ONLINE BOOK STORE

A PROJECT REPORT

Submitted by

DHARANIKA K (8115U23EC019)

in partial fulfillment of requirements for the award of the course

EGB1201 - JAVA PROGRAMMING

in

ELECTRONICS AND COMMUNICATION ENGINEERING

K. RAMAKRISHNAN COLLEGE OF ENGINEERING
(AnAutonomousInstitution,affiliatedtoAnnaUniversityChennaiandApprovedbyAICTE,New Delhi)

SAMAYAPURAM–621112

DECEMBER - 2024

K.RAMAKRISHNANCOLLEGEOFENGINEERING
(AUTONOMOUS)

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BONAFIDE CERTIFICATE

Certified that this project report on **“ONLINE BOOK STORE”** is the bonafide work of **DHARANIKA K (8115U23EC019)** who carried out the project work during the academic year 2024 - 2025 under my supervision.

TM.

SIGNATURE

Dr.T.M.NITHYA, M.E.,Ph.D., **HEAD OF THE DEPARTMENT**

ASSOCIATE PROFESSOR

Department of CSE

K.Ramakrishnan College of
Engineering(Autonomous)

Samayapuram–621112.

SIGNATURE

Mr.V.KUMARARAJA,M.E.,(Ph.D.,),

SUPERVISOR

ASSISTANT PROFESSOR

Department of CSE

K.Ramakrishnan College of
Engineering(Autonomous)

Samayapuram–621112.

Submitted for the viva-voce examination held on…06/12/2024…….

6/12/24

INTERNAL EXAMINER

EXTERNAL EXAMINER

DECLARATION

I declare that the project report on **“ONLINE BOOK STORE”** 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 **EGB1201- JAVA PROGRAMMING.**

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Signature

Dharanika K

Place: Samayapuram

Date:06/12/2024

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VISION OF THE INSTITUTION

To achieve a prominent position among the top technical institutions.

MISSION OF THE INSTITUTION

- M1: To bestow standard technical education par excellence through state of the art infrastructure, competent faculty and high ethical standards.
- M2: To nurture research and entrepreneurial skills among students in cutting edgetechnologies.
- M3: To provide education for developing high-quality professionals to transform the society.

VISION OF DEPARTMENT

To create eminent professionals of Computer Science and Engineering by imparting quality education.

MISSION OF DEPARTMENT

M1: To provide technical exposure in the field of Computer Science and Engineering through state of the art infrastructure and ethical standards.

M2: To engage the students in research and development activities in the field of Computer Science and Engineering.

M3: To empower the learners to involve in industrial and multi-disciplinary projects for addressing the societal needs.

PROGRAM EDUCATIONAL OBJECTIVES

Our graduates shall

PEO1: Analyse, design and create innovative products for addressing social needs.

PEO2: Equip themselves for employability, higher studies and research.

PEO3: Nurture the leadership qualities and entrepreneurial skills for their successful career.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- **PSO1:** Apply the basic and advanced knowledge in developing software, hardware and firmware solutions addressing real life problems.

- **PSO2:** Design, develop, test and implement product-based solutions for their career enhancement.

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 theengineering 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

Online Book Store is a Java-based application designed to streamline the process of browsing, purchasing, and managing books in a virtual environment. This system provides a seamless experience for users to explore a diverse range of books, add them to a shopping cart, and complete purchases securely. For administrators, it includes features for managing inventory, monitoring sales, and generating reports. The application employs object-oriented programming principles and is built using Java for its core functionality, with database integration to store and manage book and user information. With its user- friendly interface and robust backend, the project aims to enhance the accessibility and efficiency of book retailing in the digital age.The online book store represents a digital platform where customers can browse, purchase, and access books in a convenient and user-friendly manner. This service caters to a diverse audience, ranging from avid readers to casual book buyers, by offeringa vast collection of books. Leveraging modern technology, the store provides features such as search filters, recommendations based on reading history, user reviews, and secure payment options to enhance the shopping experience. Digital copies, audiobooks, and physical books are typically offered, providing customers with multiple formats to suit their preferences. The growth of e- commerce, advances in digital distribution, and the increasing global demand for accessible reading material have solidified the online book store as a crucial element of the literary market, democratizing access to knowledge and entertainment.

ABSTRACT WITH POs AND PSOs MAPPING

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

ABSTRACT	POs MAPPED	PSOs MAPPED
This system provides a seamless experience for users to explore a diverse range of books, add them to a shopping cart, and complete purchases securely. For administrators, it includes features for managing inventory, monitoring sales, and generating reports. The application employs object-oriented programming principles and is built using Java for its core functionality, with database integration to store and manage book and user information.	PO1 -3 PO2 -3 PO3 -3 PO4 -3 PO5 -3 PO6 -3 PO7 -3 PO8-3 PO9-3 PO10 -3 PO11 -3 PO12-3	PSO1 -3 PSO2 -3

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

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CHAPTER 1

INTRODUCTION

1.1 Objective

The primary objective of the Online Book Store is to provide a user-friendly and efficient platform for purchasing books online, offering convenience and accessibility to customers. The system aims to enable users to browse, search, and order books seamlessly while allowing administrators to manage the inventory, monitor sales, and handle customer data effectively. By leveraging Java's object-oriented capabilities and integrating with a secure database, the application seeks to create a robust, scalable, and reliable solution that enhances the overall experience of book retailing in a digital environment.

1.2 Overview

The **Online Book Store** is a comprehensive Java-based application designed to replicate the functionality of a physical bookstore in a digital format. The system facilitates seamless interactions for both customers and administrators. Customers can browse and search for books by category, title, author, or genre, add their desired items to a shopping cart, and complete secure transactions.Additionally, registered users can track their order history and receive personalized recommendations.

For administrators, the platform offers tools to manage the bookstore efficiently, including adding or updating book records, monitoring stock levels, and generating sales reports. The system is built using Java's object-oriented programming principles, with a database backend for efficient data storage and retrieval. The application emphasizes scalability, security, and a user-friendly interface, making it a modern and effective solution for online book retailing.

1.3 Java Programming Concepts

1. **Core Concepts:**

   Object-Oriented Programming: Create a Book class with attributes like title, author, and price.

   Collections: Use ArrayList to manage the inventory and shopping cart.

2. **Graphical User Interface (GUI):**

   - Use **Java AWT components** like:
   - Frame for the main window.
   - Label for static text.
   - Choice to list books.
   - Button for actions like "Add to Cart" and "Checkout."
   - TextArea for displaying cart details.

3. **Event Handling:**

   - Implement ActionListener to respond to button clicks and user actions.
   - Manage events like adding books to the cart, viewing the cart, and checkout.

4. **Data Flow:**

   - Display books from the inventory in a dropdown menu (Choice).
   - Allow users to select and add books to the cart.
   - Update and clear the cart dynamically based on user actions.

5. **Optional Enhancements:**

   - **Search Feature:** Search books by title or author.
   - **Total Calculation:** Show the total price of items in the cart

CHAPTER 2

PROJECT METHODOLOGY

2.1 Proposed Work

The Online Book Store project involves the development of a Java-based application to provide a seamless digital platform for book shopping. The proposed work is divided into multiple stages, ensuring a structured and The efficient implementation.

Requirement Analysis

- Identify user requirements for customers and administrators.
- Define the system's functional and non-functional requirements.

System Design

- Create a detailed system architecture, including use case diagrams, class diagrams, and database schemas.
- Plan the workflow for customer and admin functionalities.

Database Design

- Create a relational database to store book details, user information, orders, and transaction data.
- Optimize database queries for performance.

Security Implementation

- Add user authentication and authorization mechanisms.
- Ensure secure payment processes and data validation.

Testing and Debugging

- Perform unit testing, integration testing, and system testing to ensure the application meets requirements.

2.2 Block Diagram

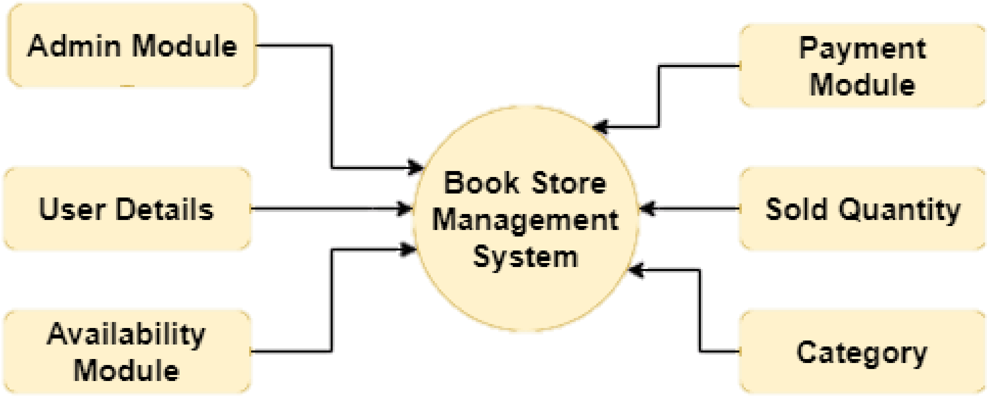


Fig 2.2 Book Store Management system

CHAPTER 3

MODULE DESCRIPTION

3.1 User Authentication Module

- Description: This module handles the login and registration of users (both customers and administrators). It validates user credentials, ensures secure login, and manages session states.

    - Key Functions:
        - User login and registration.
        - Password hashing for security.
        - User role management (customer/admin).

3.2 Book Management Module

- Description: This module allows both customers and administrators to manage books in the store. Customers can browse and search for books, while administrators can add, edit, and delete book entries in the inventory.

    - Key Functions:
        - Book search by title, author, or category.
        - Book browsing by genre or popularity.
        - Admin functions to add/update/delete books in the inventory.

3.3 Shopping Cart Module

- Description: Enables users (customers) to add books to their shopping cart, update quantities, and proceed to checkout. It tracks the selected books until the user confirms the purchase.

- Key Functions:
    - Add/remove books from the cart.
    - Update quantities.
    - View cart summary

3.4 Order Processing Module

- Description: This module handles the checkout process, including order finalization, payment processing, and confirmation. It updates the inventory and generates order records in the database.
    - Key Functions:
    - Order placement and confirmation.
    - Payment processing (integrating with a payment gateway, if necessary).
    - Order history management for customers.

3.5 User Management Module (Admin)

Description: Admins use this module to manage customer accounts, including viewing user information, blocking/unblocking users, and managing their order history.

Key Functions:

- View and update user profiles.
- Block/unblock users.

CHAPTER 4
CONCLUSION AND FUTURE SCOPE

4.1 Conclusion

The **Online Book Store** project, developed in Java, provides an efficient and scalable solution for managing an online bookstore, combining ease of use for customers with powerful administrative tools. By implementing key modules such as user authentication, book management, shopping cart, order processing, andinventory control, the application offers a comprehensive experience for both users and administrators.Overall, this Online Book Store serves as a robust platform for the digital retail of books, addressing the growing demand for e-commerce solutionsin the book industry. It is adaptable to different use cases, scalable for larger inventories, and user-friendly, ensuring it meets the needs of both customers and store administrators. In conclusion, online bookstores have revolutionized the way people buy and consume books. Their key advantages lie in the convenience they provide, allowing customers to browse and purchase books anytime, anywhere, without the need to leave home. This accessibility has become increasingly important in an era where time is a precious commodity. Furthermore, online bookstores typically offer a much wider range of titles compared to physical stores, including rare and out-of-print books, enabling readers to find exactly what they're looking for.

The ability to compare prices and read reviews from other customers is another significant benefit, allowing shoppers to make informed decisions and often find better deals. Online bookstores also offer various formats, such as physical books, e-books, and audiobooks, catering to different preferences and needs. Digital books, in particular, offer the convenience of instant downloads and the ability to carry an entire library in one device, making reading more flexible and portable than ever before.

Additionally, many online bookstores use advanced algorithms to provide personalized recommendations based on reading history and preferences, enhancing the shopping experience by introducing readers to new titles they may not have discovered otherwise. The seamless integration of online shopping with secure payment methods, efficient shipping, and easy return policies has made the process of buying books both quick and reliable.

In essence, online bookstores have become an essential part of modern reading culture, merging the convenience of technology with the timeless joy of discovering and sharing stories. Whether someone is an avid reader, a student in need of academic texts, or a casual browser looking for their next great adventure, online bookstores provide a versatile and satisfying solution to meet diverse needs and preferences in the world of books.

4.2 Future Scope

Enhanced User Experience

- ➢ Implement machine learning algorithms to recommend books based on user preferences, past purchases, or reading history.
- ➢ Improve the search functionality to allow users to filter by price, genre, author, publication year, and ratings.

Security Enhancements

- ➢ Secure Payment Processing: Integrate with trusted payment processing platforms like PayPal, Stripe, or Square for secure transactions.
- ➢ Mobile App Development
- ➢ Push Notifications: Integrate push notifications to alert users about new book releases, sales, or personalized recommendations.

Advanced Features

- Enable users to purchase and read e-books or listen to audiobooks directly within the application.
- Create community spaces where users can discuss books, share insights, and join book clubs.
- Implement a chatbot powered by AI to assist users in finding books, answering questions, or guiding them through the purchasing process.

Community and Social Features

- Allow users to share their favorite books or reviews directly on social media platforms.
- Enable users to write their own book reviews and share them with the community.

Future-Proofing with Technologies

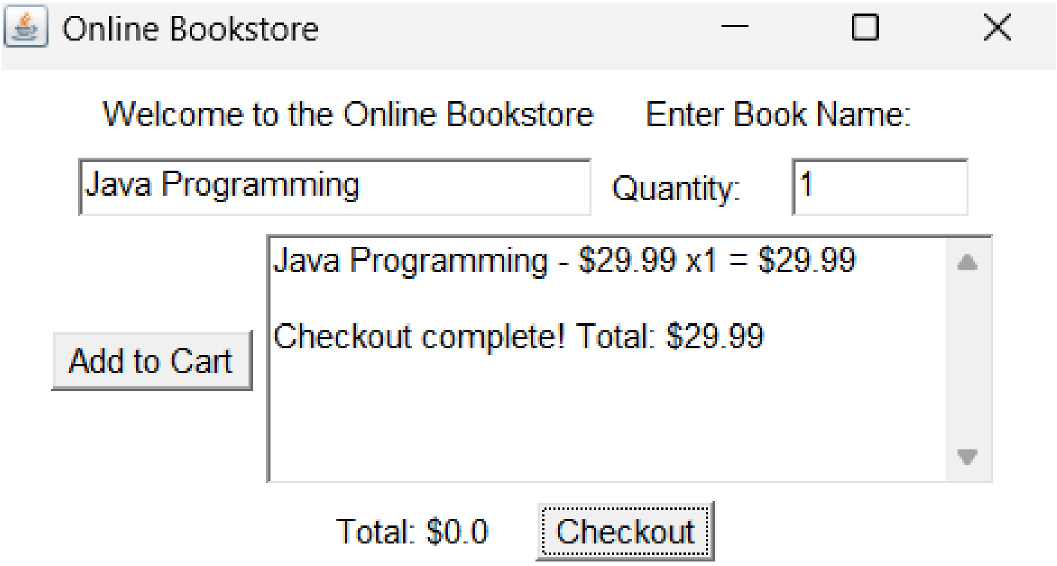
- Explore integrations with technologies like block chain for secure and transparent book transactions or limited edition digital books.

APPENDIX A (SOURCE CODE)

```
package OnlineBookstore;

import java.awt.*;
import java.awt.event.*;

public class OnlineBookstore extends Frame implements ActionListener {

    // Declare UI components
    Label titleLabel, bookLabel, quantityLabel, totalLabel;
    TextField bookField, quantityField;
    Button addToCartButton, checkoutButton;
    TextArea cartArea;
    double totalPrice = 0.0;

    // Predefined books
    String[] books = {
        "Java Programming - $29.99",
        "Data Structures - $19.99",
        "Web Development - $24.99",
        "Python for Beginners - $15.99"
    };

    // Constructor
    public OnlineBookstore() {
        //  Frame setup
        setTitle("Online Bookstore");
        setSize(400, 400);
        setLayout(new FlowLayout());
        // Initialize components
        titleLabel = new Label("Welcome to the Online Bookstore");
        bookLabel = new Label("Enter Book Name:");
        quantityLabel = new Label("Quantity:");
        totalLabel = new Label("Total: $0.0");

        // Text fields for user input
        bookField = new TextField(20);
        quantityField = new TextField("1", 5);

        // Buttons
        addToCartButton = new Button("Add to Cart");
        checkoutButton = new Button("Checkout");

        // TextArea to show the cart
        cartArea = new TextArea("", 5, 30, TextArea.SCROLLBARS_VERTICAL_ONLY);

        // Add components to the frame
        add(titleLabel);
        add(bookLabel);
        add(bookField);
        add(quantityLabel);
        add(quantityField);
        add(addToCartButton);
        add(cartArea);
        add(totalLabel);
        add(checkoutButton);

        // Add event listeners
        addToCartButton.addActionListener(this);
        checkoutButton.addActionListener(this);

        // Frame settings
        setVisible(true);
    }

    // ActionListener implementation
    public void actionPerformed(ActionEvent e) {
        if (e.getSource() == addToCartButton) {
            // Get book name and quantity
            String bookName =  bookField.getText().trim();
            if (bookName.isEmpty()) {
                cartArea.append("Please enter a book name.\n");
                return;
            }

            // Check if the book name matches a predefined book
            boolean bookFound = false;
            String selectedBook = "";
            double price = 0.0;
            for (String book : books) {
                if (book.toLowerCase().contains(bookName.toLowerCase())) {
                    selectedBook = book;
                    price = extractPrice(book);
                    bookFound = true;
                    break;
                }
            }
            if (!bookFound) {
                cartArea.append("Book not found. Please enter a valid book name.\n");
                return;
            }

            // Get quantity
            int quantity;
            try {
                quantity = Integer.parseInt(quantityField.getText());
                if (quantity <= 0) {
                    cartArea.append("Quantity must be a positive number.\n");
                    return;
                }
            } catch (NumberFormatException ex) {
                cartArea.append("Please enter a valid number for quantity.\n");
                return;
            }

            // Add to cart
            double totalBookPrice = price * quantity;
            cartArea.append(selectedBook + " x" + quantity + " = $" + totalBookPrice + "\n");

            // Update total
            totalPrice += totalBookPrice;
            totalLabel.setText("Total: $" + totalPrice);
        } else if (e.getSource() == checkoutButton) {
            // Display checkout message
            cartArea.append("\nCheckout complete! Total: $" + totalPrice);
            totalPrice = 0.0;  // Reset for next transaction
            totalLabel.setText("Total: $0.0");
        }
    }

    // Method to extract the price from the book name string
    private double extractPrice(String book) {
        String priceString = book.split("-")[1].trim().replace("$", "");
        return Double.parseDouble(priceString);
    }

    // Main method to run the application
    public static void main(String[] args) {
        new OnlineBookstore();
    }
}
```

APPENDIX B (SCREENSHOTS)

1. Adding Book Information:



Welcome to the Online Bookstore Enter Book Name:

Java Programming

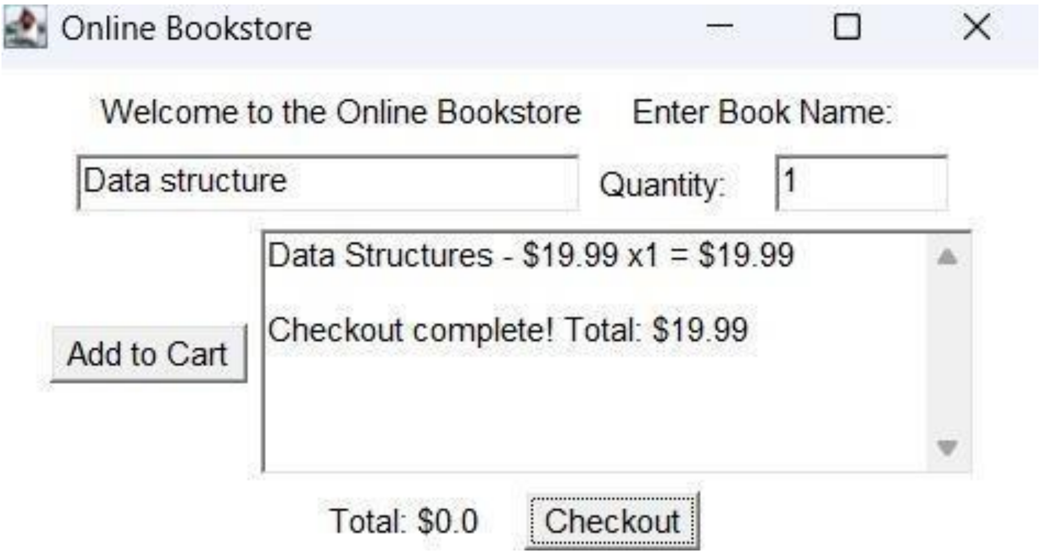
Quantity: 1

Java Programming - $29.99 x1 = $29.99

Checkout complete! Total: $29.99

Total: $0.0

2. Purchasing Quantity:



Welcome to the Online Bookstore Enter Book Name:

Data structure

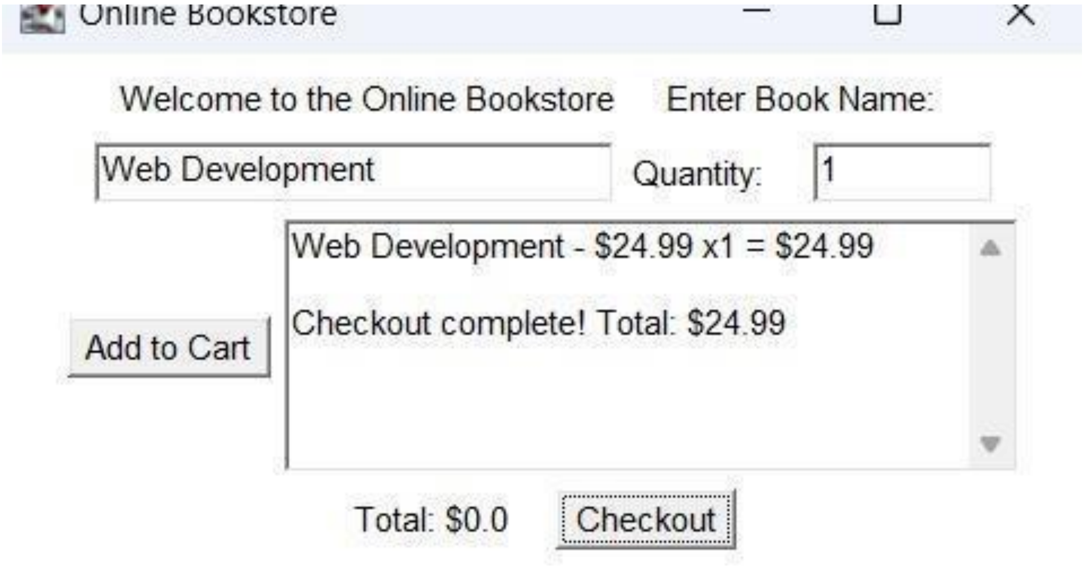
Quantity: 1

Data Structures - $19.99 x1 = $19.99

Checkout complete! Total: $19.99

Total: $0.0

3. **Updating Checkout:**



Welcome to the Online Bookstore Enter Book Name:

Web Development

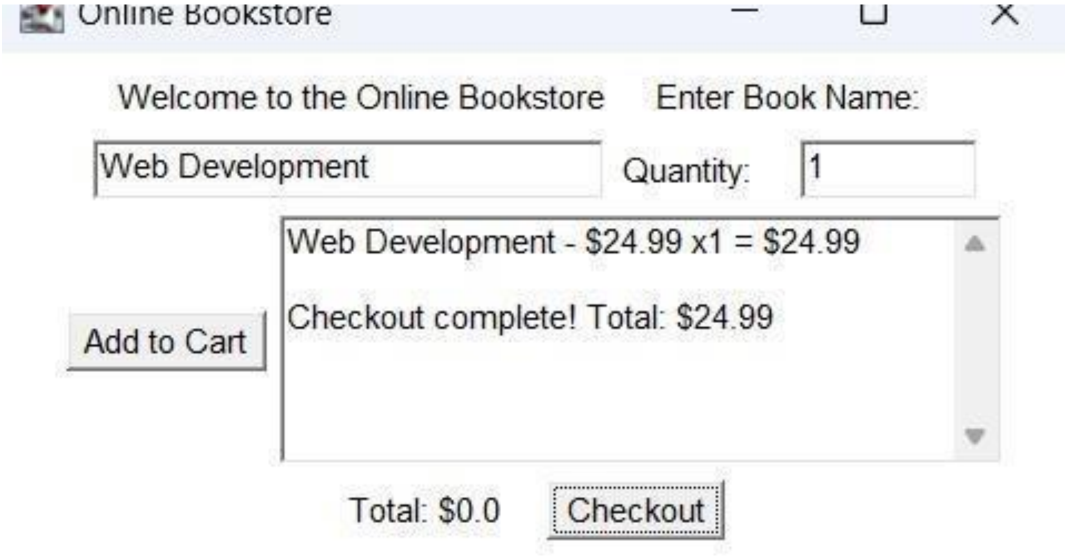
Quantity: 1

Web Development - $24.99 x1 = $24.99

Checkout complete! Total: $24.99

Total: $0.0

RESULT:



Welcome to the Online Bookstore Enter Book Name:

Web Development

Quantity: 1

Web Development - $24.99 x1 = $24.99

Checkout complete! Total: $24.99

Total: $0.0

REFERENCES:

1. **"Java: The Complete Reference" by Herbert Schildt-book**

   Comprehensive resource for all Java topics, including GUI

   development.Publisher: McGraw-Hill Education.

2. Java Swing Tutorial - GeeksforGeeks-website

Provides step-by-step tutorials and code examples for using Swing in

Java.Oracle Java Documentation.

Official documentation for Swing components and Java UI programming.

3. **Youtube channels:** error makes clever, code.io

4. Java Frameworks for Web Development

5. To create an online book store, using a Java-based web framework can greatly simplify the development process. Here are some popular Java frameworks:
6. **Spring Boot**: A popular framework for building stand-alone, production-grade Spring-based applications. It makes it easy to create REST APIs, which are essential for an online store.
7. *Reference*: Pivotal Software. (2023). *Spring Boot Documentation*. https://spring.io/projects/spring-boot
8. **Java EE (Jakarta EE)**: A robust, enterprise-level platform for building web applications.
9. *Reference*: Eclipse Foundation. (2023). *Jakarta EE Documentation*. https://jakarta.ee
10. **Hibernate**: A popular ORM (Object-Relational Mapping) tool that simplifies database operations.
11. *Reference*: Hibernate ORM. (2023). *Hibernate Documentation*. https://hibernate.org/orm/documentation/