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# **Use Case Analysis Solution**

**for**

## **Book Rental and Sales System**

**Version 1.9 approved**

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**Group 7**

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# Table of Contents

<b>Table of Contents .....</b>	<b>ii</b>
<b>Revision History .....</b>	<b>vii</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1 Purpose.....	1
1.2 Intended Audience and Reading Suggestions .....	1
1.3 Product Scope .....	2
1.4 References.....	2
1.5 Register .....	3
1.6 Login.....	4
1.7 Logout.....	5
1.8 Edit Profile .....	6
1.9 Check Book's Details .....	7
1.10 Search Books .....	8
1.11 Add Books to Favorite List.....	9
1.12 Add to Cart.....	10
1.13 View Member Card .....	11
1.14 Buy Books.....	12
1.15 Review Order .....	13
1.16 Request Refund.....	13
1.17 Read eBook.....	15
1.18 Forum Services .....	15
1.18.1 Create New Post.....	15
1.18.2 Close a Post .....	16
1.18.3 Delete a Post.....	18
1.18.4 Edit a Post .....	19
1.19 Rent Books.....	20
1.20 Register for a Rental Plan .....	21

1.21	Cancel a Rental Plan .....	22
1.22	Ask Chat box .....	23
1.23	Manage Order .....	24
1.24	Cancel Order .....	25
1.25	Update Books' Information .....	26
1.25.1	Create new Book .....	26
1.25.2	Edit Book Information .....	27
1.25.3	Delete a Book .....	27
1.26	Sell Used Book .....	29
1.27	Reset Password .....	30
<b>2.</b>	<b>Use Case Realization View of Participating Classes (VOPCs) .....</b>	<b>31</b>
2.1	Register .....	31
2.2	Login .....	31
2.3	Reset Password .....	31
2.4	Logout .....	32
2.5	Edit Profile .....	32
2.6	Check Book's Details .....	33
2.7	Search Books .....	34
2.8	Add Books to Favorite List .....	35
2.9	Add to Cart .....	36
2.10	View Member Card .....	37
2.11	Buy Books .....	38
2.12	Review Order .....	39
2.13	Request Refund .....	40
2.14	Read eBook .....	41
2.15	Forum Services .....	42
2.16	Rent Books .....	43
2.17	Register for a Rental Plan .....	44
2.18	Ask Chat box .....	45

2.19	Manage Order .....	46
2.20	Cancel Order .....	47
2.21	Update Books' Information .....	48
2.22	Sell Used Book .....	49
<b>3.</b>	<b>Analysis Class to Analysis Mechanism Map .....</b>	<b>50</b>
<b>4.</b>	<b>Appendix A: Glossary .....</b>	<b>52</b>

## Table of Figures

Figure 2-1: Register Sequence Diagram.....	3
Figure 2-2: Login Sequence Diagram .....	4
Figure 2-3: Logout Sequence Diagram .....	5
Figure 2-4: Edit Profile Sequence Diagram .....	6
Figure 2-5: Check Book's Details Sequence Diagram .....	7
Figure 2-6: Search Books Sequence Diagram.....	8
Figure 2-7: Add Books to Favorite List Sequence Diagram .....	9
Figure 2-8: Add to Cart Sequence Diagram .....	10
Figure 2-9: View Member's Card Sequence Diagram.....	11
Figure 2-10: Buy Book Sequence Diagram.....	12
Figure 2-11: Review Order Sequence Diagram .....	13
Figure 2-12: Request Refund Sequence Diagram .....	14
Figure 2-13: Read eBook Sequence Diagram .....	15
Figure 2-14: Create a Post Sequence Diagram.....	16
Figure 2-15: Close a Post Sequence Diagram .....	17
Figure 2-16: Delete a Post Sequence Diagram.....	18
Figure 2-17: Edit a Post Sequence Diagram.....	19
Figure 2-18: Rent Books Sequence Diagram .....	20
Figure 2-19: Register for a Rental Plan Sequence Diagram .....	21
Figure 2-20: Cancel Rental Plan Sequence Diagram. ....	22
Figure 2-21: Ask Chat Box Sequence Diagram .....	23
Figure 2-22: Manage Orders for Buyers and Admin Sequence Diagram .....	24
Figure 2-23: Cancel Order Sequence Diagram .....	25
Figure 2-24: Create New Book Sequence Diagram .....	26
Figure 2-25: Edit Book Information Sequence Diagram .....	27
Figure 2-26: Delete Book Sequence Diagram.....	28
Figure 2-27: Sell Used Book Sequence Diagram.....	29

Figure 2-28: Reset Password Sequence Diagram.....	30
Figure 3-1: Register Class Diagram .....	31
Figure 3-2: Login Class Diagram .....	31
Figure 3-3: Logout Class Diagram .....	32
Figure 3-4: Edit Profile Class Diagram .....	32
Figure 3-5: Check Book's Details Class Diagram .....	33
Figure 3-6: Search Books Class Diagram .....	34
Figure 3-7: Add Books to Favorite List Class Diagram.....	35
Figure 3-8: Add to Cart Class Diagram.....	36
Figure 3-9: View Member's Card Class Diagram .....	37
Figure 3-10: Buy Book Class Diagram .....	38
Figure 3-11: Review Order Class Diagram .....	39
Figure 3-12: Request Refund Class Diagram .....	40
Figure 3-13: Read eBook Class Diagram .....	41
Figure 3-14: Manage Posts Class Diagram .....	42
Figure 3-15: Rent Books Sequence Diagram .....	43
Figure 3-16: Register for a Rental Plan Class Diagram .....	44
Figure 3-17: Ask Chat Box Class Diagram .....	45
Figure 3-18: Manage Orders for Buyers and Admin Class Diagram.....	46
Figure 3-19: Cancel Order Class Diagram .....	47
Figure 3-20: Update Books' Information (Add, Delete, Edit) Class Diagram .....	48
Figure 3-21: Sell Used Book Class Diagram .....	49

## Revision History

Name	Date	Reason For Changes	Version
Trinh Thai Linh	29-Oct-2023	Create Document Template	1.0
Trinh Thai Linh	29-Oct-2023	Add Introduction	1.1
Trinh Thai Linh	03-Nov-2023	Add <i>Sell Used Book, Read eBook, Reset Password, Rent Books, Register for Rental Plan, Manage Order, Manage Member Card, Update Books' Information</i> Sequence Diagrams	1.2
Pham Tung Duong	04-Nov-2023	Add <i>Review, Buy Book</i> Sequence Diagrams	1.3
Pham Tung Duong	05-Nov-2023	Add <i>Manage Order, Review, Buy Book, Cancel Order</i> Class Diagrams	1.4
Trinh Thai Linh	05-Nov-2023	Add <i>Sell Used Book, Read eBook, Reset Password, Rent Books, Register for Rental Plan, Manage Order, Manage Member Card, Ask Chat</i> Class Diagram	1.5
Le Quang Chinh	05-Nov-2023	Add <i>Chat Box, Create Post, Close Post, Delete Post, Edit Post, Add Favorite, Request Refund</i> Sequence Diagrams Add <i>Forum</i> Class Diagram	1.6
Do Tien Dung	05-Nov-2023	Add <i>Edit Profile, Add to Cart, Search Books, View Book's Details</i> Sequence Diagrams and Class Diagrams	1.7
Nguyen Hoang Anh Dung	05-Nov-2023	Add <i>Cancel Order, Sign Up, Sign In, Logout, Review Order</i> Sequence Diagrams Add <i>Sign Up, Sign In, Logout</i> Class Diagrams	1.8
Trinh Thai Linh	05-Nov-2023	Add Changes	1.9
Trinh Thai Linh	29-Nov-2023	Add <i>Analysis Mechanism Mapping, Change SignUp</i> Diagrams	2.0

# 1. Introduction

## 1.1 Purpose

This is a report prepared by Group 7 (Object-oriented Analysis and Design Class 20, 22-23) of Use Case Solution Analysis for Book Rental and Sales System and is written based on the reporting format “IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications”.

This report explains the system from the user’s perspective and describes communicating system behavior in the user’s term through design models. This document includes sequence diagrams for each Use Case and the Use Case Realization View of Participating Classes (VOPCs).

## 1.2 Intended Audience and Reading Suggestions

The diverse types of reader that the document is intended for are:

- **Designers:** Design the classes and the subsystems architecture that satisfies the requirements specified in this SRS (Software Requirements Specification).
- **Developers:** Implement codes from the design and these documents. They use this document as a blueprint, and it makes sure that, firstly, their code works properly, and secondly, it is coordinated with others’ codes.
- **Tester:** Use this document to understand the requirements. They must create a test plan that outlines the scope of testing, objectives, test environment setup, resources required, and a schedule.
- **Documentation writers:** Ensure that the documentation aligns with the software's requirements as specified in the Software Requirements Specification (SRS). Verify that the documented information is accurate and complete.



### **1.3 Product Scope**

The software, “Book Rental and Sales System”, is designed to provide a platform for users to rent, purchase, read books in both physical and electrical form. Additionally, it includes a forum where users can discuss with other readers about the books they purchased, rented or simply ones that captured their interest. The system aims to enhance the reading experience and promote the reading community engagements.

### **1.4 References**

- [1] Form of presentation IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.
- [2] System Requirements Specification Content and Format Standard, which specifies the content and format of this specification.
- [3] Previous Project of Object-Oriented Analysis and Design Course, The Cargo Carriage System.

## Use Case Realization Interaction Diagrams

## 1.5 Register

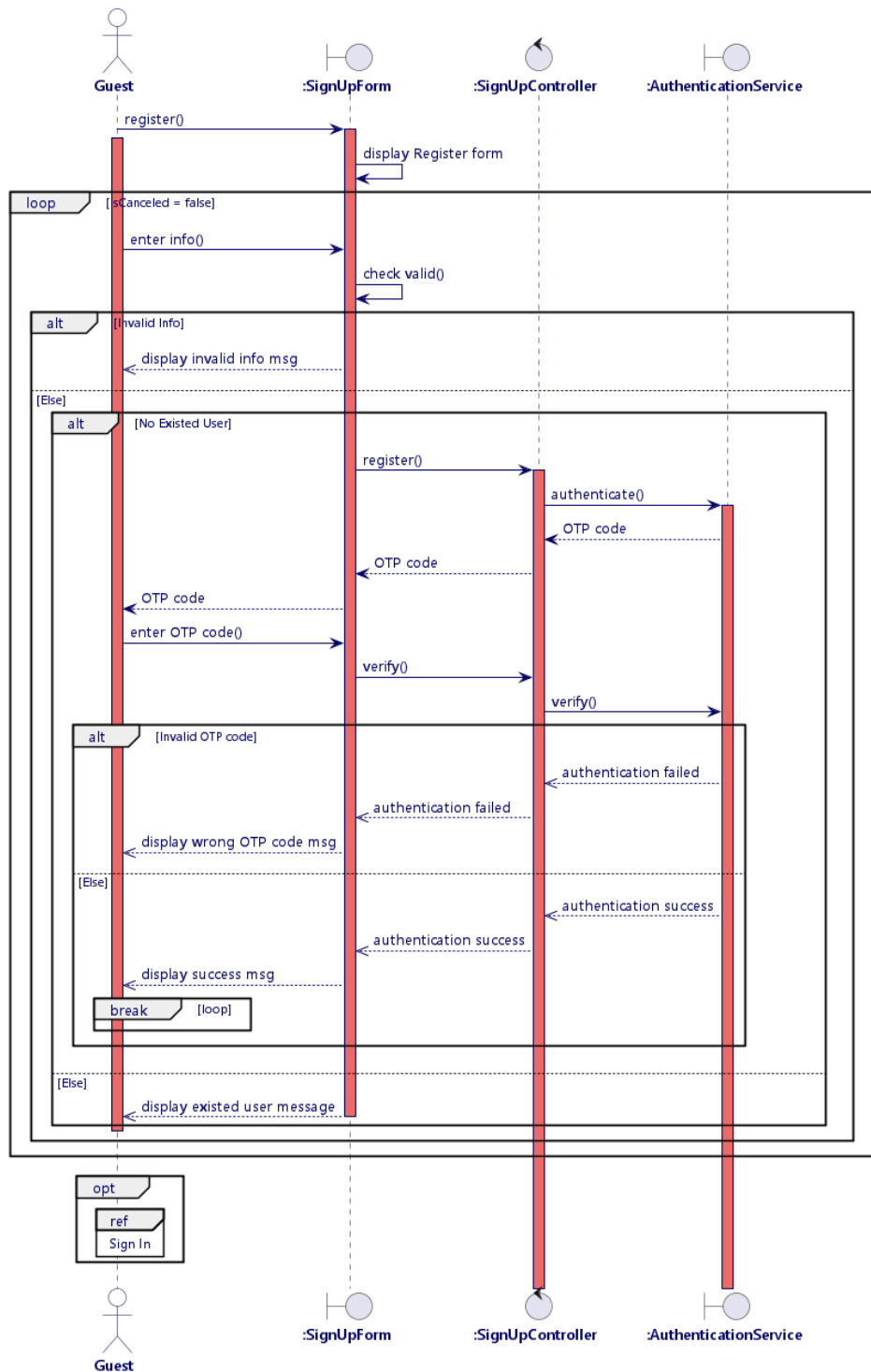


Figure 1-1: Register Sequence Diagram

## 1.6 Login

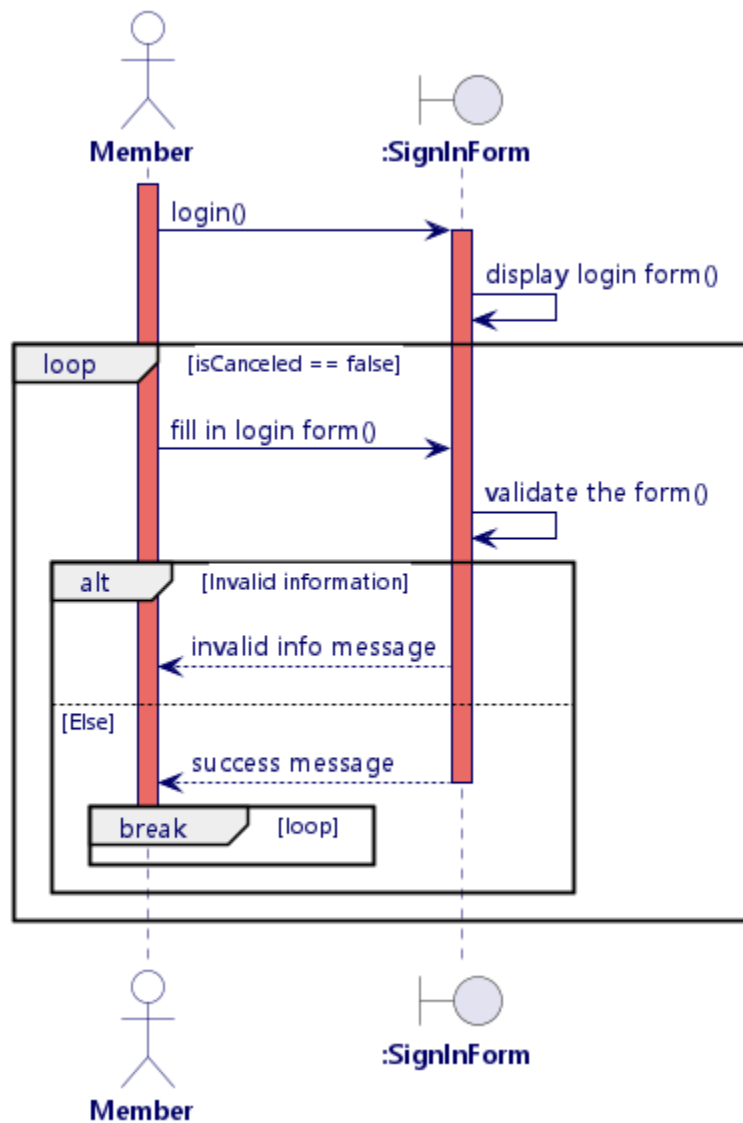


Figure 1-2: Login Sequence Diagram

## 1.7 Logout

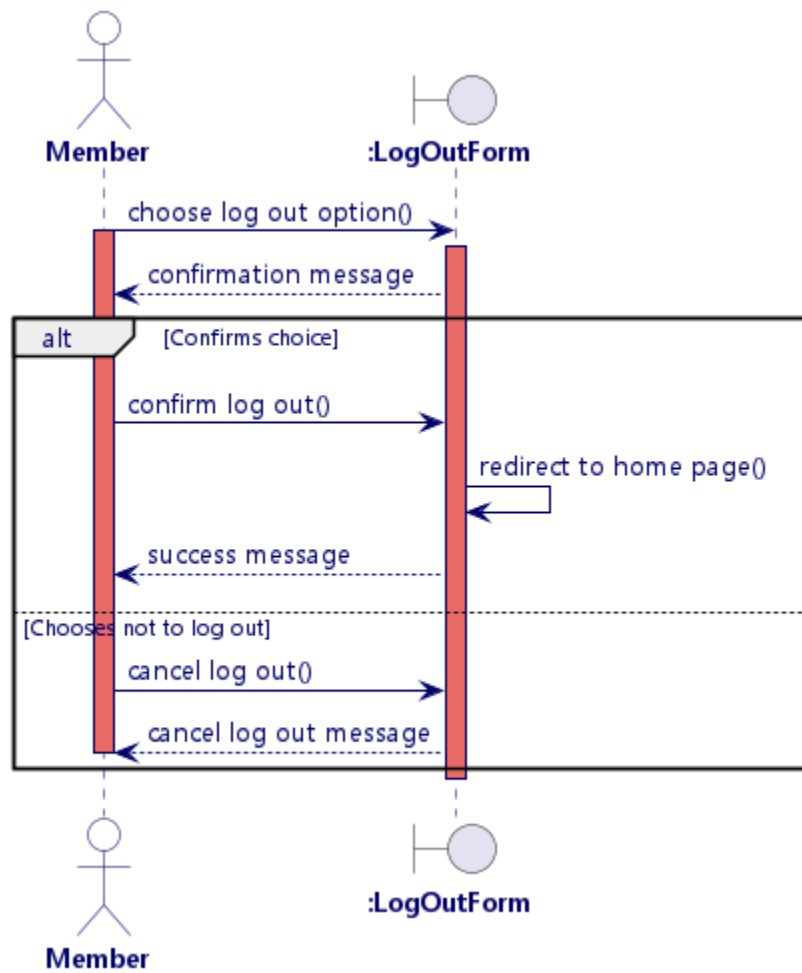


Figure 1-3: Logout Sequence Diagram

## 1.8 Edit Profile

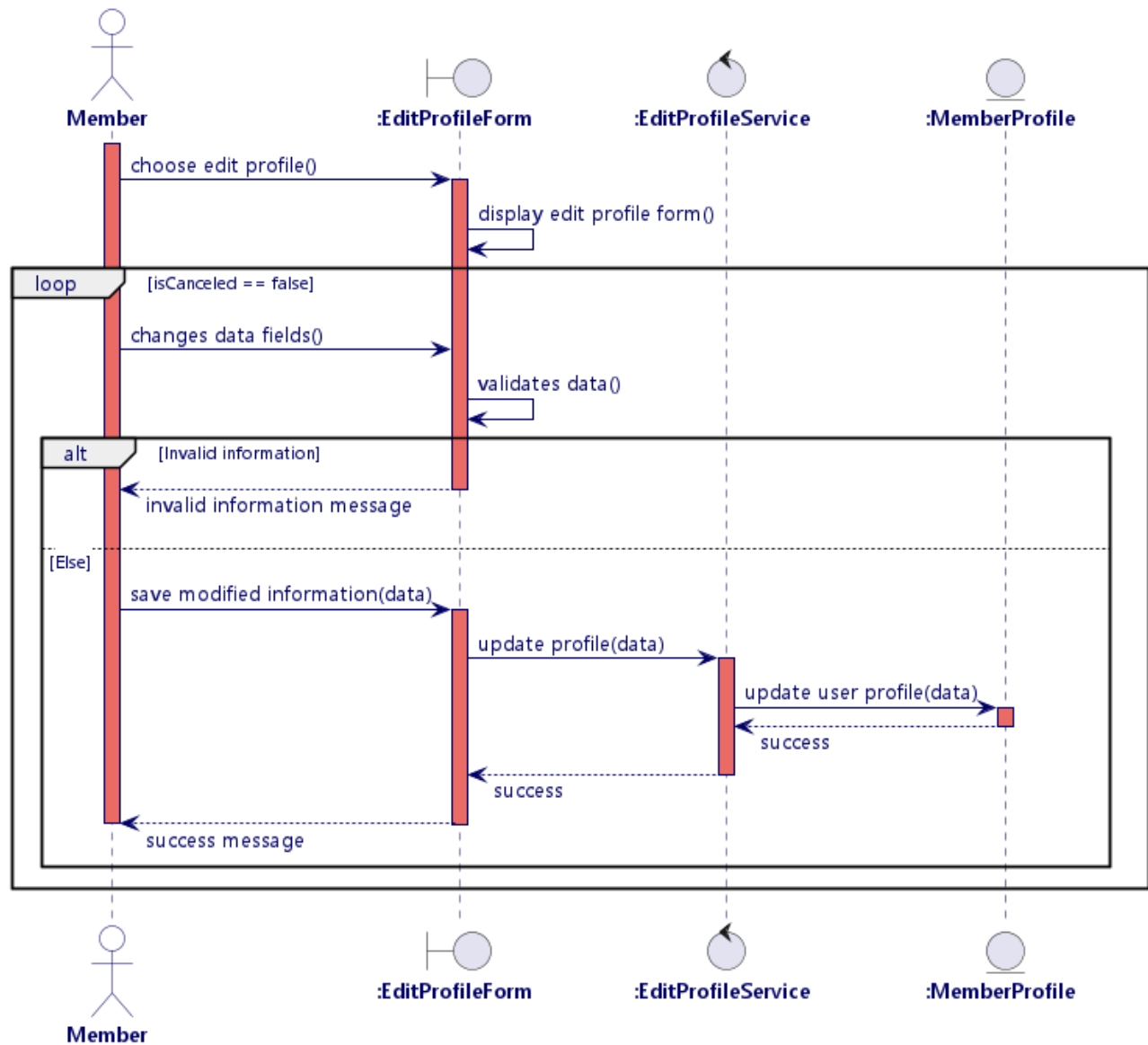


Figure 1-4: Edit Profile Sequence Diagram

## 1.9 Check Book's Details

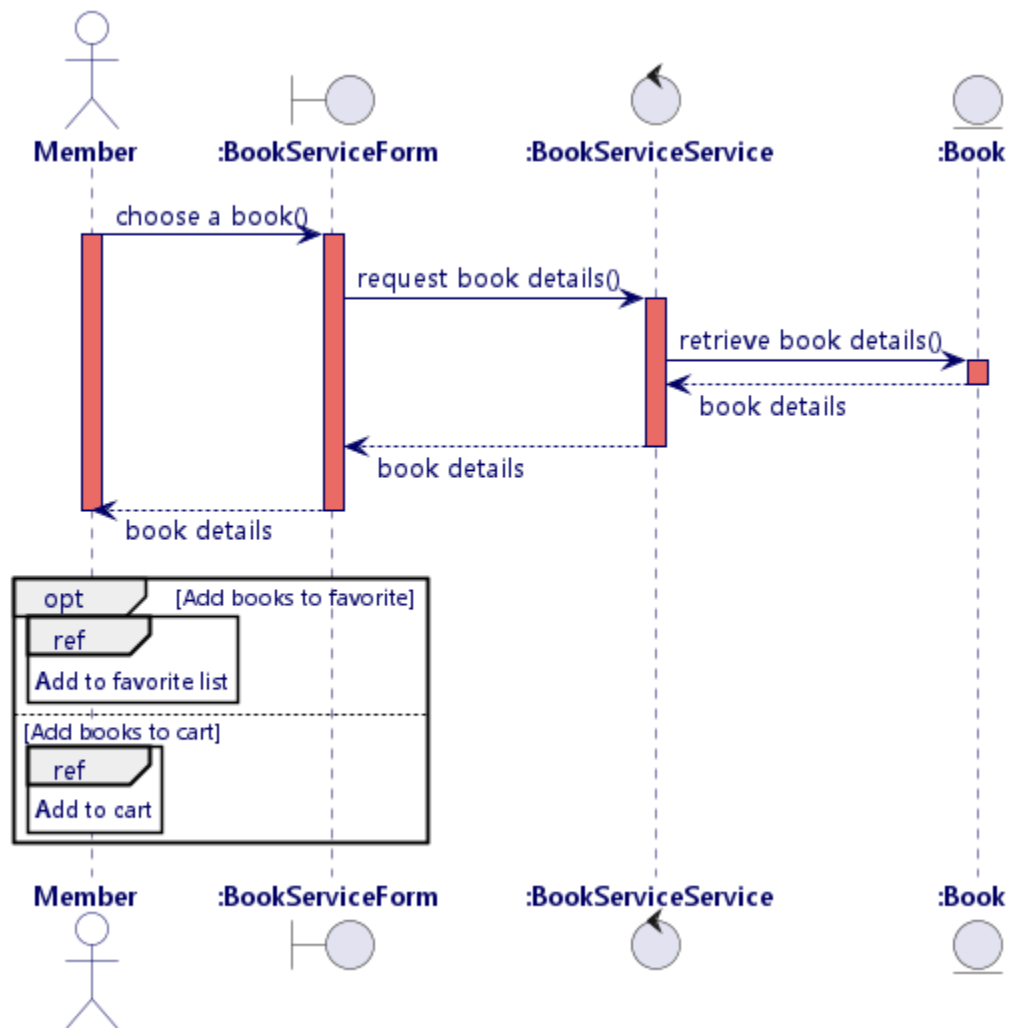


Figure 1-5: Check Book's Details Sequence Diagram

## 1.10 Search Books

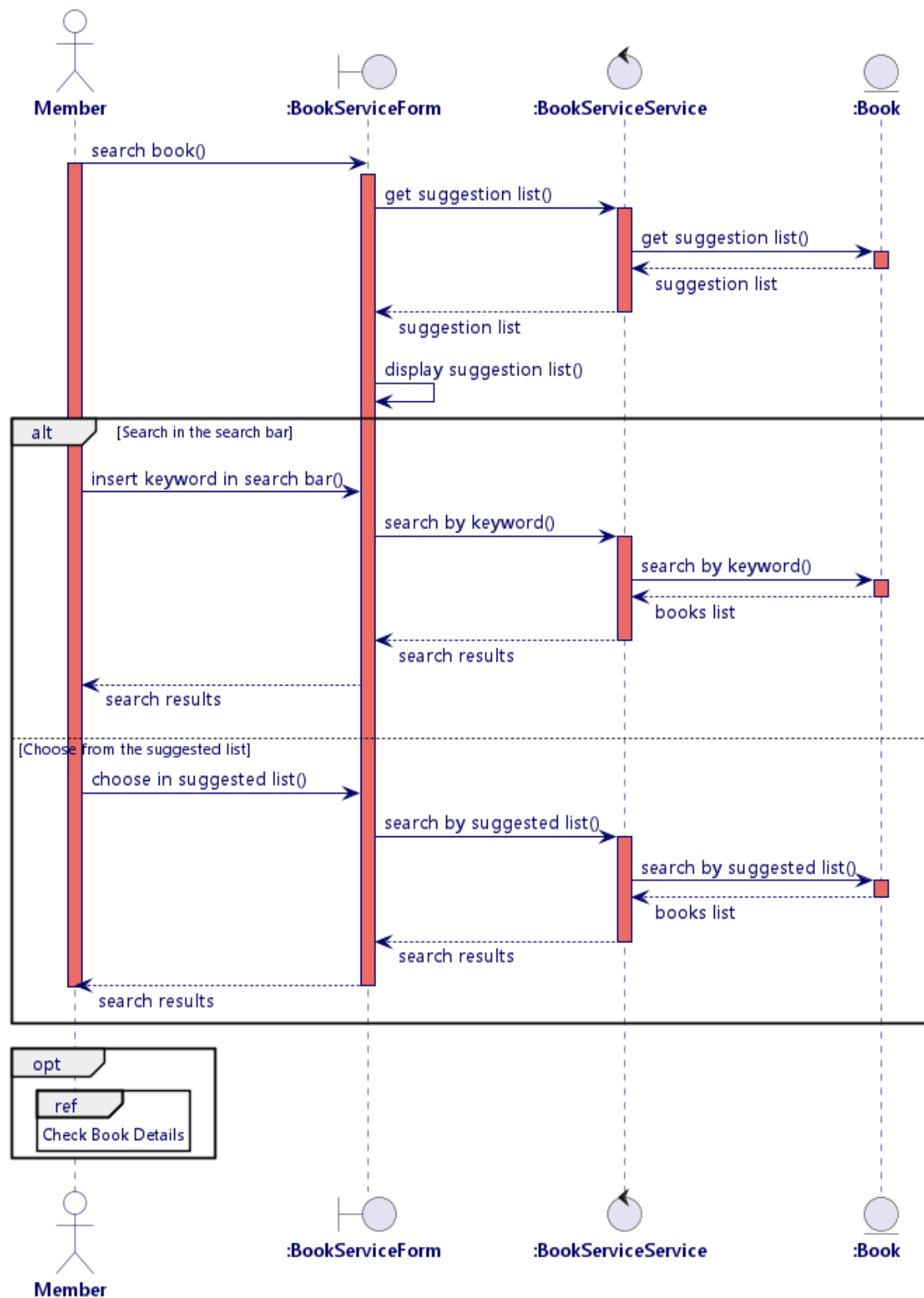


Figure 1-6: Search Books Sequence Diagram

## 1.11 Add Books to Favorite List

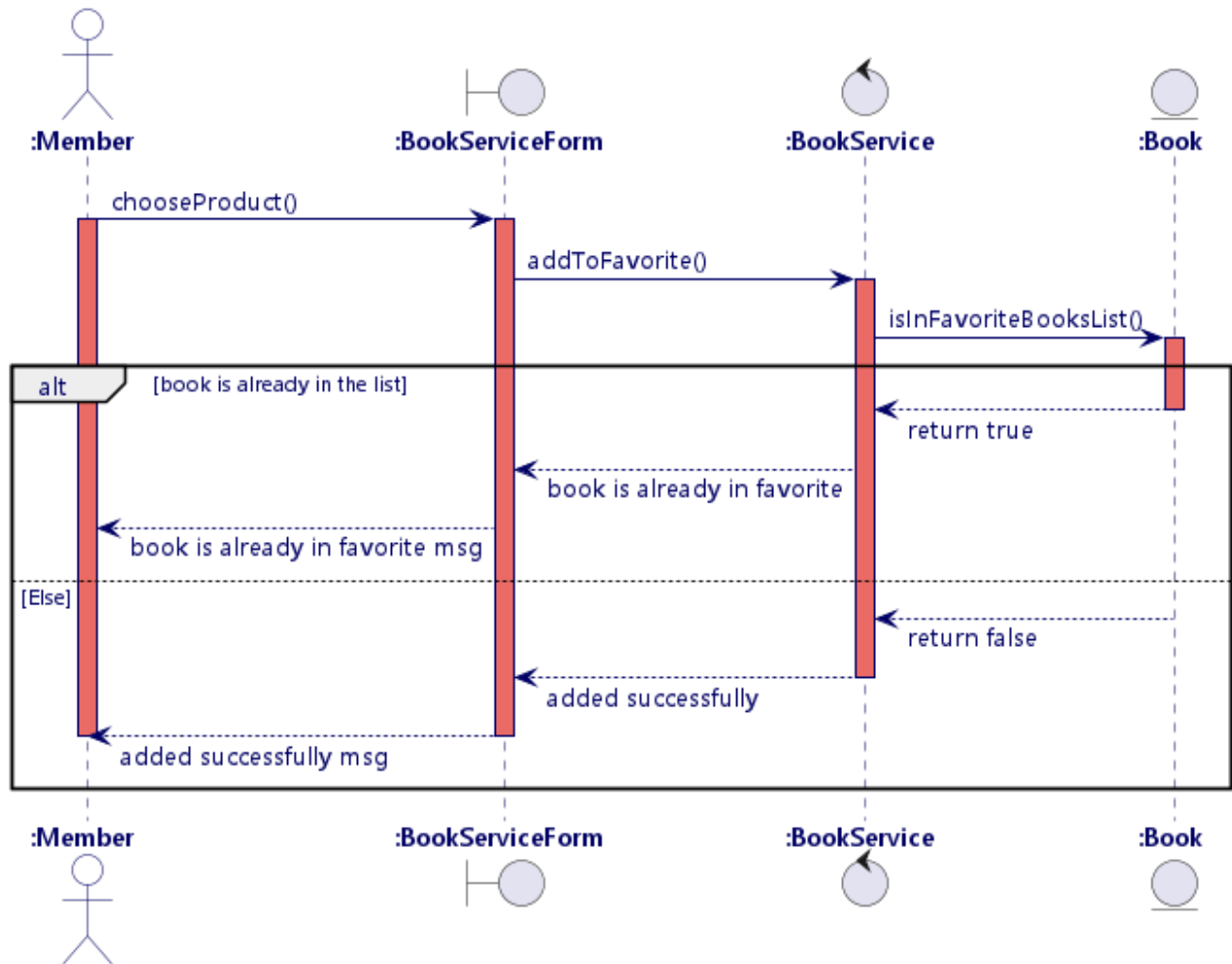


Figure 1-7: Add Books to Favorite List Sequence Diagram



## 1.12 Add to Cart

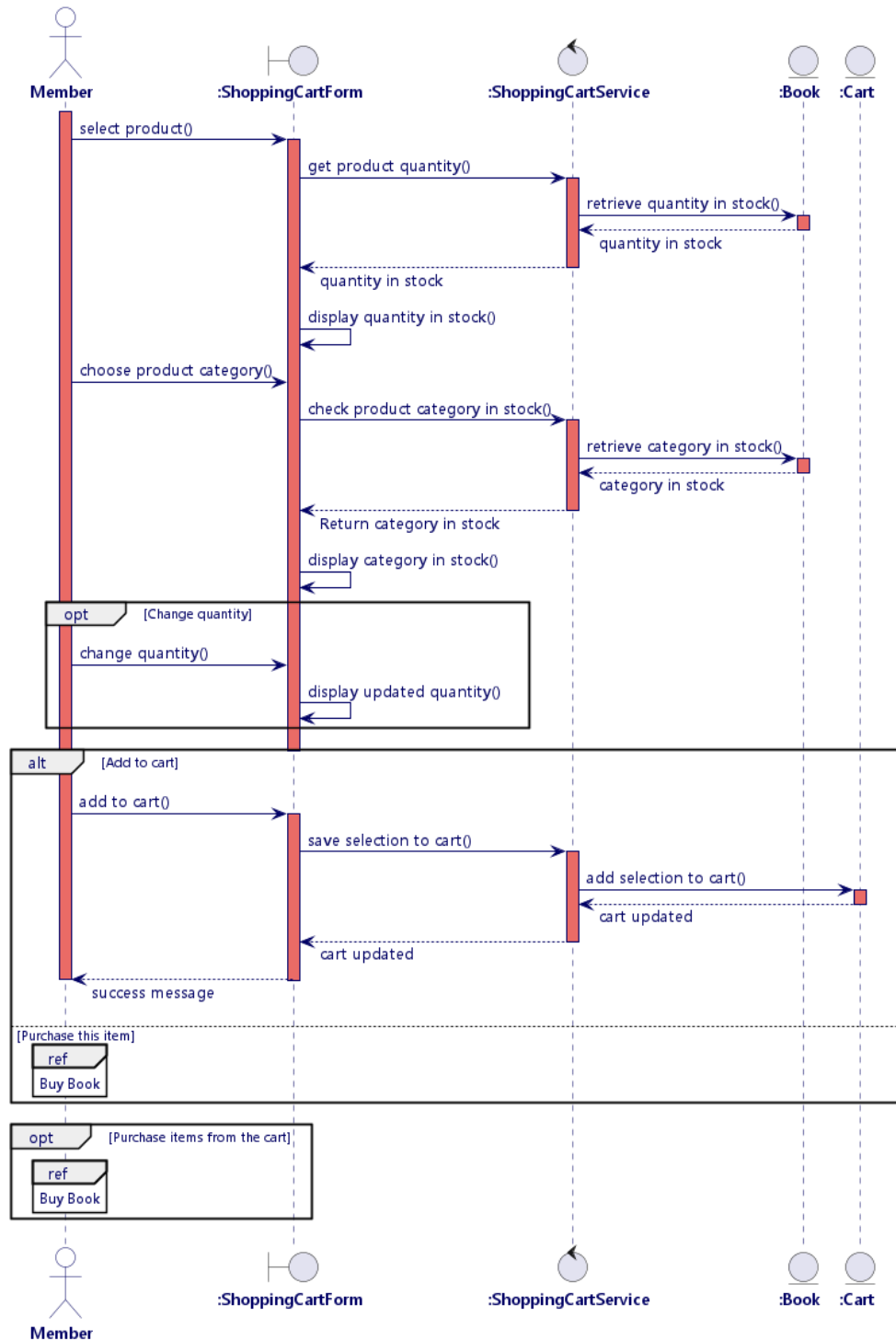


Figure 1-8: Add to Cart Sequence Diagram

### 1.13 View Member Card

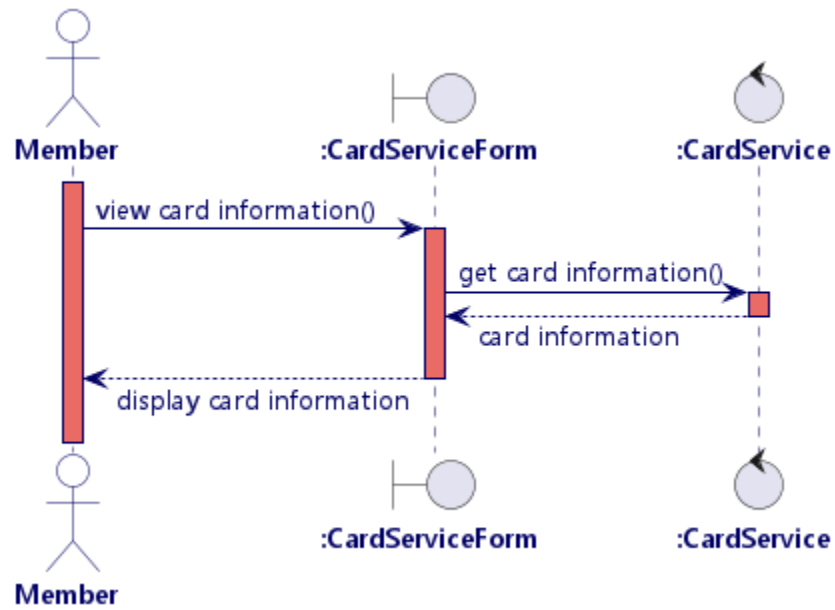


Figure 1-9: View Member's Card Sequence Diagram

## 1.14 Buy Books

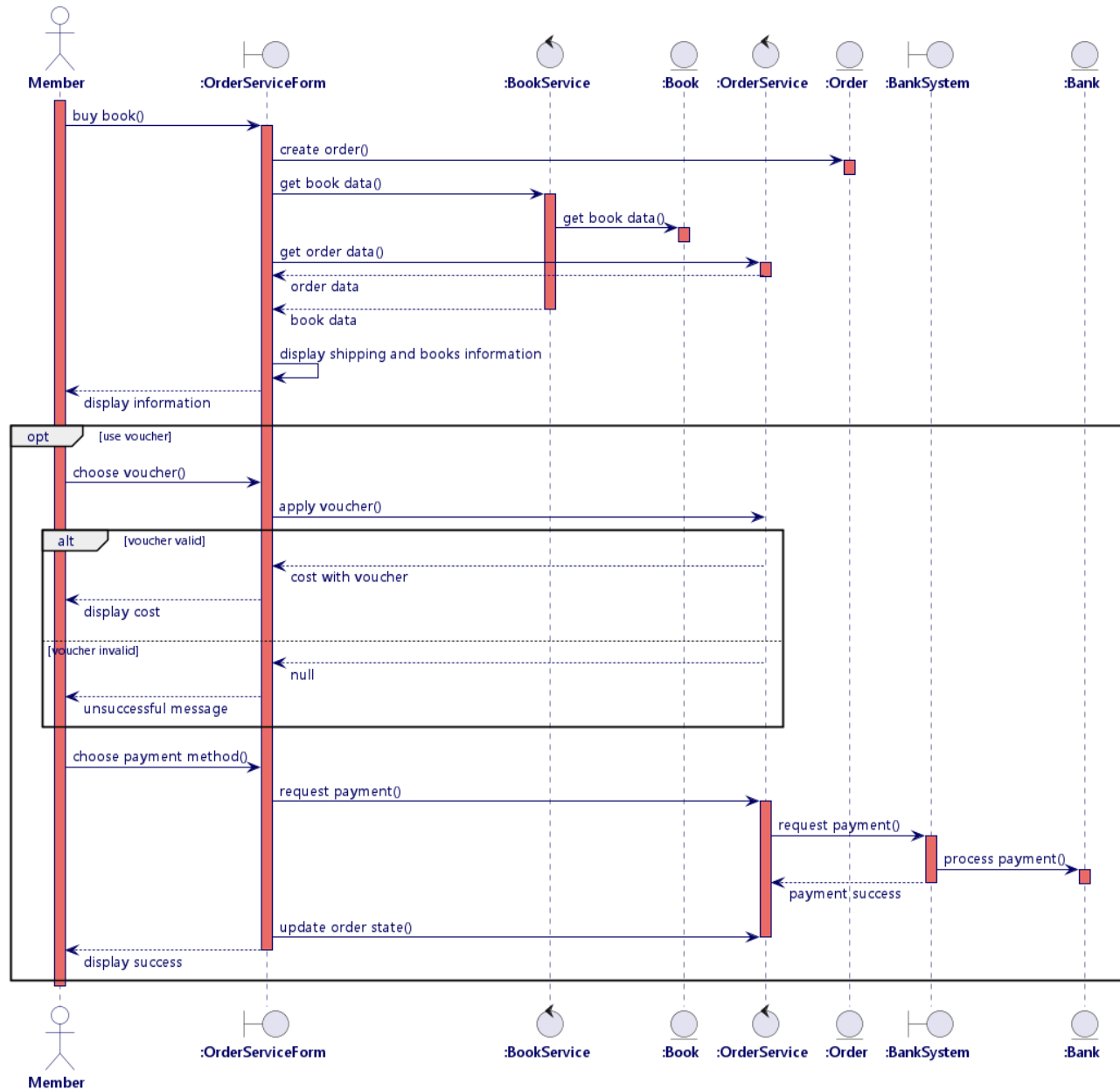


Figure 1-10: Buy Book Sequence Diagram

## 1.15 Review Order

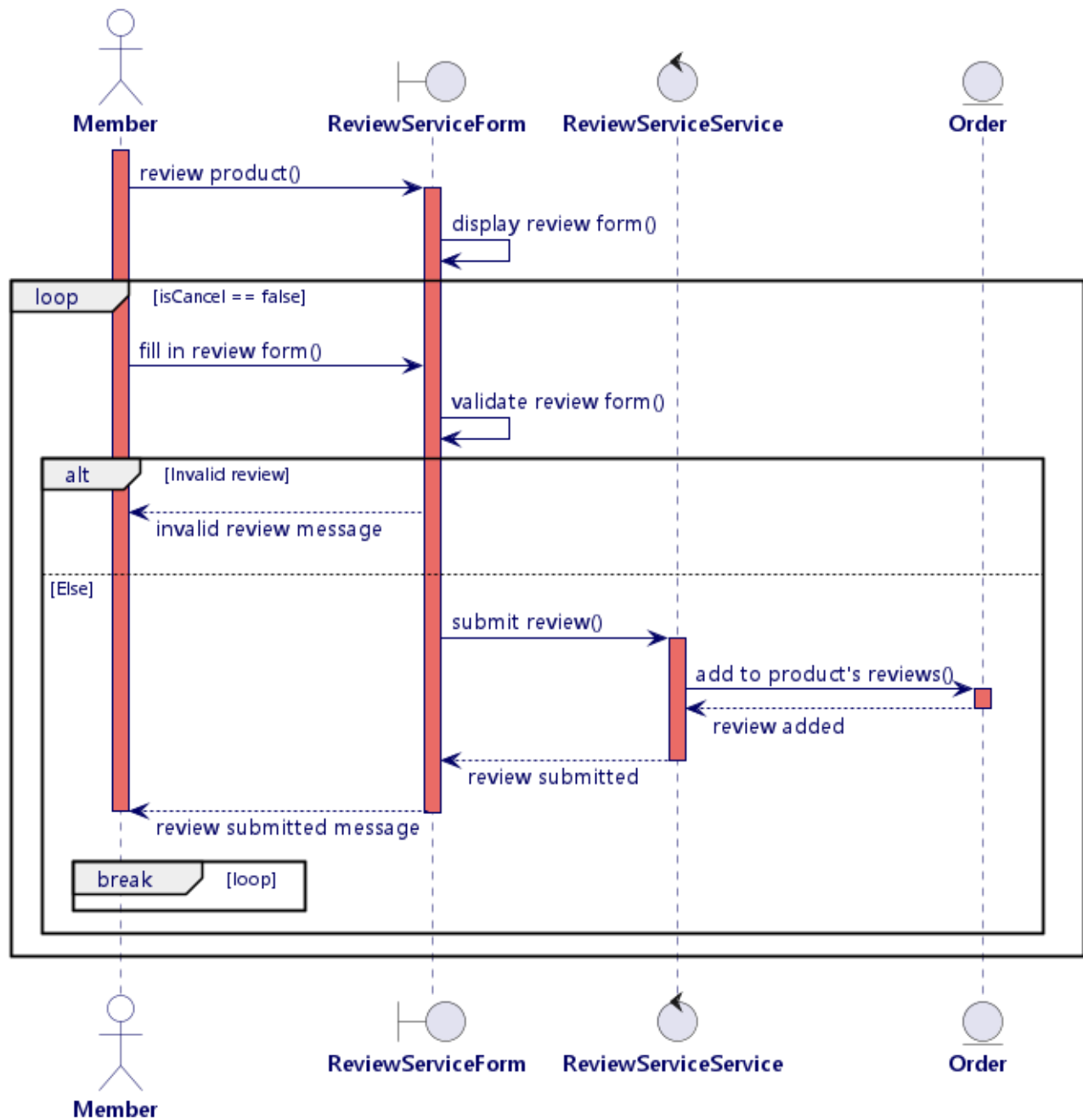


Figure 1-11: Review Order Sequence Diagram

## 1.16 Request Refund

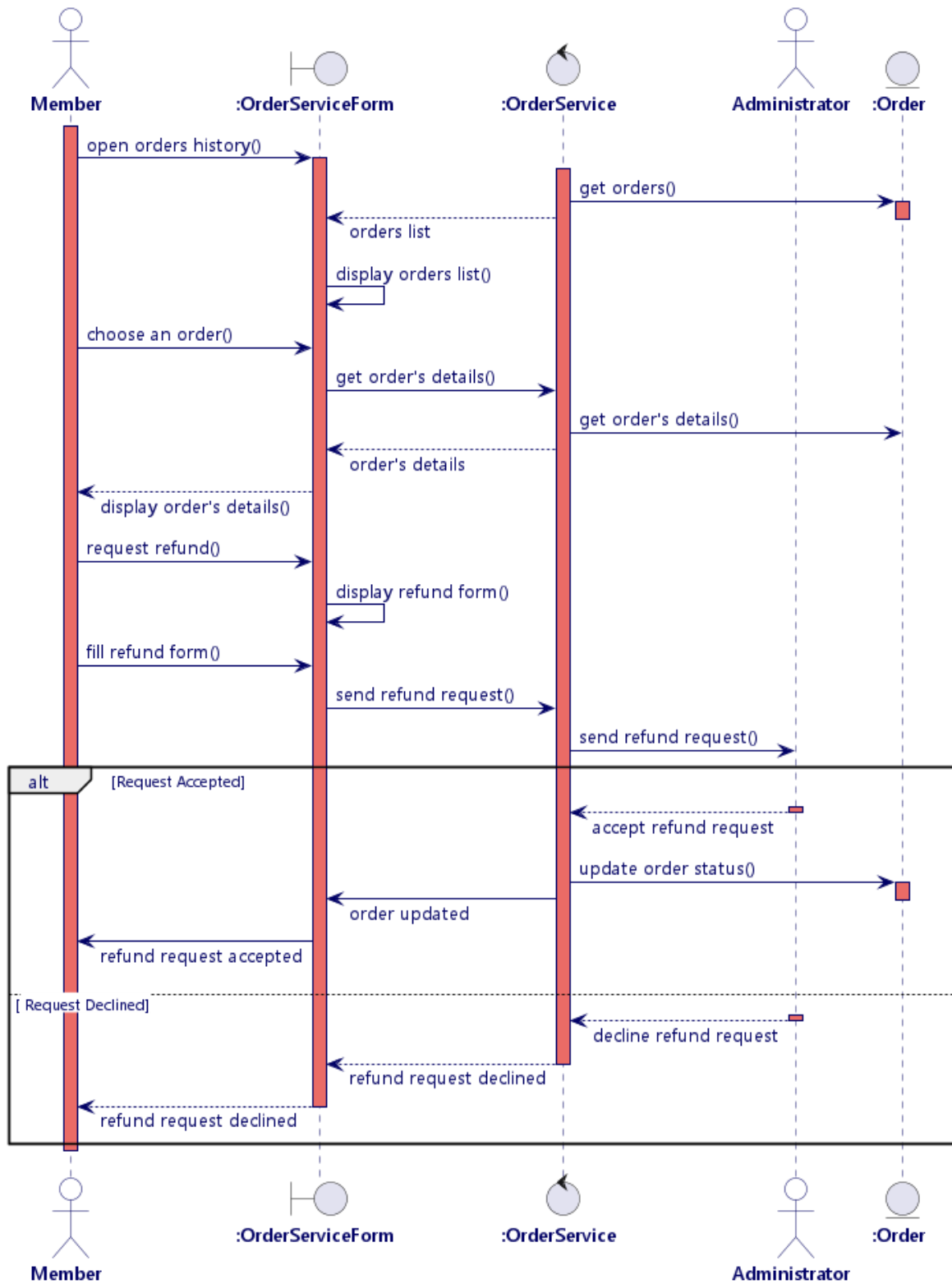


Figure I-12: Request Refund Sequence Diagram

## 1.17 Read eBook

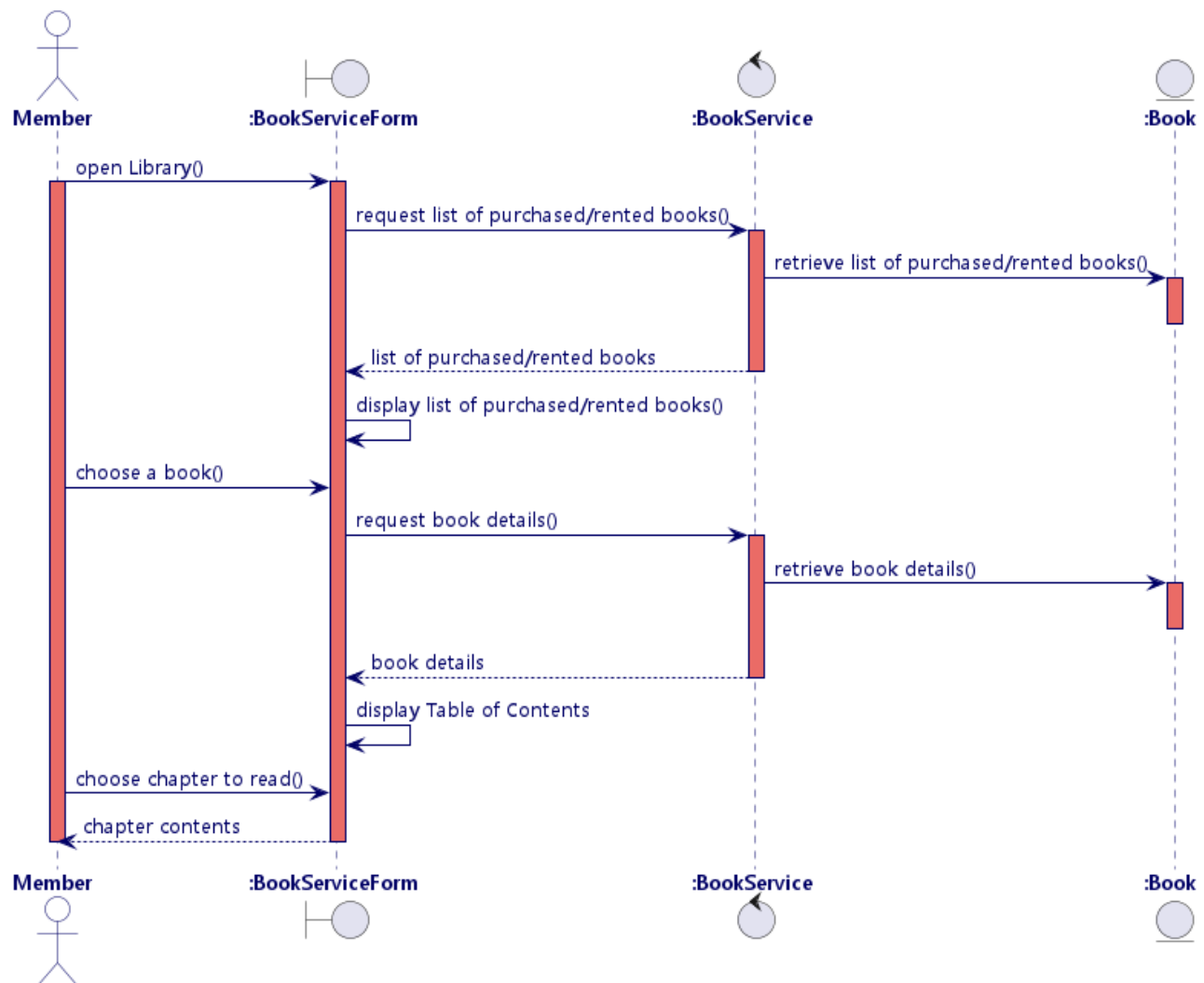


Figure 1-13: Read eBook Sequence Diagram

## 1.18 Forum Services

### 1.18.1 Create New Post

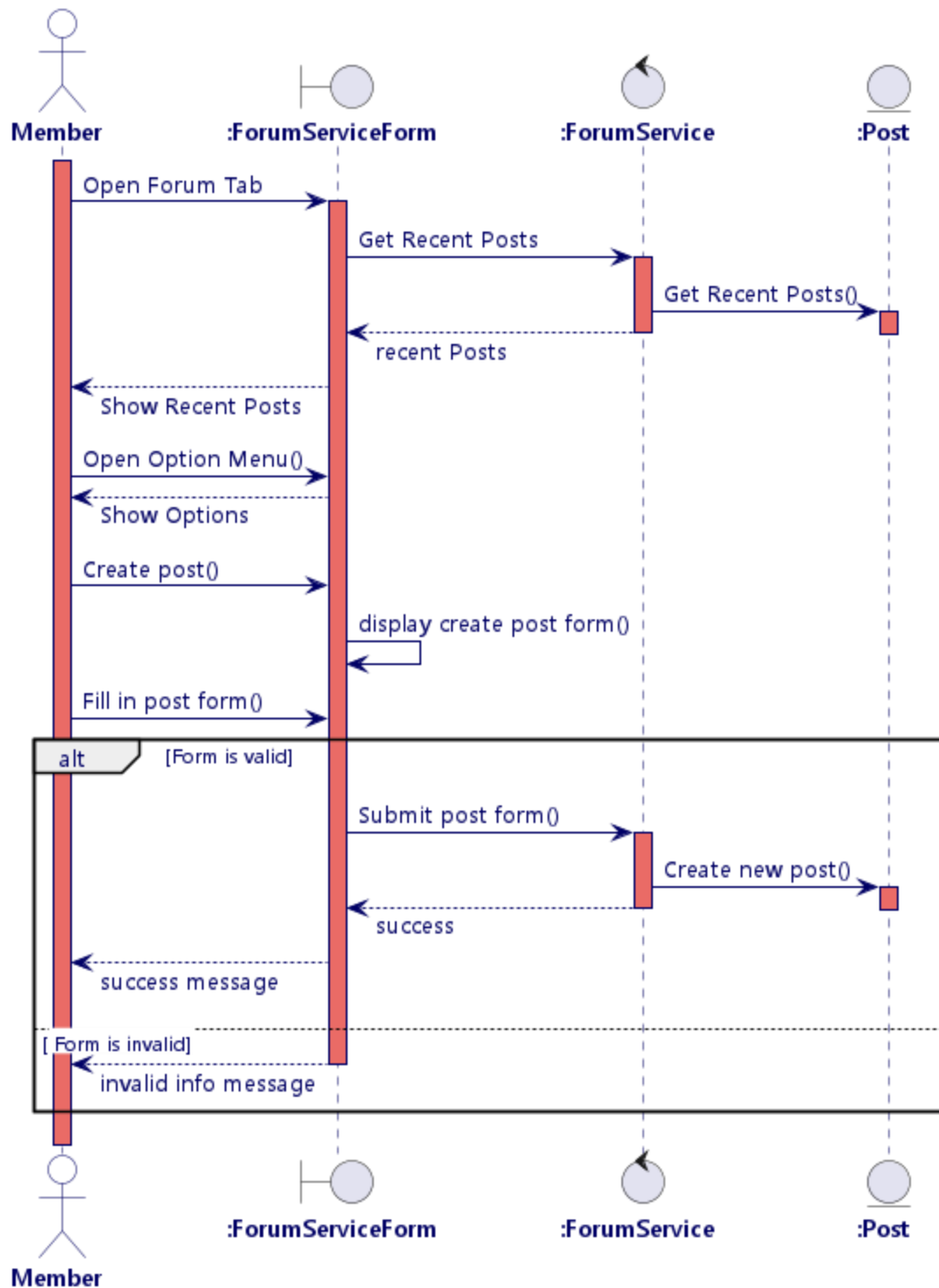


Figure 1-14: Create a Post Sequence Diagram

### 1.18.2 Close a Post

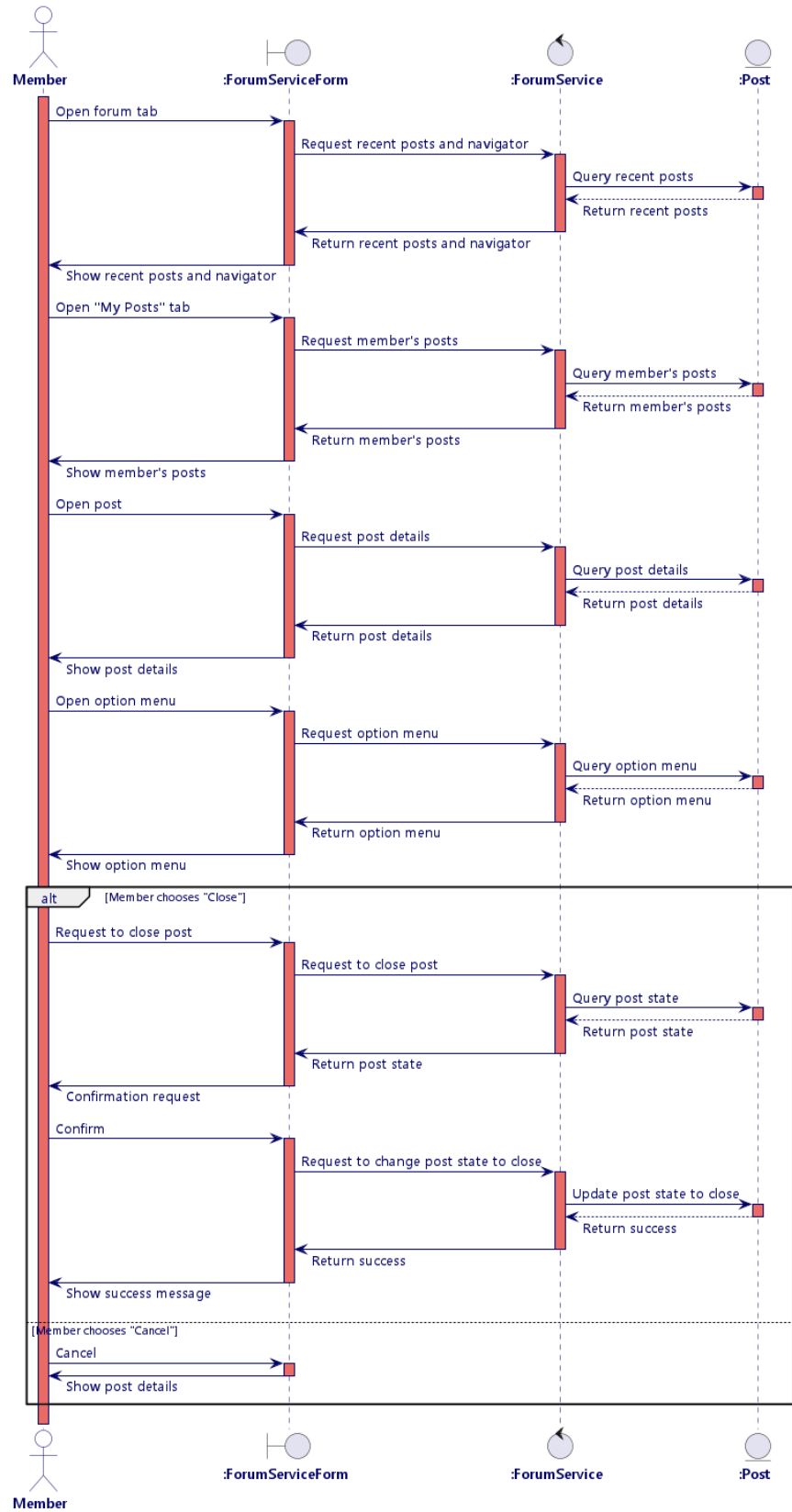


Figure 1-15: Close a Post Sequence Diagram



## 1.18.3 Delete a Post

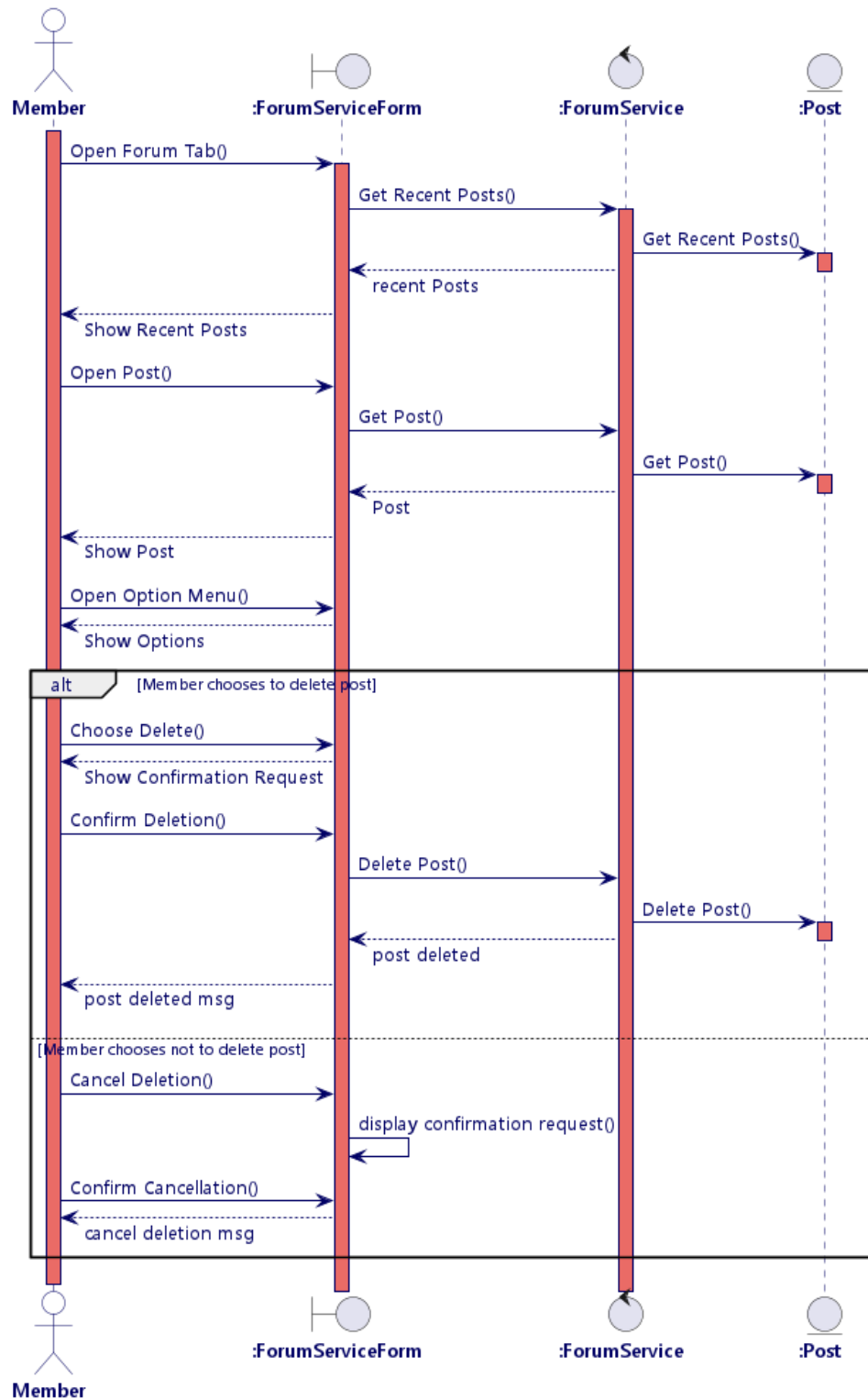


Figure 1-16: Delete a Post Sequence Diagram

### 1.18.4 Edit a Post

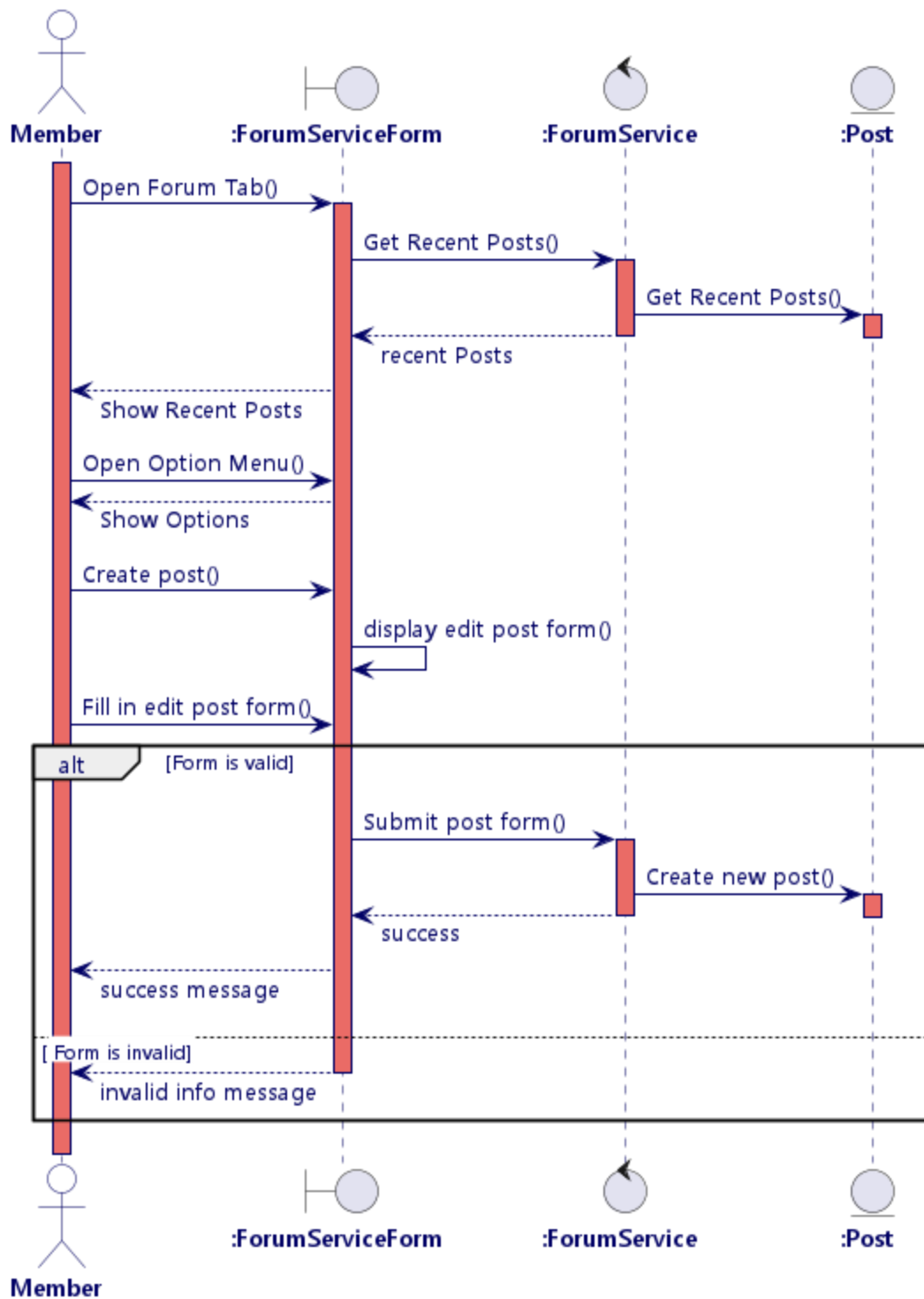


Figure 1-17: Edit a Post Sequence Diagram

## 1.19 Rent Books

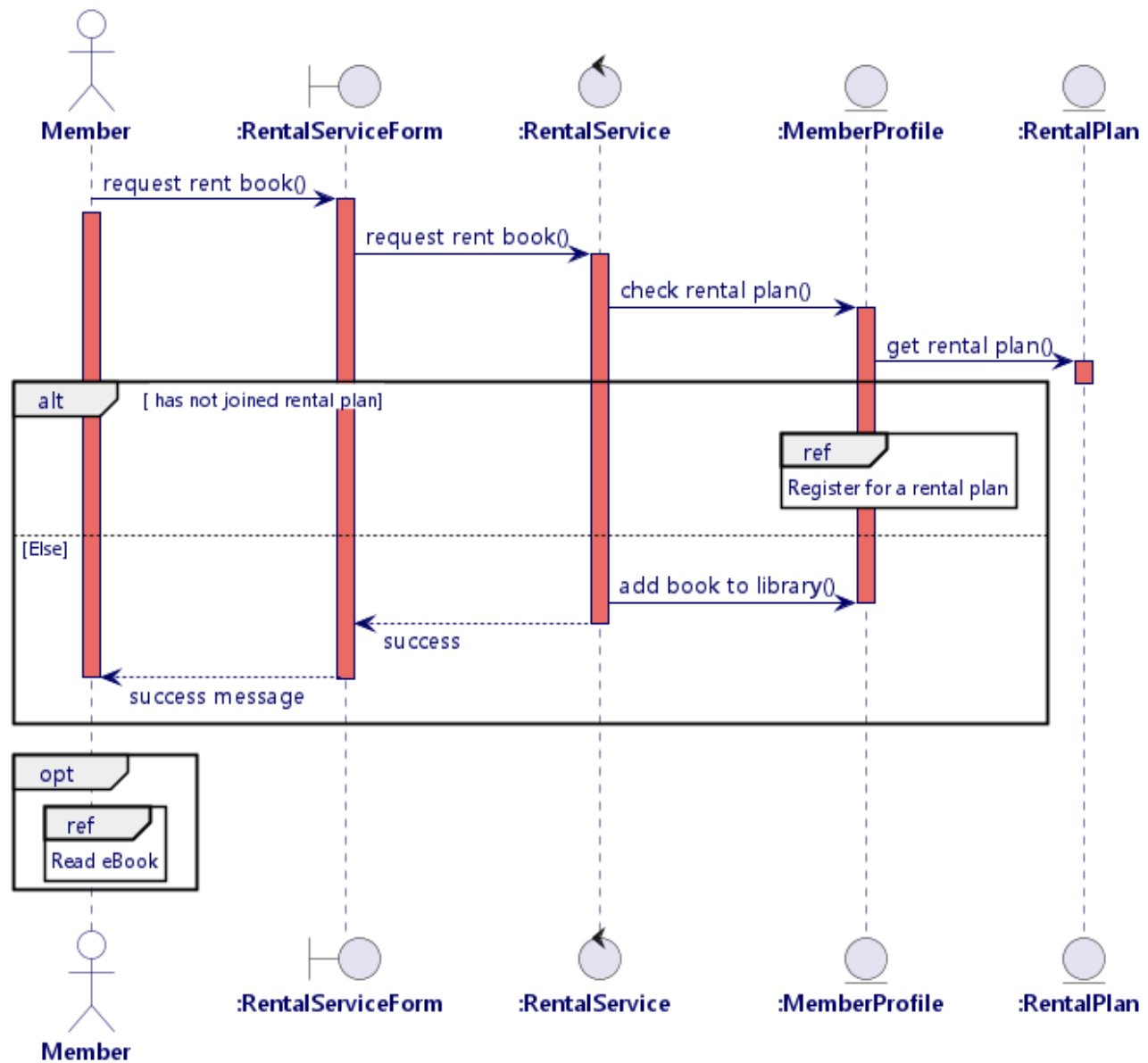


Figure 1-18: Rent Books Sequence Diagram

## 1.20 Register for a Rental Plan

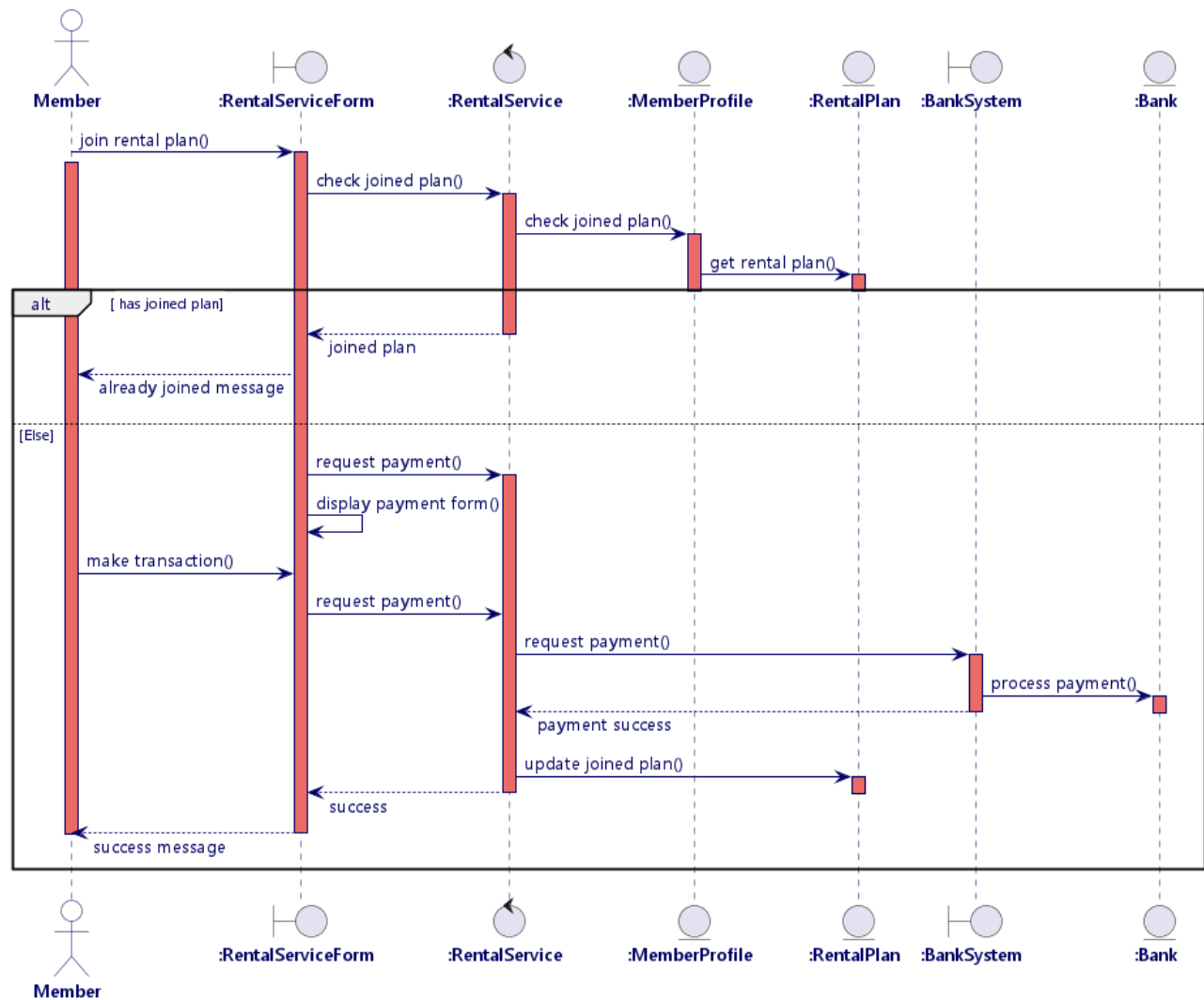


Figure 1-19: Register for a Rental Plan Sequence Diagram

## 1.21 Cancel a Rental Plan

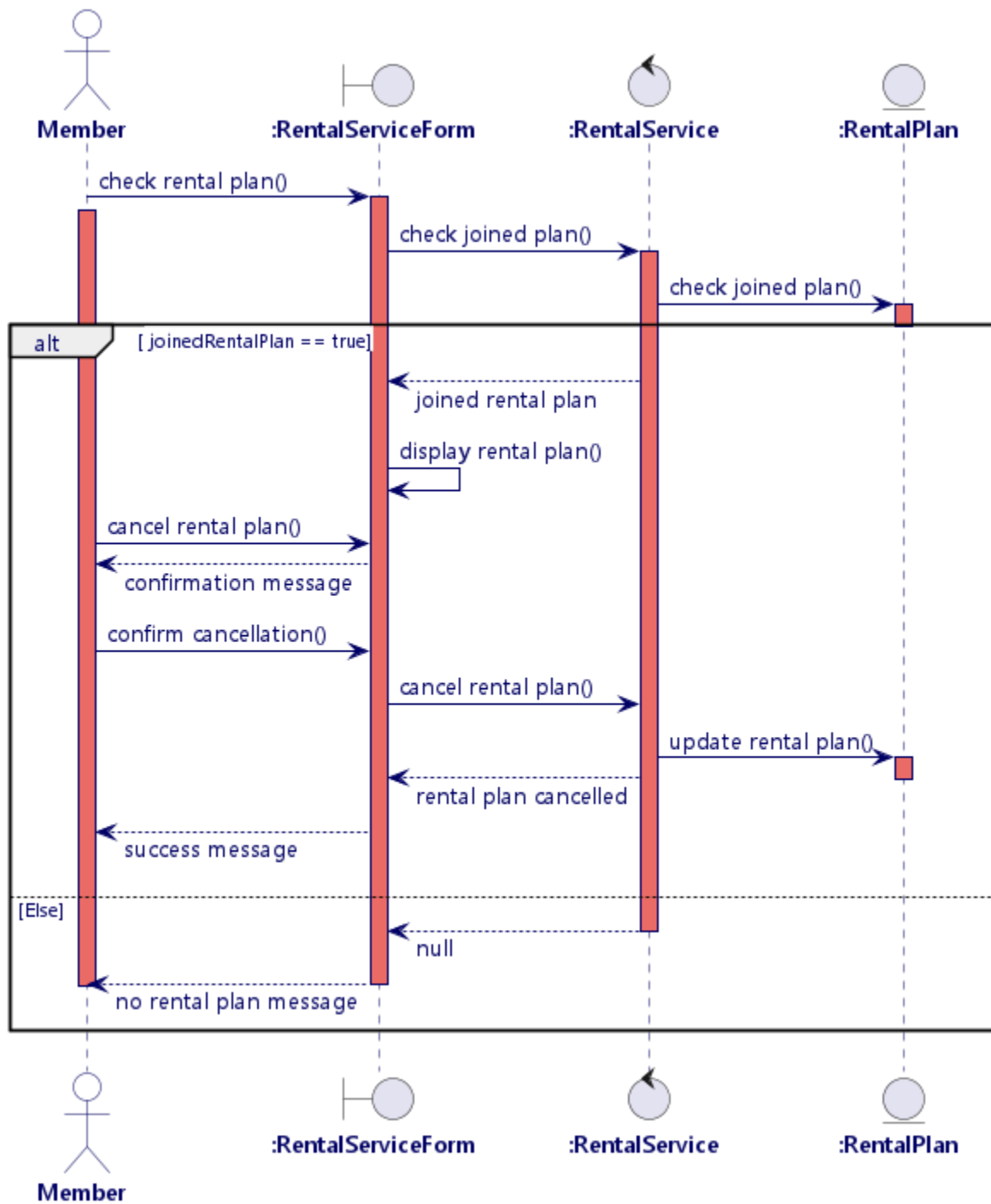


Figure 1-20: Cancel Rental Plan Sequence Diagram.



## 1.23 Manage Order

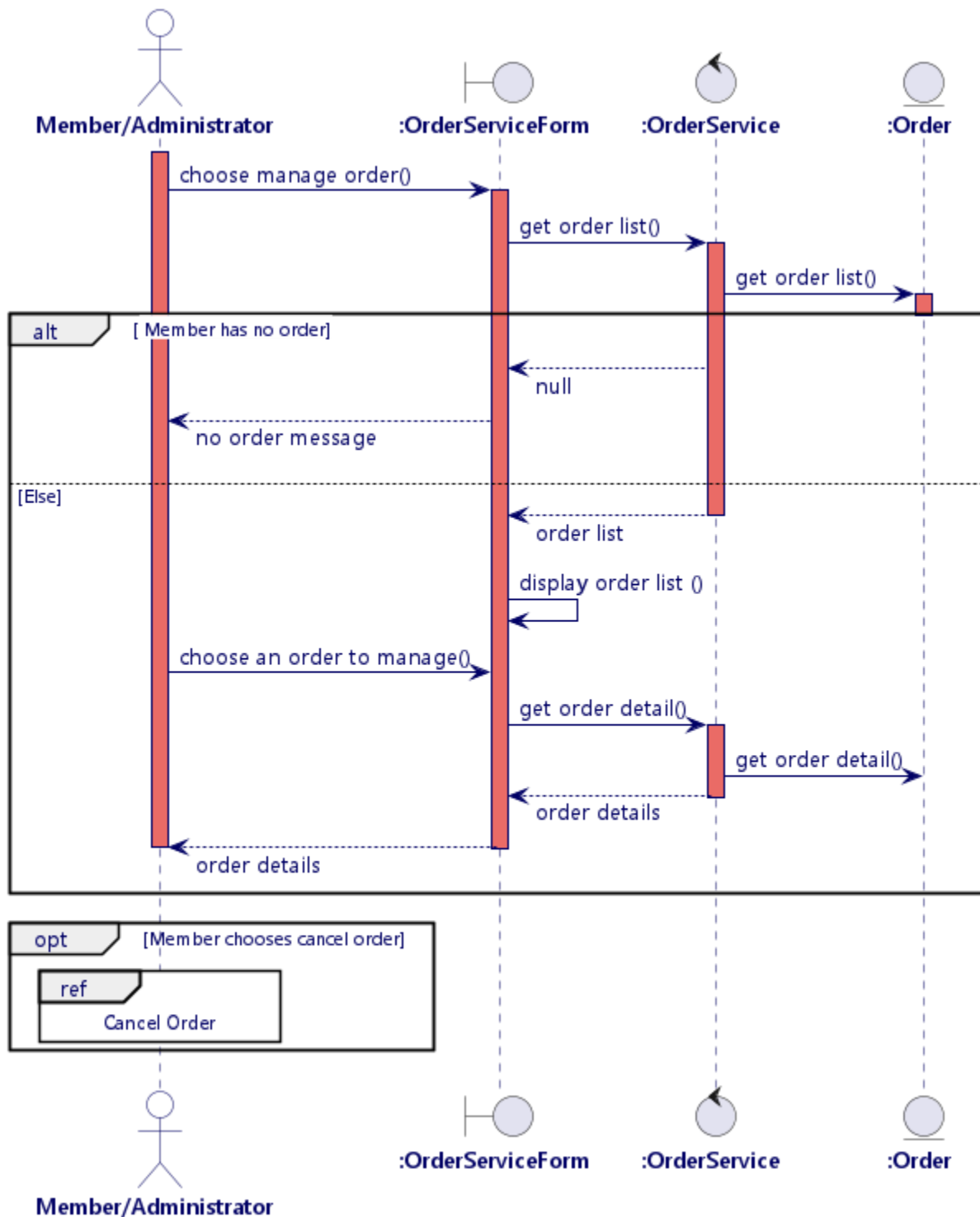


Figure 1-22: Manage Orders for Buyers and Admin Sequence Diagram

## 1.24 Cancel Order

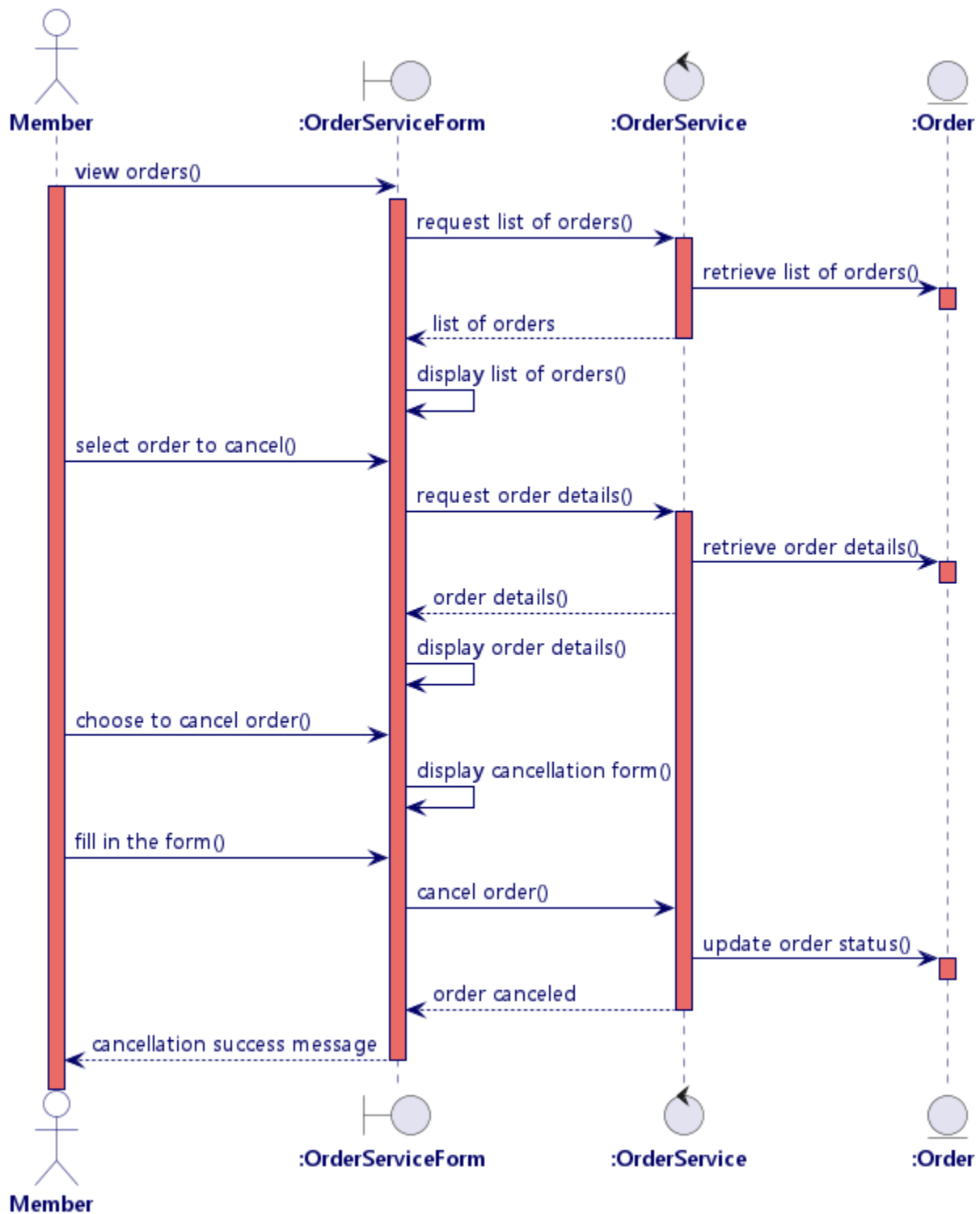


Figure 1-23: Cancel Order Sequence Diagram



## 1.25 Update Books' Information

### 1.25.1 Create new Book

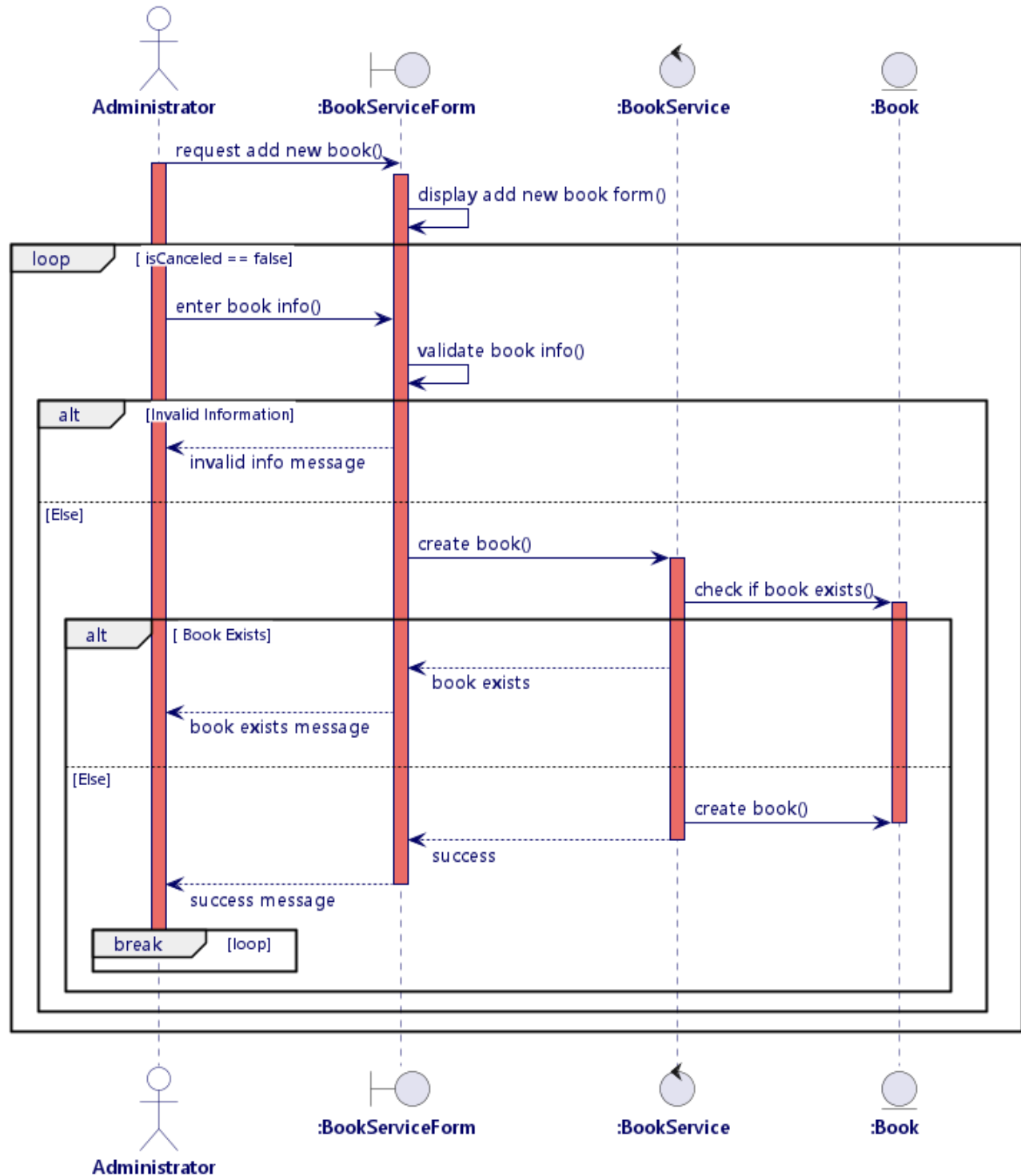


Figure 1-24: Create New Book Sequence Diagram

### 1.25.2 Edit Book Information

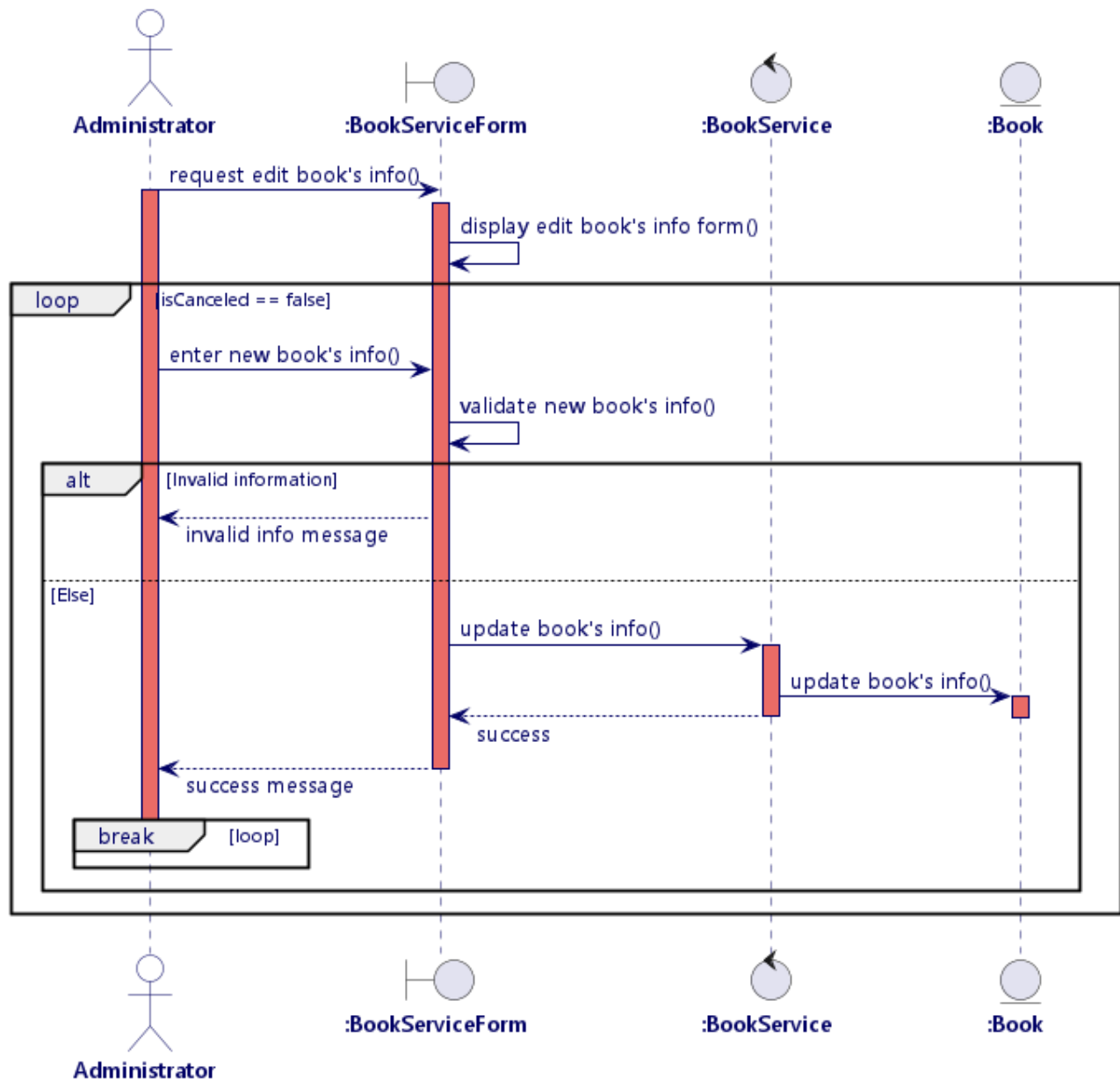
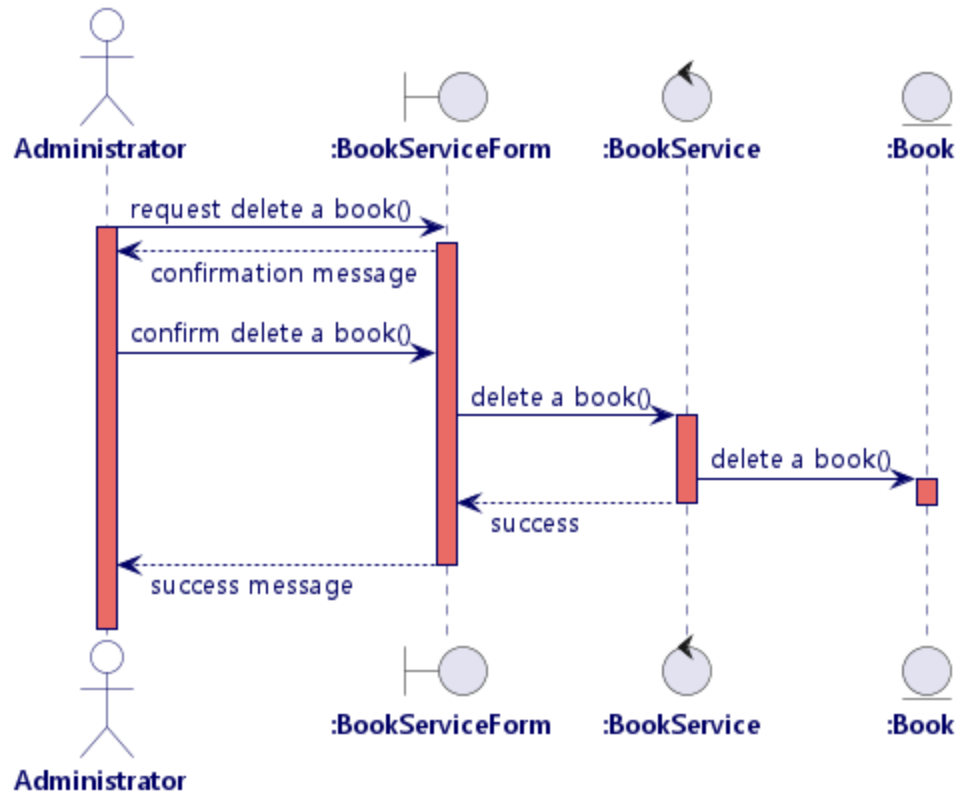


Figure 1-25: Edit Book Information Sequence Diagram

### 1.25.3 Delete a Book

*Figure 1-26: Delete Book Sequence Diagram*

## 1.26 Sell Used Book

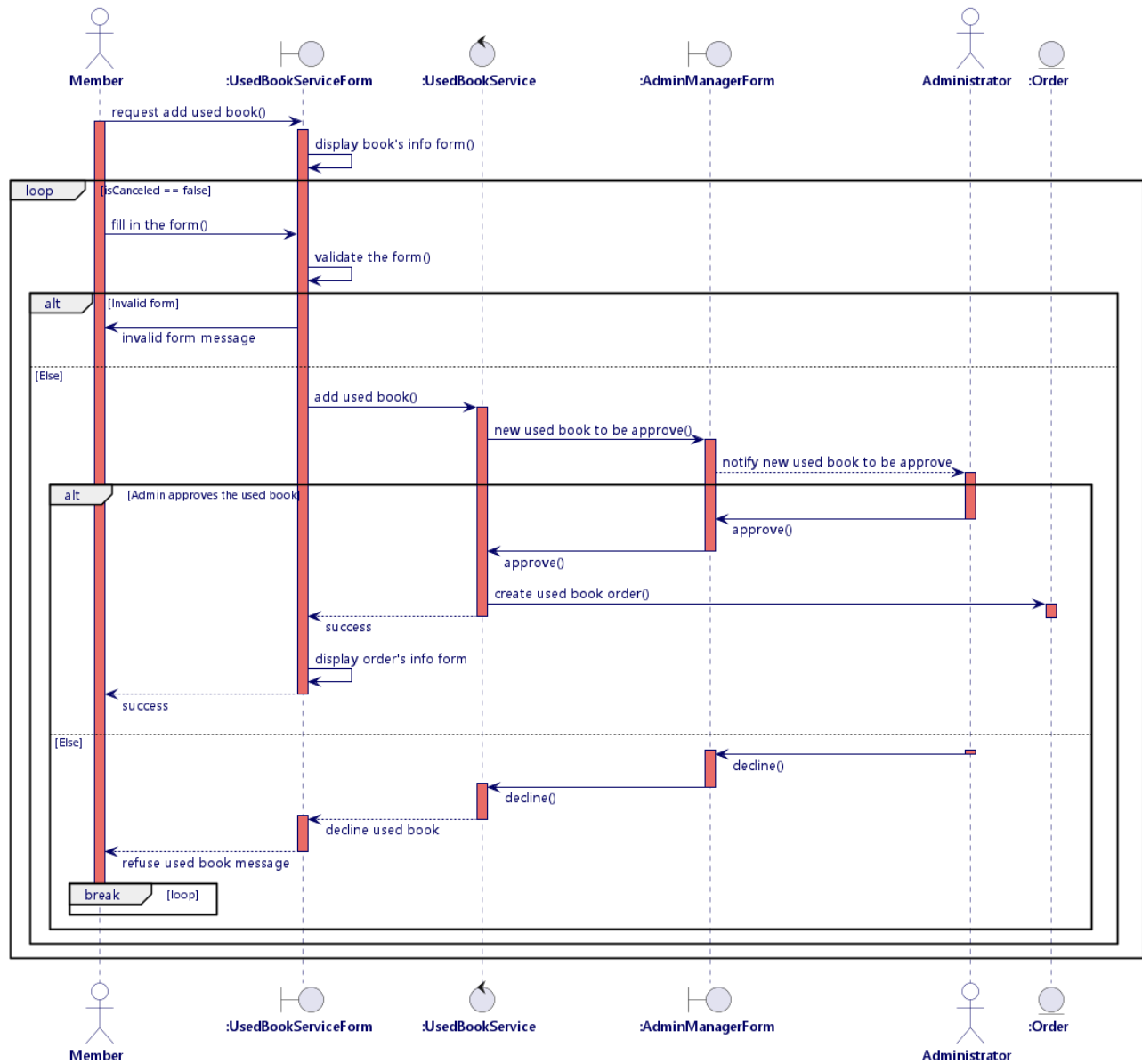


Figure 1-27: Sell Used Book Sequence Diagram

## 1.27 Reset Password

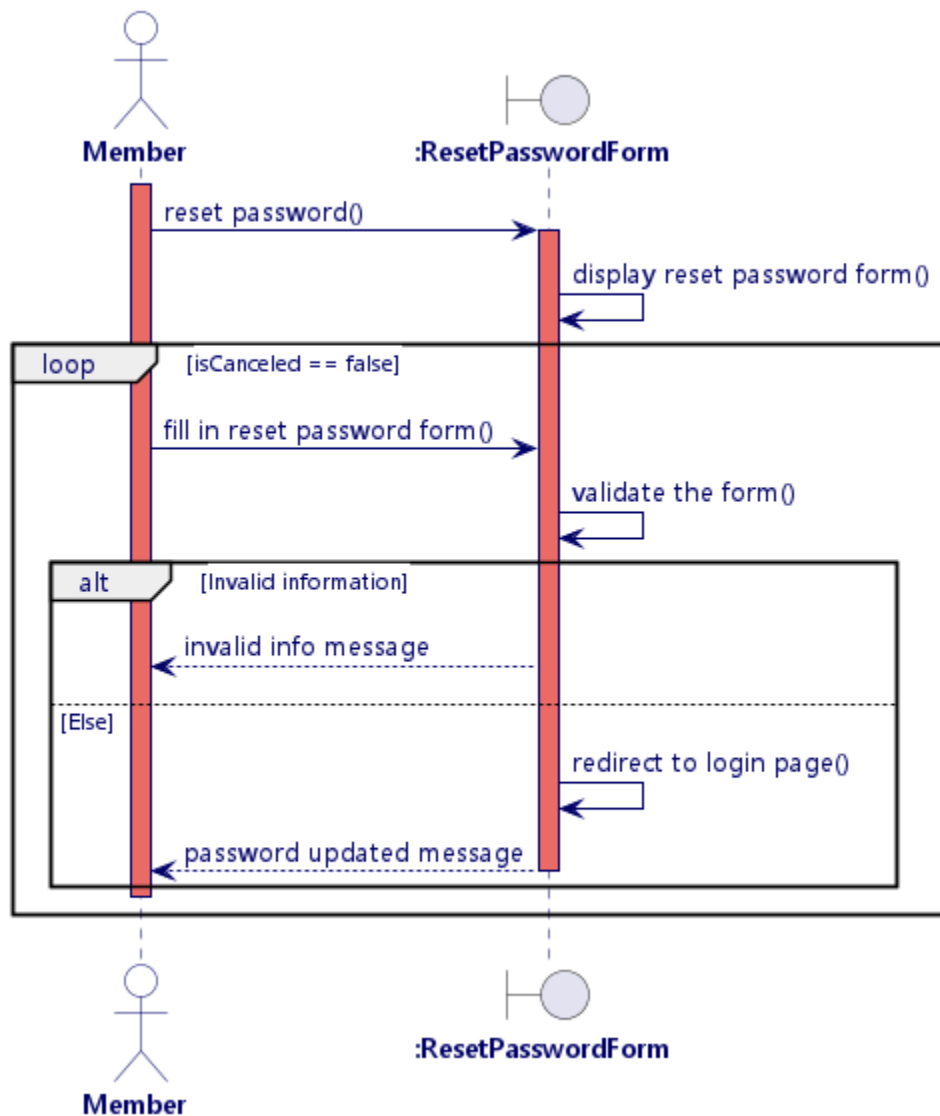


Figure 1-28: Reset Password Sequence Diagram

## 2. Use Case Realization View of Participating Classes (VOPCs)

### 2.1 Register



Figure 2-1: Register Class Diagram

### 2.2 Login

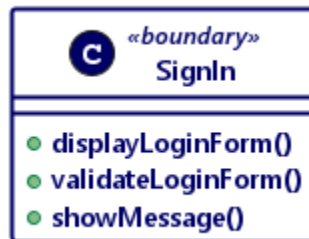


Figure 2-2: Login Class Diagram

### 2.3 Reset Password



Hình 2-1: Reset Password Class Diagram

## 2.4 Logout



Figure 2-3: Logout Class Diagram

## 2.5 Edit Profile

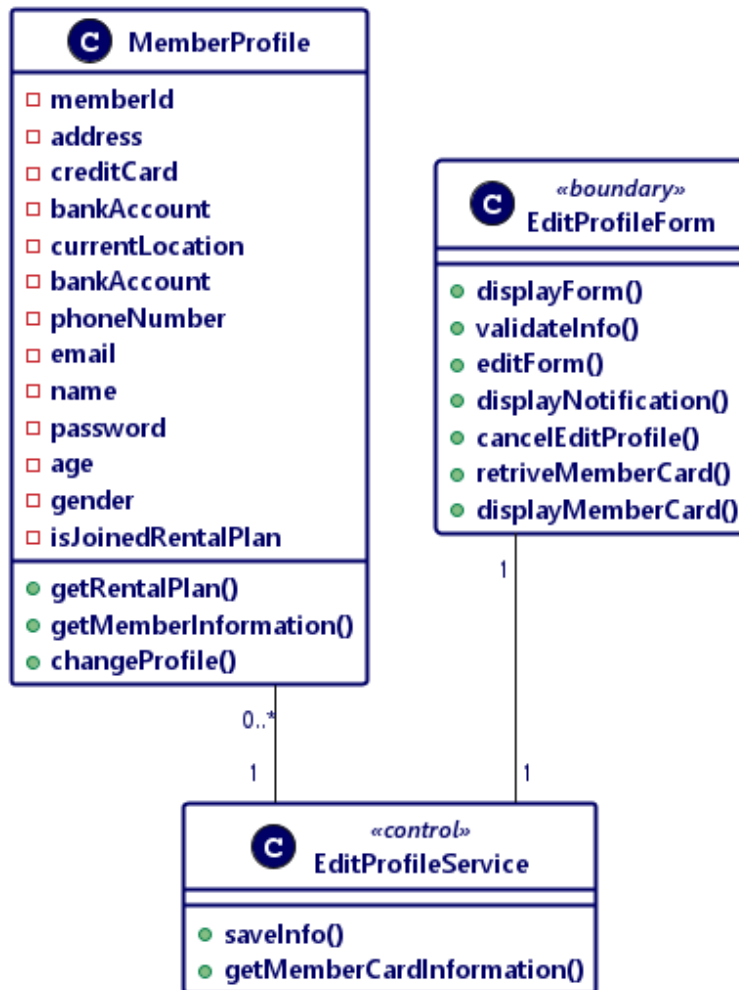


Figure 2-4: Edit Profile Class Diagram

## 2.6 Check Book's Details

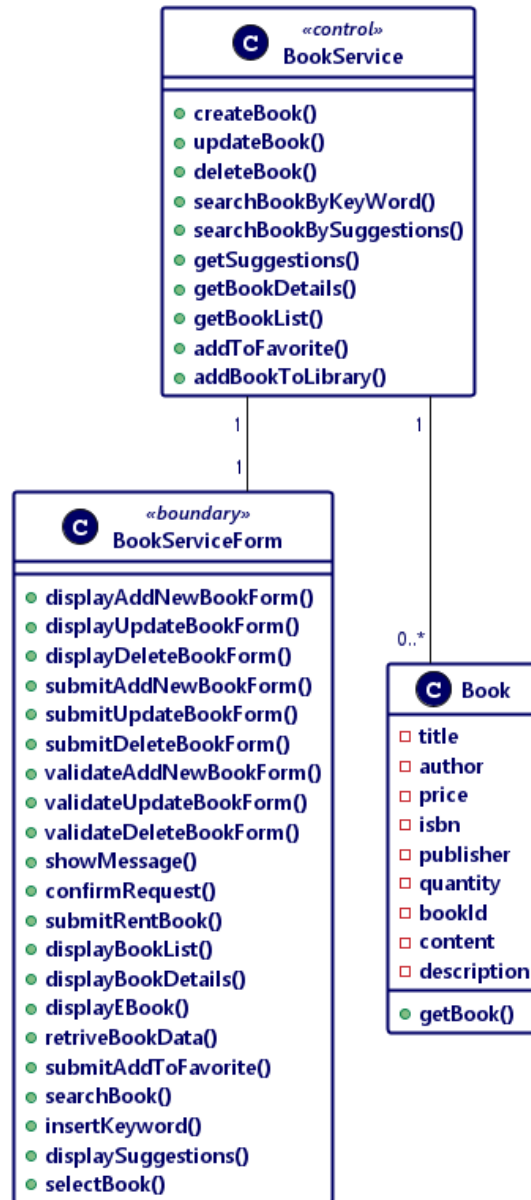


Figure 2-5: Check Book's Details Class Diagram



## 2.7 Search Books

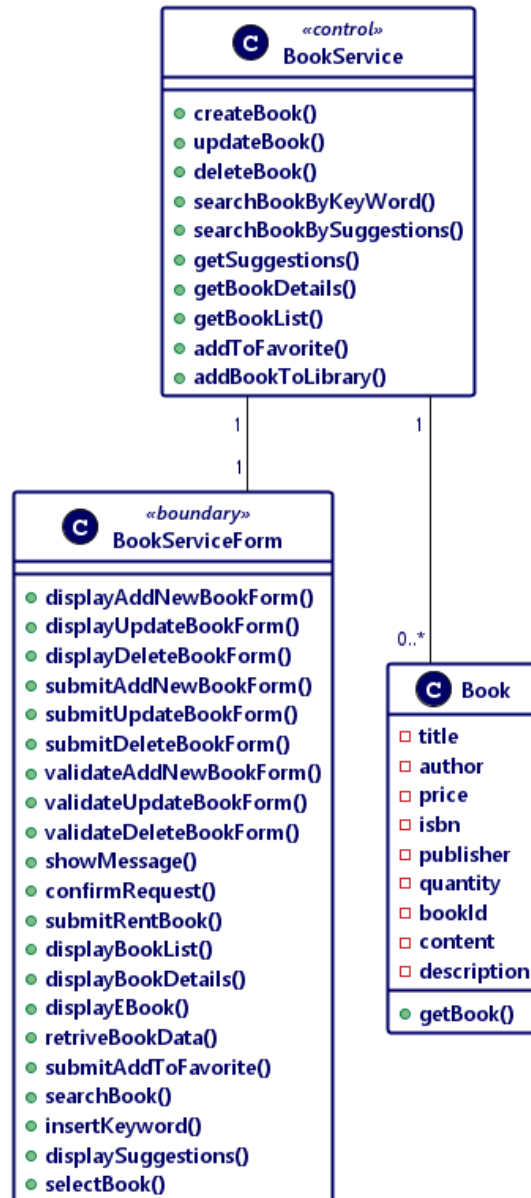


Figure 2-6: Search Books Class Diagram

## 2.8 Add Books to Favorite List

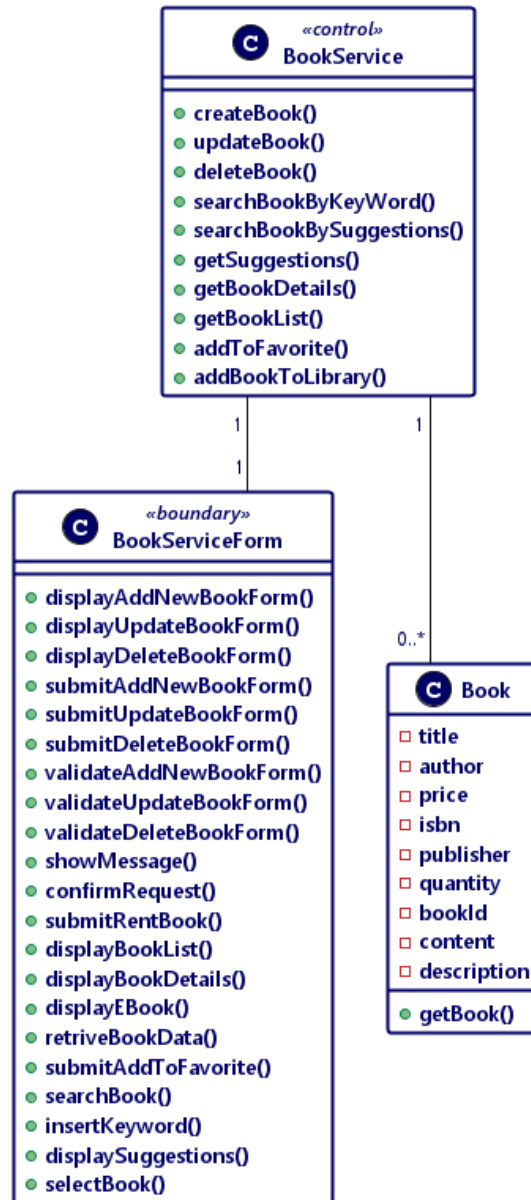


Figure 2-7: Add Books to Favorite List Class Diagram

## 2.9 Add to Cart

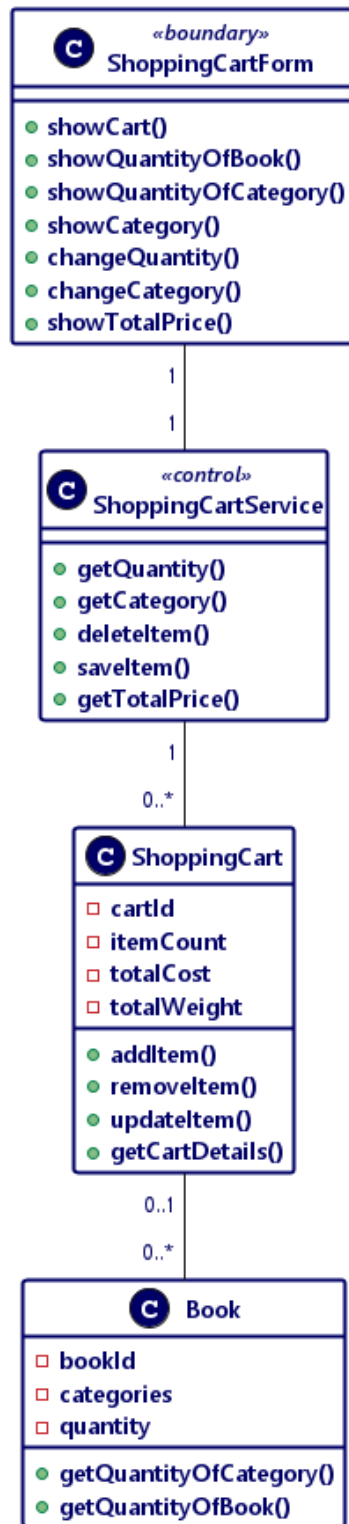


Figure 2-8: Add to Cart Class Diagram

## 2.10 View Member Card

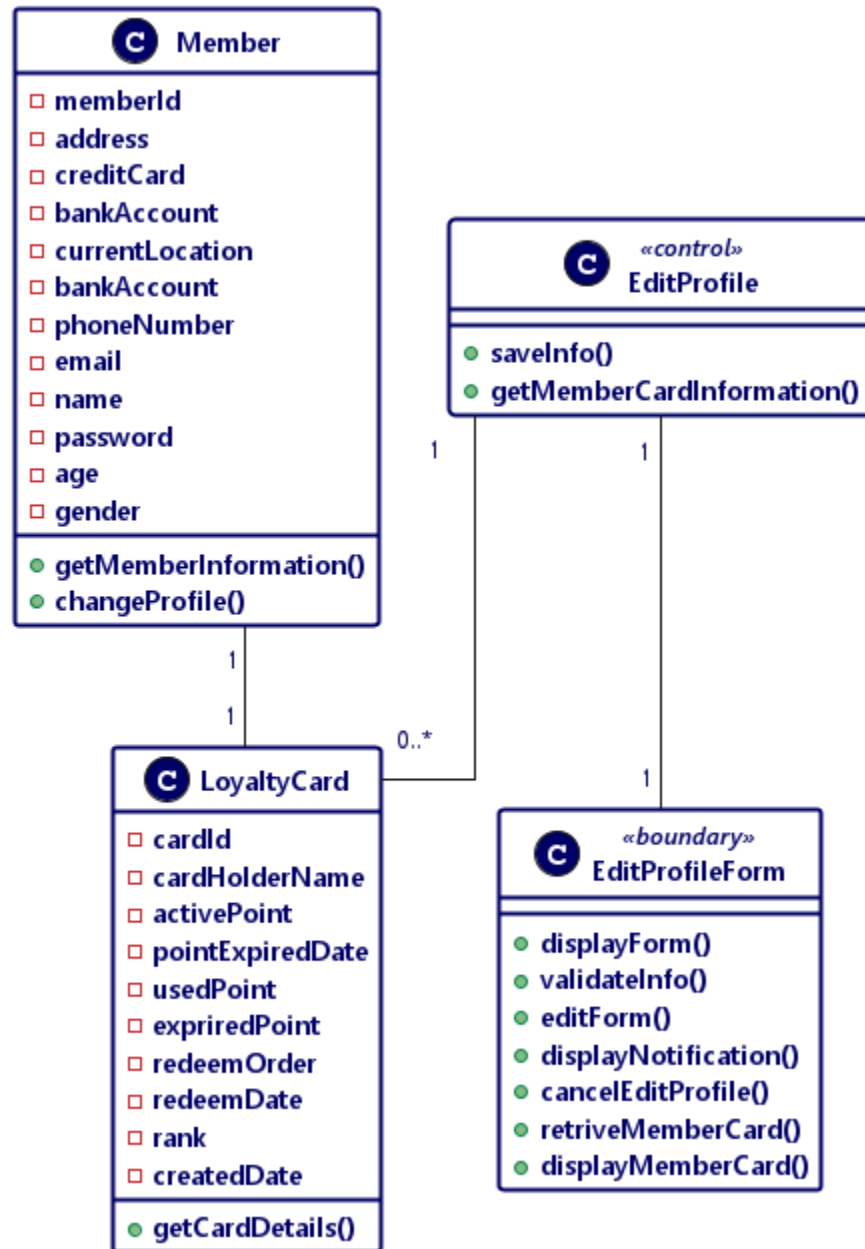


Figure 2-9: View Member's Card Class Diagram

## 2.11 Buy Books

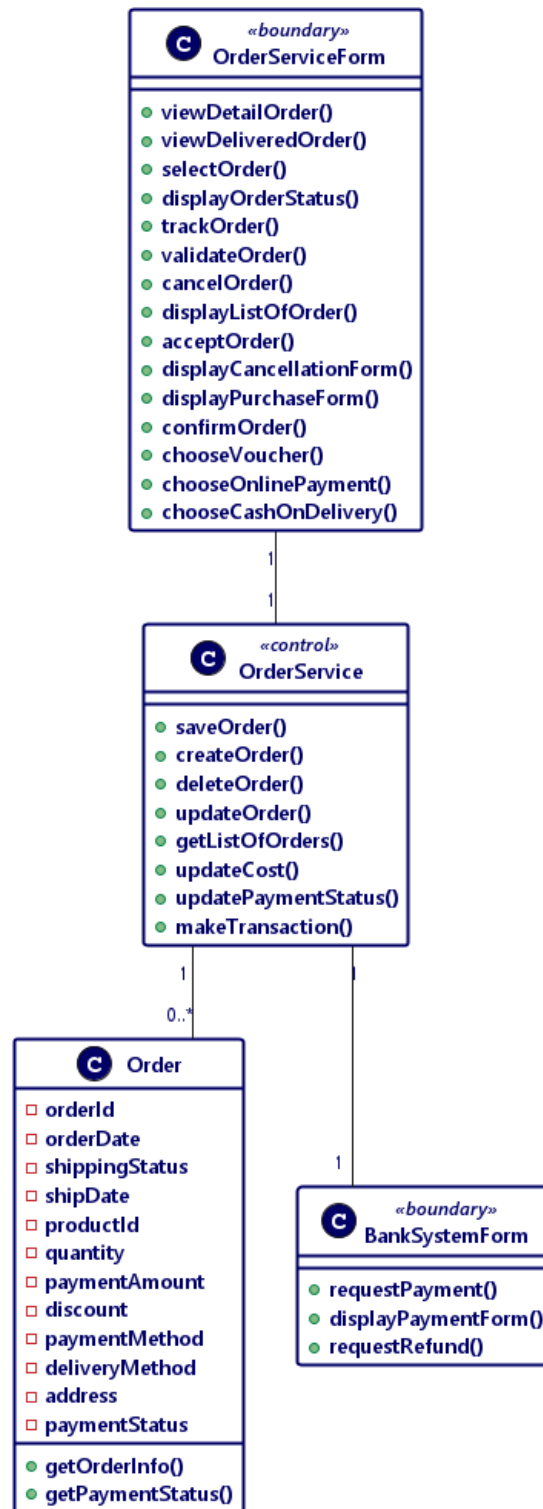


Figure 2-10: Buy Book Class Diagram

## 2.12 Review Order

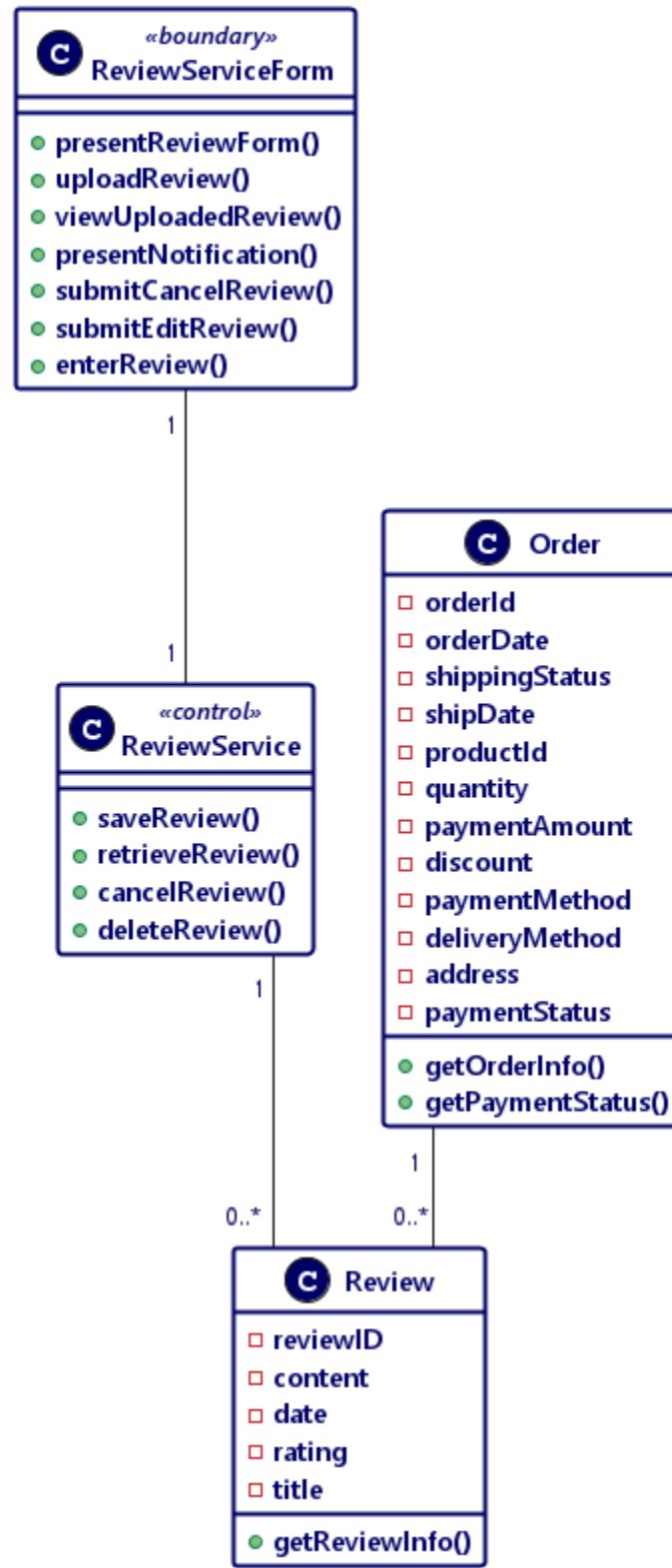


Figure 2-11: Review Order Class Diagram

## 2.13 Request Refund

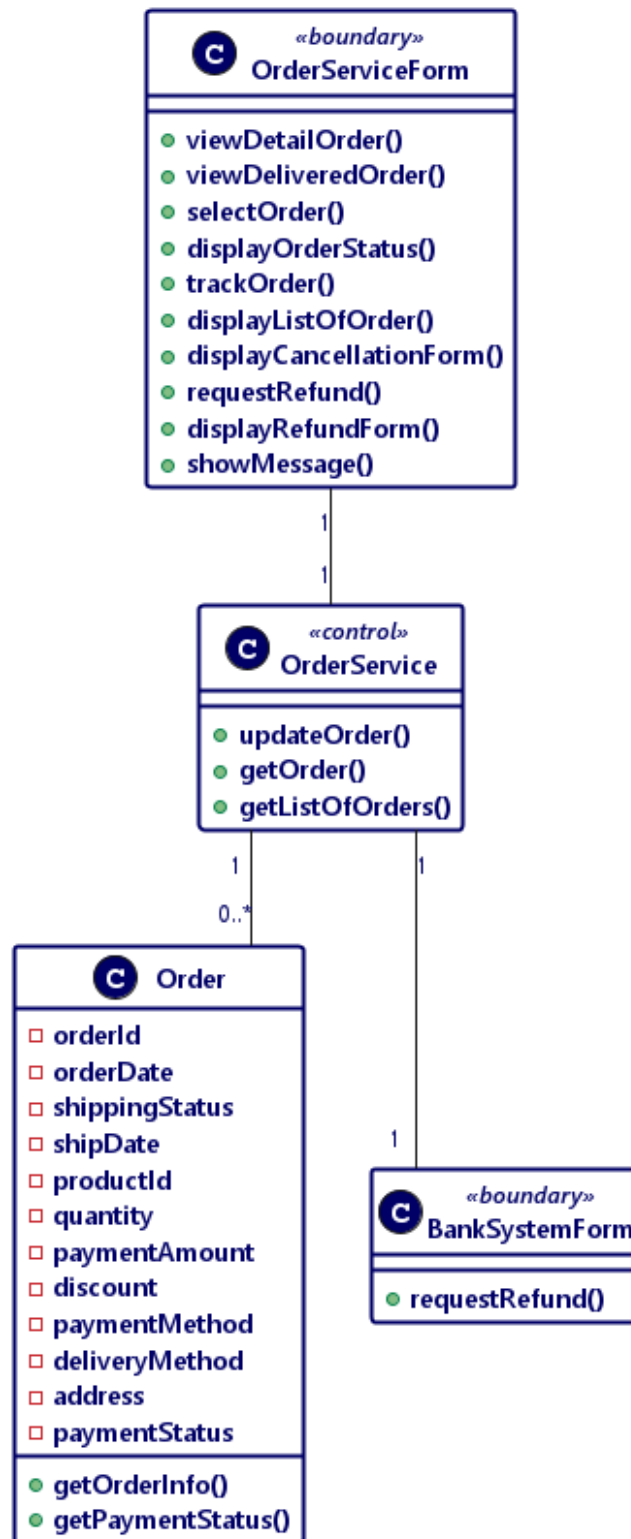


Figure 2-12: Request Refund Class Diagram

## 2.14 Read eBook

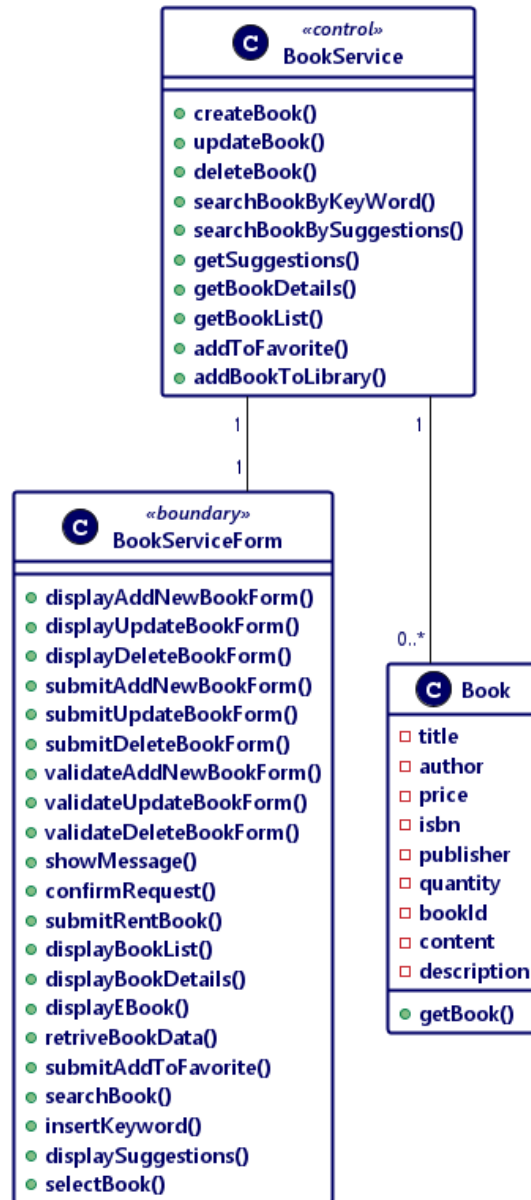


Figure 2-13: Read eBook Class Diagram



## 2.15 Forum Services



Figure 2-14: Manage Posts Class Diagram

## 2.16 Rent Books

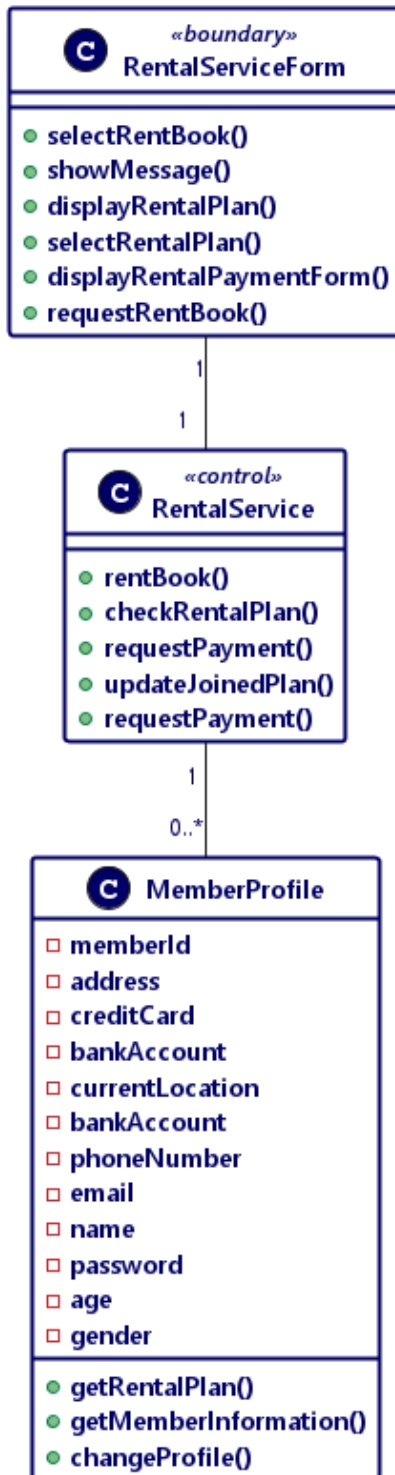


Figure 2-15: Rent Books Sequence Diagram

## 2.17 Register for a Rental Plan

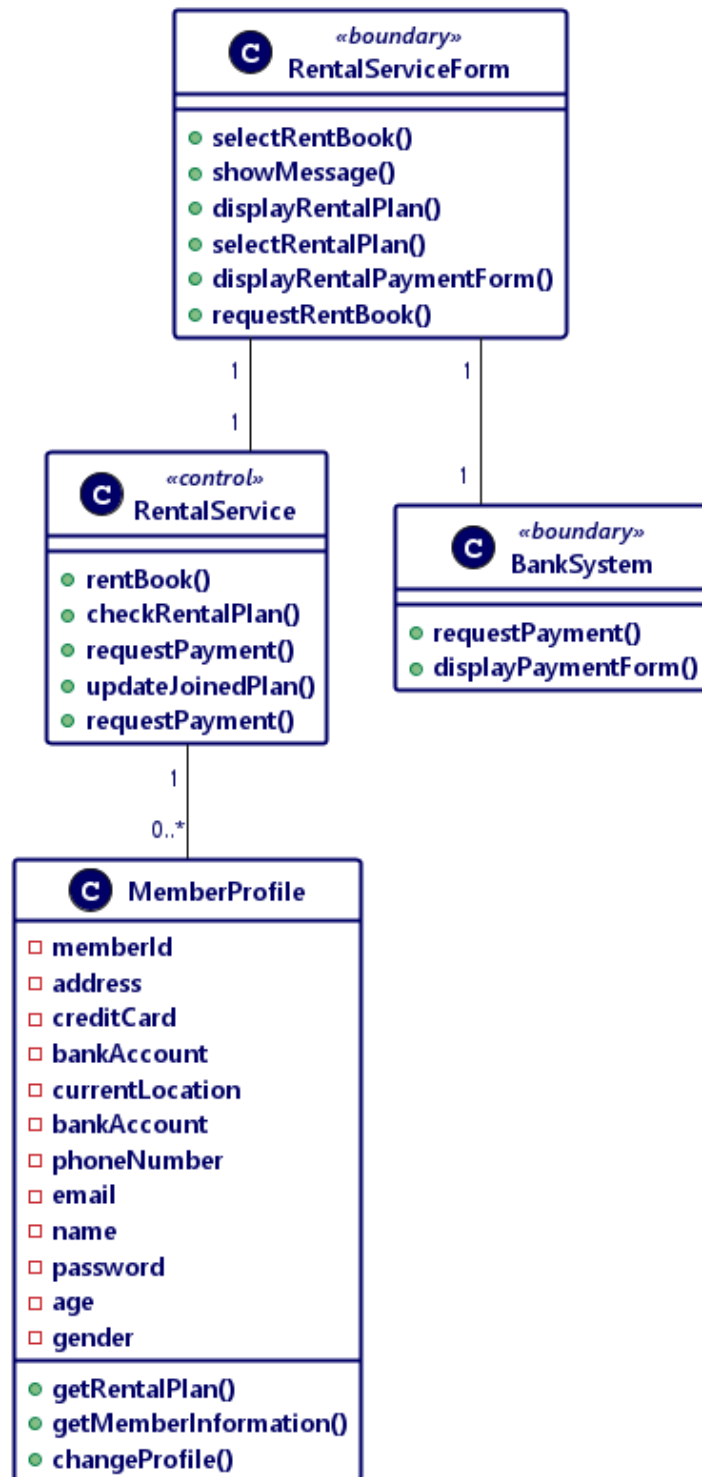


Figure 2-16: Register for a Rental Plan Class Diagram

## 2.18 Ask Chat box



Figure 2-17: Ask Chat Box Class Diagram

## 2.19 Manage Order

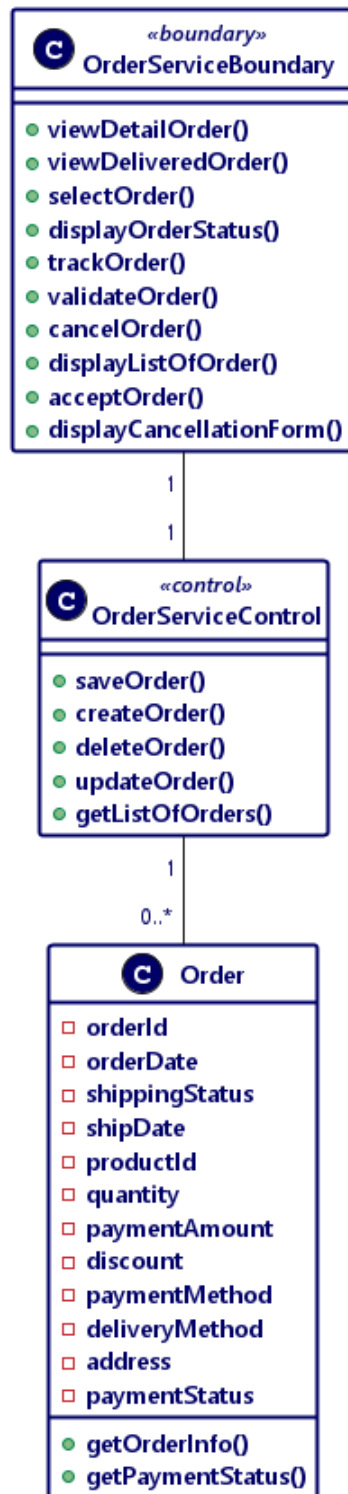


Figure 2-18: Manage Orders for Buyers and Admin Class Diagram

## 2.20 Cancel Order

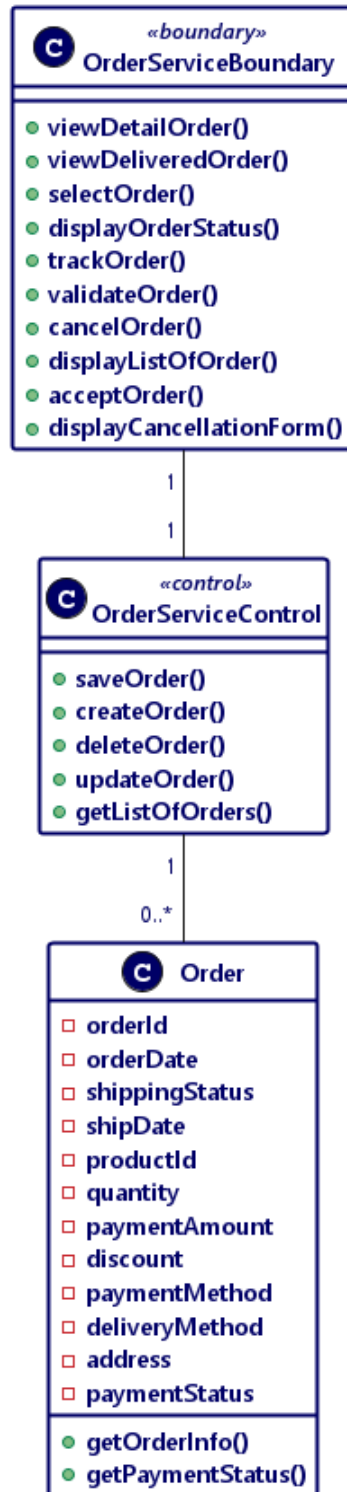


Figure 2-19: Cancel Order Class Diagram

## 2.21 Update Books' Information

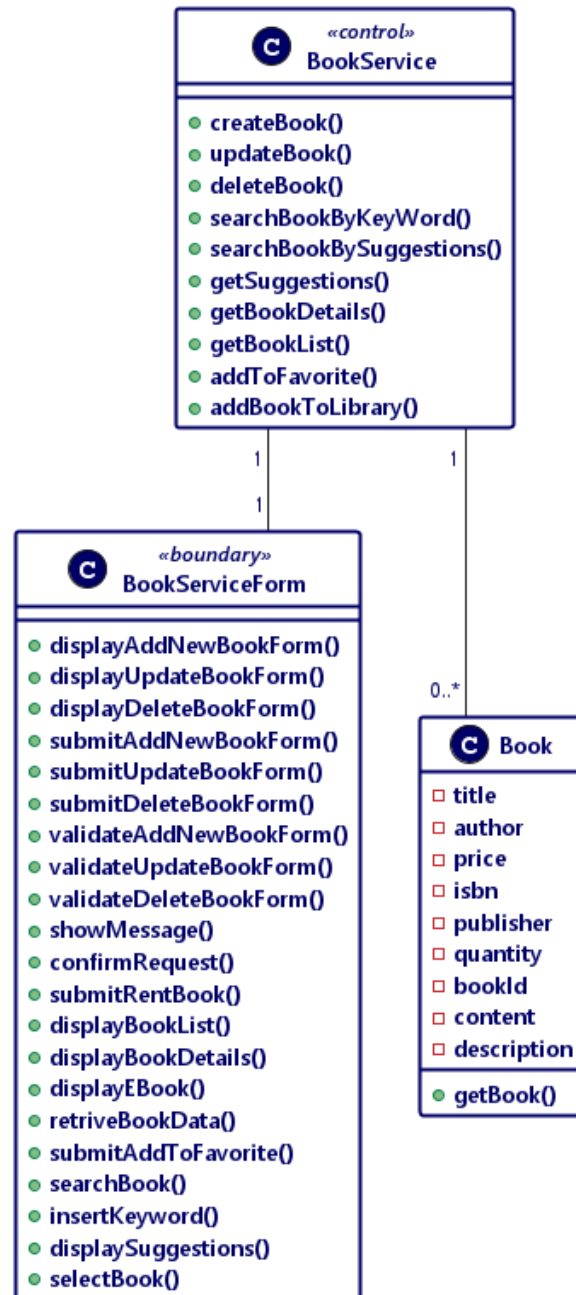


Figure 2-20: Update Books' Information (Add, Delete, Edit) Class Diagram

## 2.22 Sell Used Book

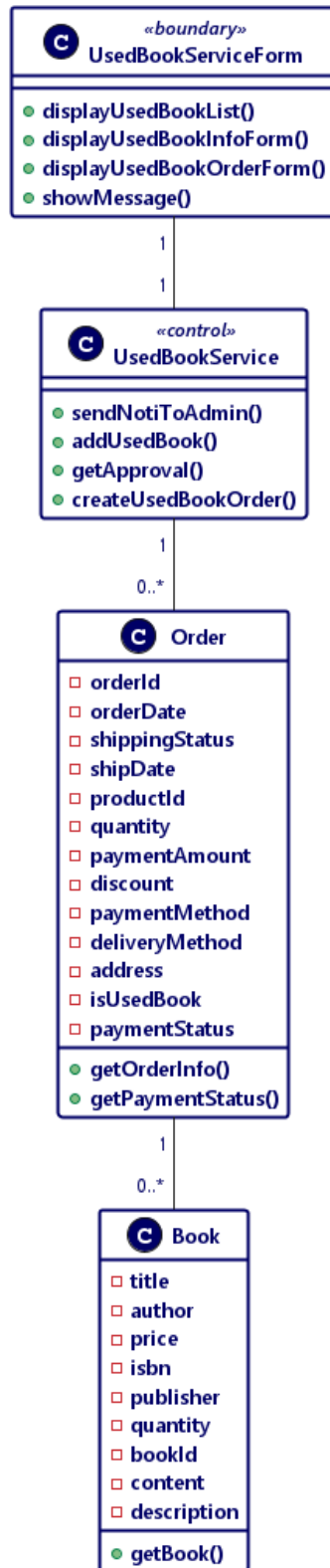


Figure 2-21: Sell Used Book Class Diagram



### 3. Analysis Class to Analysis Mechanism Map

Analysis Class	Analysis Mechanism(s)
<b>Presentation Package</b>	
ForumServiceForm	None
OrderServiceForm	None
ReviewServiceForm	None
EditProfileForm	None
ShoppingCartForm	None
BookServiceForm	None
RentalServiceForm	None
ResetPasswordForm	None
SignUpForm	None
SignInForm	Security
SignOutForm	None
ChatServiceForm	None
AdminManagerForm	None
UsedBookServiceForm	None
BankSystem	Security
<b>Application Package</b>	
BookService	Communication
EditProfile	Communication
OrderService	Communication
ReviewService	Communication
ShoppingCart	Communication
RentalService	Communication
UsedBookService	Communication
<b>Profile Package</b>	

MemberProfile	Persistency
RentalPlan	Persistency
Administrator	Persistency
LoyaltyCard	Persistency
<b>Order Package</b>	
Order	Persistency
Review	Persistency
ShoppingCart	Persistency
<b>Reading Package</b>	
Post	Persistency
Book	Persistency
Publisher	Persistency
Author	Persistency
<b>Persistence Package</b>	
Database	Persistency, Error detection / handling / reporting, Security, Distribution
BookDB	Persistency, Error detection / handling / reporting, Security, Distribution
OrderDB	Persistency, Error detection / handling / reporting, Security, Distribution
ProfileDB	Persistency, Error detection / handling / reporting, Security, Distribution

## 4. Appendix A: Glossary

- **VOPC (view of participating class):** a class diagram that shows either the classes within a package or the collaborating classes within a use case realization. In a class diagram, there are cases that are shown by the following icon, it is easier to be changed than Entity and Control class.
- **Boundary class:** a class that is the boundary of the system and other system or user (which is an actor in the use case diagram).
- **Control class:** A control class manages the flow of interaction of the scenario. A control class to achieve use cases in the use case diagram.
- **Entity class:** An entity is a long-lived, passive class that is responsible for some meaningful chunk of information that class has data.
- **Sequence diagram:** an interaction diagram that shows how processes operate with one another and in what order and shows object interactions arranged in time sequence.