

# ONLINE BOOK BUYING AND SELLING PORTAL



## A PROJECT REPORT

*Submitted by*

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*in partial fulfillment of requirements for the award of the course*

**CGB1201 - JAVA PROGRAMMING**

*In*

**COMPUTER SCIENCE AND ENGINEERING**

**K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY**

(An Autonomous Institution, affiliated to Anna University Chennai and Approved by AICTE, New Delhi)

**SAMAYAPURAM – 621 112**

**DECEMBER- 2024**

**K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY  
(AUTONOMOUS)**

**SAMAYAPURAM – 621 112**

**BONAFIDE CERTIFICATE**

Certified that this project report on “**ONLINE BOOK BUYING AND SELLING PORTAL**” is the bonafide work of **RAGUNATH S (2303811710421128)** who carried out the project work during the academic year 2024 - 2025 under my supervision

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## DECLARATION

I declare that the project report on “**ONLINE BOOK BUYING AND SELLING PORTAL**” is the result of original work done by us and best of our knowledge, similar work has not been submitted to “**ANNA UNIVERSITY CHENNAI**” for the requirement of Degree of **BACHELOR OF ENGINEERING**. This project report is submitted on the partial fulfilment of the requirement of the completion of the course **CGB120- JAVA PROGRAMMING**.

**Signature**



---

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I render our sincere thanks to Course Coordinator and other staff members for providing valuable information during the course.

I wish to express our special thanks to the officials and Lab Technicians of our departments who rendered their help during the period of the work progress.

## **VISION OF THE INSTITUTION**

To serve the society by offering top-notch technical education on par with global standards

## **MISSION OF THE INSTITUTION**

- Be a center of excellence for technical education in emerging technologies by exceeding the needs of the industry and society.
- Be an institute with world class research facilities
- Be an institute nurturing talent and enhancing the competency of students to transform them as all-round personality respecting moral and ethical values

## **VISION OF DEPARTMENT**

To be a center of eminence in creating competent software professionals with research and innovative skills.

## **MISSION OF DEPARTMENT**

**M1: Industry Specific:** To nurture students in working with various hardware and software platforms inclined with the best practices of industry.

**M2: Research:** To prepare students for research-oriented activities.

**M3: Society:** To empower students with the required skills to solve complex technological problems of society.

## **PROGRAM EDUCATIONAL OBJECTIVES**

### **1. PEO1: Domain Knowledge**

To produce graduates who have strong foundation of knowledge and skills in the field of Computer Science and Engineering.

### **2. PEO2: Employability Skills and Research**

To produce graduates who are employable in industries/public sector/research organizations or work as an entrepreneur.

### **3. PEO3: Ethics and Values**

To develop leadership skills and ethically collaborate with society to tackle real-world challenges.

### **PROGRAM SPECIFIC OUTCOMES (PSOs)**

#### **PSO 1: Domain Knowledge**

To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering.

#### **PSO 2: Quality Software**

To apply software engineering principles and practices for developing quality software for scientific and business applications.

#### **PSO 3: Innovation Ideas**

To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems

### **PROGRAM OUTCOMES (POs)**

Engineering students will be able to:

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **ABSTRACT**

The online book buying and selling portal is a Java-based application designed using Swing for the graphical user interface (GUI). It allows users to register, log in, browse available books, and make purchases. Users can also sell books by providing details like title, author, and price. The system supports multiple users, each managing their own book purchases and sales. Features like error handling and input validation ensure smooth user interactions, making it an efficient platform for buying and selling books online.

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**ABSTRACT WITH POs AND PSOs MAPPING**

**CO 5 : BUILD JAVA APPLICATIONS FOR SOLVING REAL-TIME PROBLEMS.**

<b>ABSTRACT</b>	<b>POs MAPPED</b>	<b>PSOs MAPPED</b>
The "Online Book Buying and Selling Portal" is a Java-based Swing application that allows users to buy and sell books in a virtual marketplace. Users can register, log in, browse available books, purchase them, and list new books for sale. The portal provides a simple, user-friendly interface with features like book viewing, purchasing, and selling, alongside user authentication and management. It serves as a basic model for an online book store.	<b>PO1 -3</b> <b>PO2 -3</b> <b>PO3 -3</b> <b>PO4 -3</b> <b>PO5 -3</b> <b>PO6 -3</b> <b>PO7 -3</b> <b>PO8 -3</b> <b>PO9 -3</b> <b>PO10 -3</b> <b>PO11-3</b> <b>PO12 -3</b>	<b>PSO1 -3</b> <b>PSO2 -3</b> <b>PSO3 -3</b>

Note: 1- Low, 2-Medium, 3- High

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# CHAPTER 1

## INTRODUCTION

### 1.1 Objective

The objective of the "Online Book Buying and Selling Portal" is to provide a simple, interactive platform for users to buy and sell books online. The program aims to simulate the process of browsing a marketplace, purchasing books, and listing books for sale. By implementing basic features like user authentication, book management, and simple navigation, the program offers a practical example of how an online book store can be structured using Java Swing for the graphical user interface.

### 1.2 Overview

The "Online Book Buying and Selling Portal" is a Java-based Swing application designed to simulate an online marketplace for books. It enables users to log in, register, view available books, purchase books, and sell their own books. The portal uses a card-based layout to manage different screens, including the login page, main menu, and panels for viewing, buying, and selling books. The user interface is simple and intuitive, providing a smooth experience for interaction while demonstrating fundamental programming concepts in Java.

### 1.3 Java Programming Concepts

The program utilizes core Java programming concepts, such as Object-Oriented Programming (OOP), to model users and books as classes with properties and methods. It makes use of **ArrayList** to store and manage lists of books and users dynamically. Swing components like **JFrame**, **JPanel**, **CardLayout**, **TextField**, and **Button** are employed to create the graphical interface and provide navigation. Event handling, through **ActionListener** interfaces, is implemented for interactive features like login, registration, buying, and selling books, offering a complete application structure.

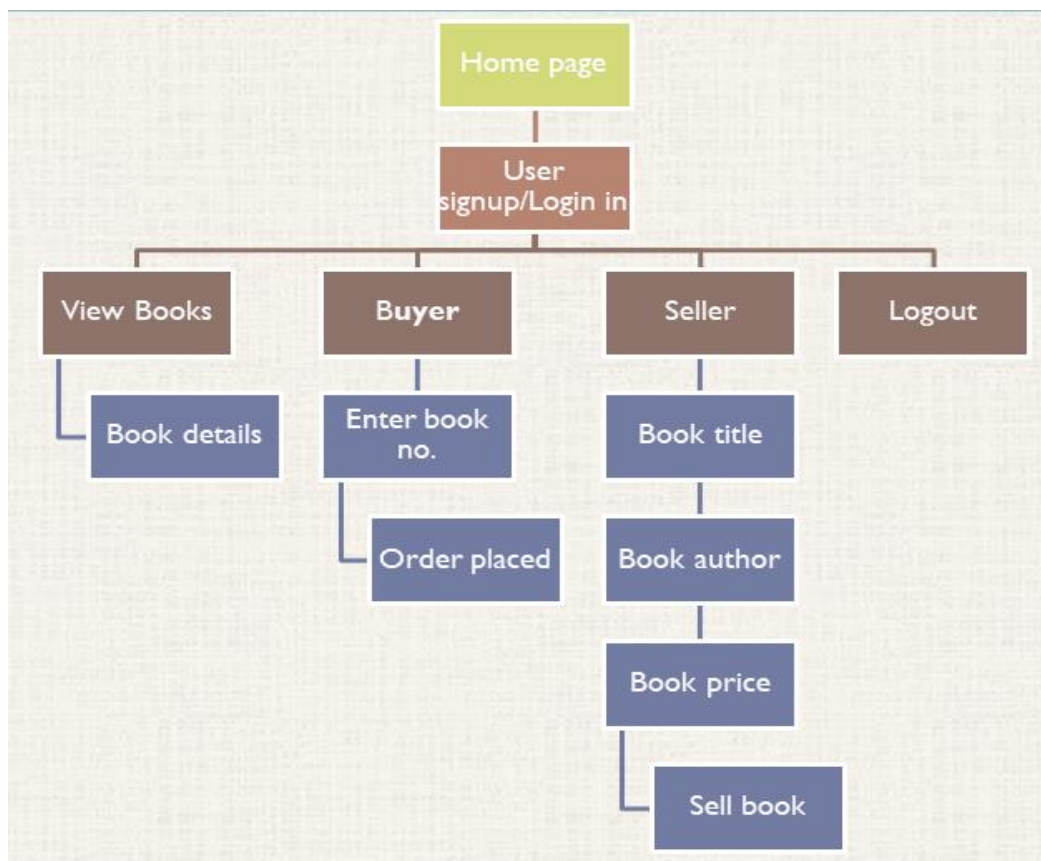
## CHAPTER 2

### PROJECT METHODOLOGY

#### 2.1 Proposed Work

The "Online Book Buying and Selling Portal" is designed to offer a simple yet functional platform where users can register, log in, browse, buy, and sell books. The system will simulate an online book store where users can view available books, purchase them, and also list their own books for sale. The proposed work involves creating an interactive GUI using Java Swing, implementing user authentication, and ensuring smooth navigation. It also includes managing books with features to add, display, and update the book list. The goal is to develop an easy-to-use, event-driven application demonstrating key Java concepts.

#### 2.2 Block Diagram



## **CHAPTER 3**

### **MODULE DESCRIPTION**

#### **3.1 User Authentication and Management Module:**

The User Authentication and Management module ensures secure login and registration for users. By validating user credentials (username and password), it grants access to the system and maintains a user session throughout the program. This module allows users to create new accounts, ensuring a personalized experience. It manages user data, such as usernames and passwords, with basic validation to prevent errors. Enhancing this module with features like password recovery, session timeout, and user role management can further improve its security and functionality.

#### **3.2 Book Listing and Display Module:**

The Book Listing and Display module is responsible for showing the available books for sale. It dynamically updates the list of books, displaying details such as title, author, and price. Using the JTextArea component, users can easily browse through the book offerings in a user-friendly layout. This module is linked to the main panel where users can view books, and it can be extended to support advanced features like filtering, searching, and sorting based on genres, authors, or price range for improved user experience.

#### **3.3 Book Purchase Module:**

The Book Purchase module allows logged-in users to buy books from the available listing. It validates the user's input to select the correct book and processes the purchase by adding the selected book to the user's purchase history. This module also updates the display to reflect changes in the list of books for

sale. Enhancements can include integrating real payment systems, providing receipts or confirmations, and allowing users to manage their purchase history with options for book reviews, ratings, and refunds.

### **3.4 Book Selling Module:**

The Book Selling module facilitates users in adding new books for sale. It provides an interface to input the book's title, author, and price. Upon successful entry, the book is added to the available books list. This module is crucial for supporting the marketplace dynamic, enabling users to contribute to the store's inventory. Future improvements could include adding validation for duplicate books, category selection for better book organization, and a rating system to ensure quality books are listed.

### **3.5 Main Menu and Navigation Module:**

The Main Menu and Navigation module provides users with easy access to all core features, including viewing available books, purchasing, selling, and logging out. It uses a CardLayout for seamless panel transitions between different tasks. This module ensures that users can quickly navigate through the application without confusion. Enhancements could include the addition of a more sophisticated navigation system, such as side menus, shortcuts, or a dashboard with personalized user statistics, enhancing the overall usability and user experience.

## **CHAPTER 4**

### **CONCLUSION & FUTURE SCOPE**

#### **4.1 CONCLUSION**

The provided Java-based online bookstore program effectively simulates a user-driven book buying and selling system using Swing for the GUI. It incorporates essential functionalities such as user authentication, book listing, purchasing, and adding books for sale. Through interaction with classes like **User** and **Book**, the program efficiently manages the data flow, enabling users to engage in the bookstore's operations. The design also ensures an intuitive user interface with smooth transitions between panels, contributing to a satisfying user experience.

#### **4.2 FUTURE SCOPE**

To enhance the system's capabilities, several improvements can be made. Integration with a database for persistent storage would ensure data remains consistent across sessions. Additionally, adding advanced user roles (e.g., admin, customer) could enable features like inventory management and price adjustments. Implementing payment gateway integration would allow real-world book purchases. A recommendation engine could also be added to suggest books based on user preferences. Furthermore, a mobile-friendly version could improve accessibility

## APPENDIX A

### (SOURCE CODE)

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
import java.util.ArrayList;
import java.util.List;

public class Main {

    static class Book {
        private String title;
        private String author;
        private double price;

        public Book(String title, String author, double price) {
            this.title = title;
            this.author = author;
            this.price = price;
        }

        @Override
        public String toString() {
            return "Title: " + title + ", Author: " + author + ", Price: $" +
price;
        }
    }

    static class User {
        private String username;
        private String password;
        private List<Book> purchasedBooks;

        public User(String username, String password) {
            this.username = username;
            this.password = password;
            this.purchasedBooks = new ArrayList<>();
        }

        public void addPurchasedBook(Book book) {
            purchasedBooks.add(book);
        }

        public List<Book> getPurchasedBooks() {
```



```

        return purchasedBooks;
    }
}

private JFrame frame;
private JPanel panel;
private CardLayout cardLayout;
private List<Book> booksForSale;
private List<User> users;
private User loggedInUser;

private JTextField usernameField, bookTitleField, bookAuthorField,
bookPriceField;
private JPasswordField passwordField;
private JTextArea displayArea;

public static void main(String[] args) {
    SwingUtilities.invokeLater(() -> new Main().createAndShowGUI());
}

public Main() {
    booksForSale = new ArrayList<>();
    users = new ArrayList<>();

    booksForSale.add(new Book("Java Programming", "John Doe", 29.99));
    booksForSale.add(new Book("Effective Java", "Joshua Bloch", 45.00));
    booksForSale.add(new Book("Clean Code", "Robert C. Martin", 40.50));

    users.add(new User("john_doe", "password123"));
    users.add(new User("jane_doe", "password456"));
}

public void createAndShowGUI() {
    frame = new JFrame("Online Book Store");
    panel = new JPanel(new CardLayout());
    cardLayout = (CardLayout) panel.getLayout();

    panel.add(createLoginPanel(), "Login");
    panel.add(createMainMenuPanel(), "Main Menu");
    panel.add(createViewBooksPanel(), "View Books");
    panel.add(createBuyBookPanel(), "Buy Book");
    panel.add(createSellBookPanel(), "Sell Book");

    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setSize(600, 400);
    frame.add(panel);
    frame.setVisible(true);
}

```

```

    }

    private JPanel createLoginPanel() {
        JPanel loginPanel = new JPanel(new GridLayout(6, 1));

        usernameField = new JTextField();
        passwordField = new JPasswordField();

        JButton loginButton = new JButton("Login");
        loginButton.addActionListener(e -> handleLogin());

        JButton registerButton = new JButton("Register");
        registerButton.addActionListener(e -> handleRegister());

        loginPanel.add(new JLabel("Username: "));
        loginPanel.add(usernameField);
        loginPanel.add(new JLabel("Password: "));
        loginPanel.add(passwordField);
        loginPanel.add(loginButton);
        loginPanel.add(registerButton);

        return loginPanel;
    }

    private void handleLogin() {
        String username = usernameField.getText();
        String password = new String(passwordField.getPassword());

        for (User user : users) {
            if (user.username.equals(username) &&
                user.password.equals(password)) {
                loggedInUser = user;
                cardLayout.show(panel, "Main Menu");
                return;
            }
        }
        JOptionPane.showMessageDialog(frame, "Invalid credentials.");
    }

    private void handleRegister() {
        String username = usernameField.getText();
        String password = new String(passwordField.getPassword());

        if (username.isEmpty() || password.isEmpty()) {
            JOptionPane.showMessageDialog(frame, "Fields cannot be empty.");
            return;
        }
    }

```

```

        users.add(new User(username, password));
        JOptionPane.showMessageDialog(frame, "Registration successful.");
    }

    private JPanel createMainMenuPanel() {
        JPanel menuPanel = new JPanel(new GridLayout(4, 1));

        JButton viewBooksButton = new JButton("View Available Books");
        viewBooksButton.addActionListener(e -> cardLayout.show(panel, "View
Books"));

        JButton buyBookButton = new JButton("Buy a Book");
        buyBookButton.addActionListener(e -> cardLayout.show(panel, "Buy
Book"));

        JButton sellBookButton = new JButton("Sell a Book");
        sellBookButton.addActionListener(e -> cardLayout.show(panel, "Sell
Book"));

        JButton logoutButton = new JButton("Logout");
        logoutButton.addActionListener(e -> cardLayout.show(panel, "Login"));

        menuPanel.add(viewBooksButton);
        menuPanel.add(buyBookButton);
        menuPanel.add(sellBookButton);
        menuPanel.add(logoutButton);

        return menuPanel;
    }

    private JPanel createViewBooksPanel() {
        JPanel viewBooksPanel = new JPanel();
        viewBooksPanel.setLayout(new BoxLayout(viewBooksPanel,
BoxLayout.Y_AXIS));

        displayArea = new JTextArea(10, 40);
        displayArea.setEditable(false);
        refreshBooksDisplay();

        JButton backButton = new JButton("Back to Main Menu");
        backButton.addActionListener(e -> cardLayout.show(panel, "Main
Menu"));

        viewBooksPanel.add(new JScrollPane(displayArea));
        viewBooksPanel.add(backButton);
    }

```

```

        return viewBooksPanel;
    }

    private void refreshBooksDisplay() {
        displayArea.setText("Available Books:\n");
        for (int i = 0; i < booksForSale.size(); i++) {
            displayArea.append((i + 1) + ". " + booksForSale.get(i) + "\n");
        }
    }

    private JPanel createBuyBookPanel() {
        JPanel buyBookPanel = new JPanel();
        buyBookPanel.setLayout(new BoxLayout(buyBookPanel, BoxLayout.Y_AXIS));

        JTextField bookSelectionField = new JTextField(10);
        JButton buyButton = new JButton("Buy Book");
        buyButton.addActionListener(e -> {
            try {
                int bookNo = Integer.parseInt(bookSelectionField.getText());
                if (bookNo < 1 || bookNo > booksForSale.size()) {
                    JOptionPane.showMessageDialog(frame, "Invalid book
number.");
                    return;
                }
                Book selectedBook = booksForSale.get(bookNo - 1);
                loggedInUser.addPurchasedBook(selectedBook);
                JOptionPane.showMessageDialog(frame, "You bought: " +
selectedBook);
            } catch (NumberFormatException ex) {
                JOptionPane.showMessageDialog(frame, "Enter a valid number.");
            }
        });

        JButton backButton = new JButton("Back to Main Menu");
        backButton.addActionListener(e -> cardLayout.show(panel, "Main
Menu"));

        buyBookPanel.add(new JLabel("Enter the book number:"));
        buyBookPanel.add(bookSelectionField);
        buyBookPanel.add(buyButton);
        buyBookPanel.add(backButton);

        return buyBookPanel;
    }

    private JPanel createSellBookPanel() {
        JPanel sellBookPanel = new JPanel();

```

```

        sellBookPanel.setLayout(new BorderLayout(sellBookPanel,
        BorderLayout.Y_AXIS));

        bookTitleField = new JTextField(20);
        bookAuthorField = new JTextField(20);
        bookPriceField = new JTextField(20);

        JButton sellButton = new JButton("Sell Book");
        sellButton.addActionListener(e -> {
            try {
                String title = bookTitleField.getText();
                String author = bookAuthorField.getText();
                double price = Double.parseDouble(bookPriceField.getText());

                if (title.isEmpty() || author.isEmpty()) {
                    JOptionPane.showMessageDialog(frame, "All fields must be
filled.");
                    return;
                }

                booksForSale.add(new Book(title, author, price));
                refreshBooksDisplay();
                JOptionPane.showMessageDialog(frame, "Book added.");
            } catch (NumberFormatException ex) {
                JOptionPane.showMessageDialog(frame, "Invalid price.");
            }
        });

        JButton backButton = new JButton("Back to Main Menu");
        backButton.addActionListener(e -> cardLayout.show(panel, "Main
Menu"));

        sellBookPanel.add(new JLabel("Book Title:"));
        sellBookPanel.add(bookTitleField);
        sellBookPanel.add(new JLabel("Book Author:"));
        sellBookPanel.add(bookAuthorField);
        sellBookPanel.add(new JLabel("Book Price:"));
        sellBookPanel.add(bookPriceField);
        sellBookPanel.add(sellButton);
        sellBookPanel.add(backButton);

        return sellBookPanel;
    }
}

```

## APPENDIX B

### (SCREENSHOTS)

Online Book Store

Username:

Password:

Login

Register

Online Book Store

Available Books:

1. Title: Java Programming, Author: John Doe, Price: \$29.99
2. Title: Effective Java, Author: Joshua Bloch, Price: \$45.0
3. Title: Clean Code, Author: Robert C. Martin, Price: \$40.5

Back to Main Menu

Online Book Store

**Book Title:**

HARRY POTTER : ORDER OF PHOENIX

**Book Author:**

J K ROWLING

**Book Price:**

10.99

**Sell Book**

**Back to Main Menu**

Message

**Book added.**

OK

Online Book Store

**Book Title:**

HARRY POTTER : CHAMBER OF SECRETS

**Book Author:**

J K ROWLING

**Book Price:**

14.99

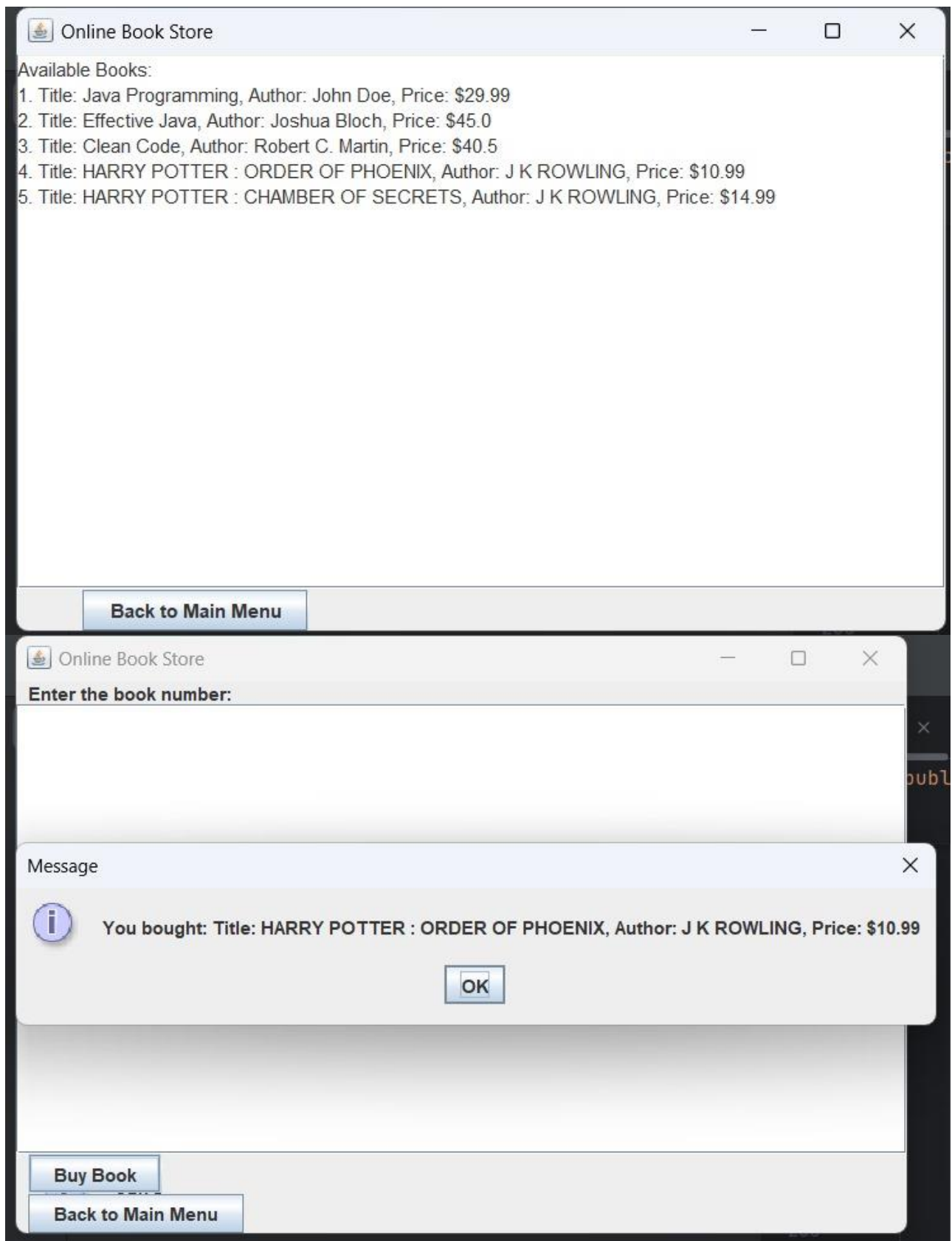
**Sell Book**

**Back to Main Menu**

Message

**Book added.**

OK





## REFERENCE

### Java Books:

1. **"Head First Java" by Kathy Sierra and Bert Bates**

This book is a great resource for beginners learning Java, with a focus on object-oriented programming concepts and real-world application development.

2. **"Effective Java" by Joshua Bloch**

A deeper dive into best practices for writing clean, maintainable Java code. It covers advanced topics like Java collections, concurrency, and design patterns that could be applied to more complex systems.

### Websites:

1. **GeeksforGeeks - Java Tutorials**

URL: <https://www.geeksforgeeks.org/java/>

A comprehensive collection of tutorials on Java, covering topics like classes, objects, inheritance, encapsulation, and more. Great for learning the core concepts of Java and applying them in projects.

2. **W3Schools - Java Tutorial**

URL: <https://www.w3schools.com/java/>

A beginner-friendly resource that offers tutorials on Java programming, including object-oriented principles and core Java concepts.

### YouTube Links:

1. **Java for Beginners - Java Brains**

URL: <https://www.youtube.com/user/koushks>

Offers Java tutorials from the basics to advanced concepts. The channel provides detailed guides on Java programming, including working with objects and classes, which are crucial for building applications