        }
    }
    //stock doesn't exist and doesn't have a place
    return -1;
}

```

2

```

int sellStock(String stockCode, int stockQuantity) {
    for (int i=0; i<stockCodes.length; i++) {
        if (stockCode.equals(stockCodes[i])) {
            //stock exists
            if (stockQuantities[i] - stockQuantity >= 0) {
                stockQuantities[i] = stockQuantities[i] - stockQuantity;
                if (stockQuantities[i] == 0) stockCodes[i] = "XXXX";
                return stockQuantities[i];
            }
            //cannot sell because there isn't enough
            else return -1;
        }
    }
    //stock doesn't exist
    return -1;
}

```

3

```

int getCash(int requiredCash) {
    int amountSold = 0;
    int i;

    for (i=0; i<stockCodes.length; i++) {
        amountSold = amountSold + stockQuantities[i] * stockPrices[i];
        if (amountSold >= requiredCash) break;
    }

    //get cash didn't succeed
    if (i == stockCodes.length) return -1;

    //get cash succeeded and we can now actually sell stocks up to stock no. i
    for (int j=0; j<=i; j++) {
        stockCodes[j] = "XXXX";
        stockQuantities[j] = 0;
    }

    return amountSold;
}

```

}

```
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;

public class Stocks extends Applet implements ActionListener {

    String[] stockCodes = {"HLTH", "ABCD", "ECIR", "XXXX", "ARTY"};
    int[] stockQuantities = {200, 400, 500, 340, 500};
    int[] stockPrices = {1, 2, 6, 4, 3};

    TextField stockCode, stockQuantity, stockPrice;
    Button buy, sell, cash;
    Label output;

    public void init() {
        Label stockCodeLabel = new Label("Type in stock's code:");
        add(stockCodeLabel);
        stockCode = new TextField(10); add(stockCode);

        Label stockQuantityLabel = new Label("Type in stock's quantity:");
        add(stockQuantityLabel);
        stockQuantity = new TextField(10); add(stockQuantity);

        Label stockPriceLabel = new Label("Type in stock's price:"); add(stockPriceLabel);
        stockPrice = new TextField(10); add(stockPrice);

        buy = new Button("Buy Stock"); add(buy); buy.addActionListener(this);
        sell = new Button("Sell Stock"); add(sell); sell.addActionListener(this);
        cash = new Button("Get Cash"); add(cash); cash.addActionListener(this);

        output = new Label("Results will be shown here"); add(output);
    }

    public void actionPerformed(ActionEvent e) {
        int returnValue = -2; //if program works fine, -2 shouldn't be returned
        if (e.getSource() == buy)
            returnValue = buyStock(stockCode.getText(),
                                   Integer.parseInt(stockQuantity.getText()),
                                   Integer.parseInt(stockPrice.getText()));
        else if (e.getSource() == sell)
            returnValue = sellStock(stockCode.getText(),
                                    Integer.parseInt(stockQuantity.getText()));
        else returnValue = getCash(Integer.parseInt(stockPrice.getText()));

        //returnValue should be more informative
        output.setText("result = "+returnValue);
    }
}
```