CSE 686: Internet Programming

Instructor: Edmund Yu

Reader's Café Project Report

Syracuse University

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Sharath Babu Srinivas - Team Lead   (SU ID: 488732390)
Karthik Yogendra Bangera   (SU ID: 234898626)
Manjunath Panduranga   (SU ID: 637425699)
Mehal Chaudhari   (SU ID: 287773263)
Pranika Jain   (SU ID:234898626)
Sakshi Varshney   (SU ID: 211094837)
Rishit Reddy Muthyala   (SU ID:431658501)

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1.Introduction

1.1 Purpose

The main purpose of developing Readers Café is to provide a user-friendly E-commerce website, by the inclusion of recent technologies like Angular JS, Bootstrap and HTML5 for the front-end and Java Spring Boot Framework, MySQL, Hibernate for back-end and Redis for session management. Use of these trending technologies improved the performance of the website.

1.2 Document Conventions

Functional Requirements are equivalent to System requirements and the other requirements fall under Non- Functional Requirements. All requirements are written using a natural language.

1.3 Intended Audience and Reading Suggestions

The intent of this software requirements specification document is to help develop and understand Requirements, environment, technologies of Readers' café application.

1.4 Objective

Reader's cafe would be a one stop virtual store where users would be able to browse a catalog and select a variety of products based on their interests. The selected items would then be put into a shopping cart. During the time of checkout, the items in the shopping cart would be presented as an order. The user would then be required to enter more information to complete the transaction (Shipping address, Billing address, Credit card number etc.). Finally, an e-mail notification would be sent to the user depicting that the order has been placed.

Taking a few critical issues into consideration, there may be instances wherein the product is not available on the website. To resolve such an issue, our web application provides the details of the product where would it will be available. There would also be reviews and discussion forums which would help prospective buyers in purchasing products of their interest. Based on available timeline, we also intend to implement a chat application wherein users can chat regarding the product. Future case scenarios could also include a feature wherein users could post products online for lending/selling it to another member.

1.5 Significance

This is a one stop platform for bibliophiles where along with common features of an e-commerce application; we are also looking to integrate innovative features like book clubs, genre-wise, author-wise discussion forums and exciting automated discounts in order to promote interaction among book lovers with similar interests.

Overview of features:

- The application will have different access for admin and users.
- Admin can add, delete and update book information based on the availability of the book.
- Users can explore books based on their interests and they can filter the search criteria based on the ratings, price, author, genre and discount.
- The application would provide a payment gateway so that user can either purchase e-copy or physical copy according to his/her needs.
- Along with these features, the application could include new features like a book club wherein after buying book; users can discuss the contents of the book with readers that have similar interests.
- For buying books of particular genre, there would be a genre-wise and author-wise discussion forum wherein a user could suggest and discuss about books of their favorite genre or author. - Application will also provide automated discount for users on certain books.

2.Technology Used:

BACK-END DEVELOPMENT	FRONT-END DEVELOPMENT
JAVA SPRING BOOT FRAMEWORK	ANGULAR JS, ANGULAR CLI,ANGULAR MATERIAL
MYSQL, HIBERNATE	BOOTSTRAP
REDIS	HTML5

The Front End is built mostly using Angular JS, HTML and the back end using Java Spring Boot Framework. To help with the database we have used MYSQL and to connect it to the Front End we have utilized the Hibernate ORM. The security aspect of the application is handled by Spring Security Framework and to further handle sessions between multiple users we have offloaded session Management using Redis. The mail facility is implemented using java. mail package.

In the front-end code is divided into 3 parts components, models and services. Models define the variables used in the application, services define how the HTTP requests take place and components are where the HTML code along with type Script code is present.

Most of the configurational changes like DB connection and mail configuration is done through a file application.properties

3.System Requirements

3.1 Admin Requirements

1. Admins are required to add a new book, view list of books, edit the details of given book by providing Book ID and delete the given book on the basis of Book ID.

2. For authentication purpose a Sign Up and Login Portal is required for Admins.

3.2 User Requirements

1. Users are required to login as guests and can create a profile by entering unique username and email address.

2. User are required to receive an automated email with new password for accessing Reader's Café account. A forgot password feature is required to get a new password in case user forgets his/her password.

3. User are required to browse books, view details and information of any required books, add book to shopping cart.

4. User are required to modify his cart by deleting an item or increasing the quantity of selected items.

5. Users are required to receive an option to add more books. A redirect option is required to book list to select more books else user are required to be redirected to checkout page.

6. In the checkout page users are required to enter his payment as well as shipping details. An option is required to be given to users to choose to provide new details or select saved information to process order.

7. A mail feature should be enabled which will be triggered on successful order placement to the registered email address indicating the order details and expected shipping date.

8. An option to check profile, Order History which includes the previous purchase details should be given to users.

4. Non-functional requirements

4.1 Performance:
These requirements describe how well the system performs under various circumstances.

• 	Website should work fast and complete the tasks in reasonable time.
• 	The application shall not crash while its being used by the user

4.2 Scalability:

Website should handle the increase in users and data

4.3 Reliability:

Percentage of the time website works to perform certain task without the failure should be high.

4.4 Security Requirements:

These requirements describe the extent to which the system safeguards the sensitive information from intrusions.

• 	The user sensitive data such as password shall be protected via encryption before storing them to the database.

4.5 Availability Requirements: These requirements describe the degree to which system is up and running.

• 	The application shall be available to the users throughout the clock.

4.6 Efficiency Requirements:

These requirements describe the throughput, efficiency and response time of the system.

• 	The user interaction and application response time should be less than two seconds.

• 	The notifications for the user in the application should be processed in one second or less.

5. Functional Requirements

- Users should get the option to select books.

- User can render the list of books and he can filter the list by description, title, etc.

- User can add any number of books in shopping cart and can modify shopping cart (quantity of book/ remove book).

- Admin can update delete modify the book list according to availability.

- User can check order history, previous orders and make changes in user's profile which include saving the credit card information and shipping address.

- User can chat with support team with live chat option and take necessary help from the support.

- User-friendly navigational menus to reach all the activities.

6.Admin Portal

The admin portal of the Reader's Café includes features like adding details for a new book, viewing the list of books added and editing the details for a selected book based on selection in the list and removing the selected book details from the list. Detailed Book List module diagram (figure 1.5) is provided further. The user here is the admin of the Reader Café. Customers do not have access to it. Admin can login to admin-portal with the login details which includes username and password. Once logged in admin has options to Add and modify new Book, View the List of books available or delete the book and logout.
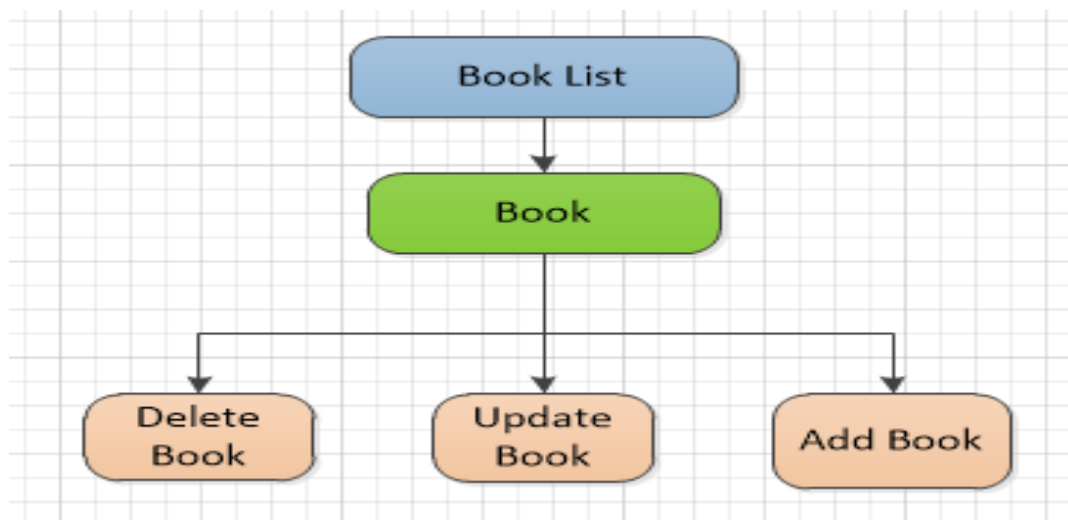
Figure 1.1: Module diagram: admin

6.1Features:

6.1.1 Add book:

Add book involves adding a book with all its details, so that it is visible to the customers and can be purchased in the store front. This feature has mandatory fields which includes:

- Title of Book
- Book Author
- Publisher of Book
- ISBN Number
- Book Description

Other than that, there are other files which are not mandatory, but the information can be added based on the requirement and details of the book provided:

- Publication Date,
- Category,
- Format – Paperback/Hardcover
- Entering the Pages of Book
- Price of Book
- Stock Number
- Shipping Weight of book
- Upload Image of Book

Once all the required details are added, we have an option to Add book or Cancel the same.

6.1.2 View Book:

This feature includes the list of books added by the admin and are available for the users. View Book also has an option to delete a book or viewing the details of each book by clicking on it.

6.1.3 Edit Book

Admin can edit the book in this module or go back to view the list of the books present. Admin can edit all the fields that are provided in the Add Book feature, which includes changing/removal of image as well. Once we update the information of the book, we have option to update description or cancel and navigate back to the same page of View Details of Book.

6.1.4 Delete Book

Delete Book involves selecting and deleting one or more books by admin. Once Delete Book is clicked (Button or delete operation) we get a confirmation window to delete or again go back to the same view book page.

7. Flow Diagram for Reader's Cafe
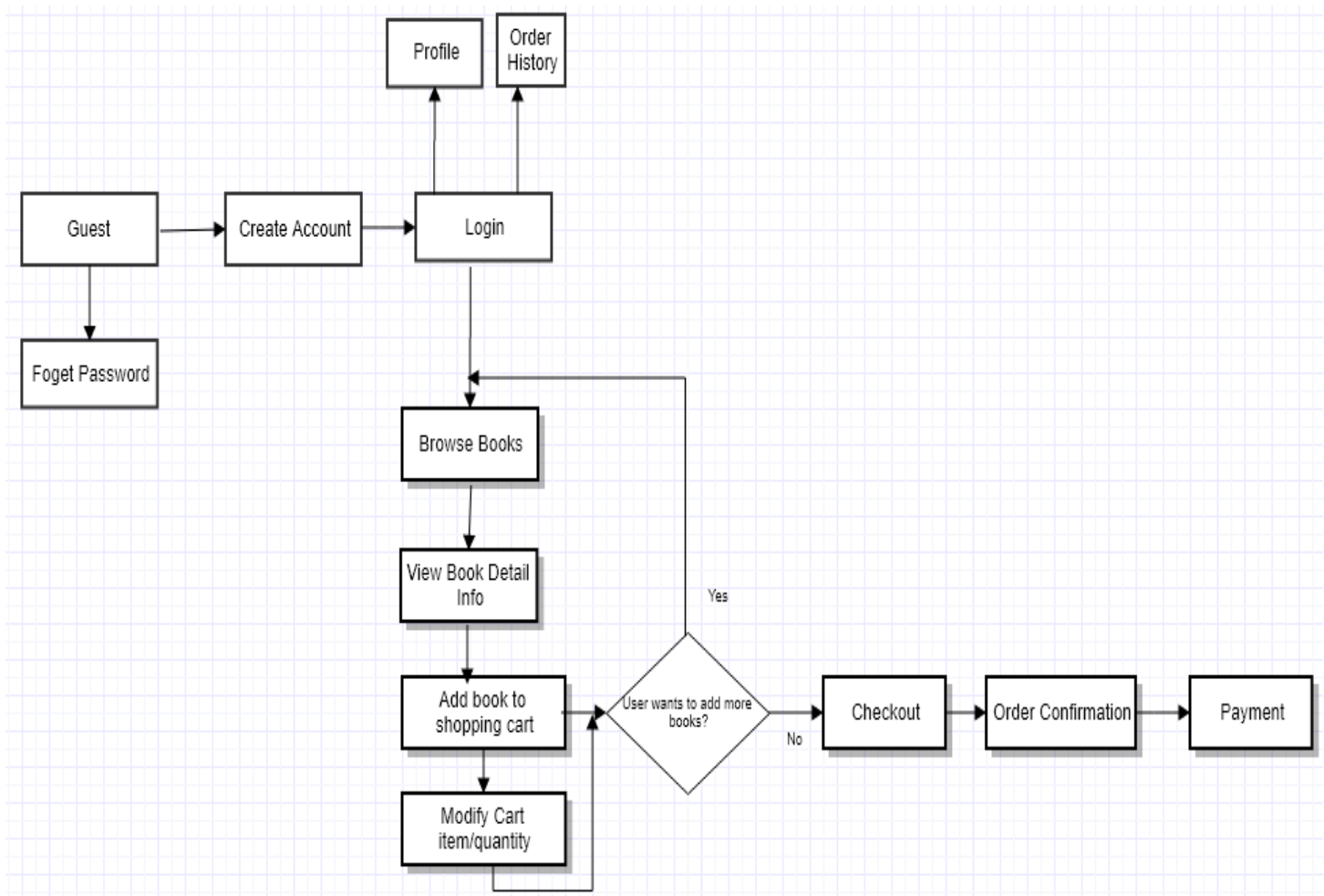
Figure 2: Flow Diagram

- As shown in the flowchart above, user can login to their profile using username and password, if it is a new user (without login credentials) user is entered as guest and can only view the books and not purchase them.

- The below figure further explains how Authentication takes place in our application. We have included Spring security framework and session management to ensure proper session is maintained.

Authentication Sequence
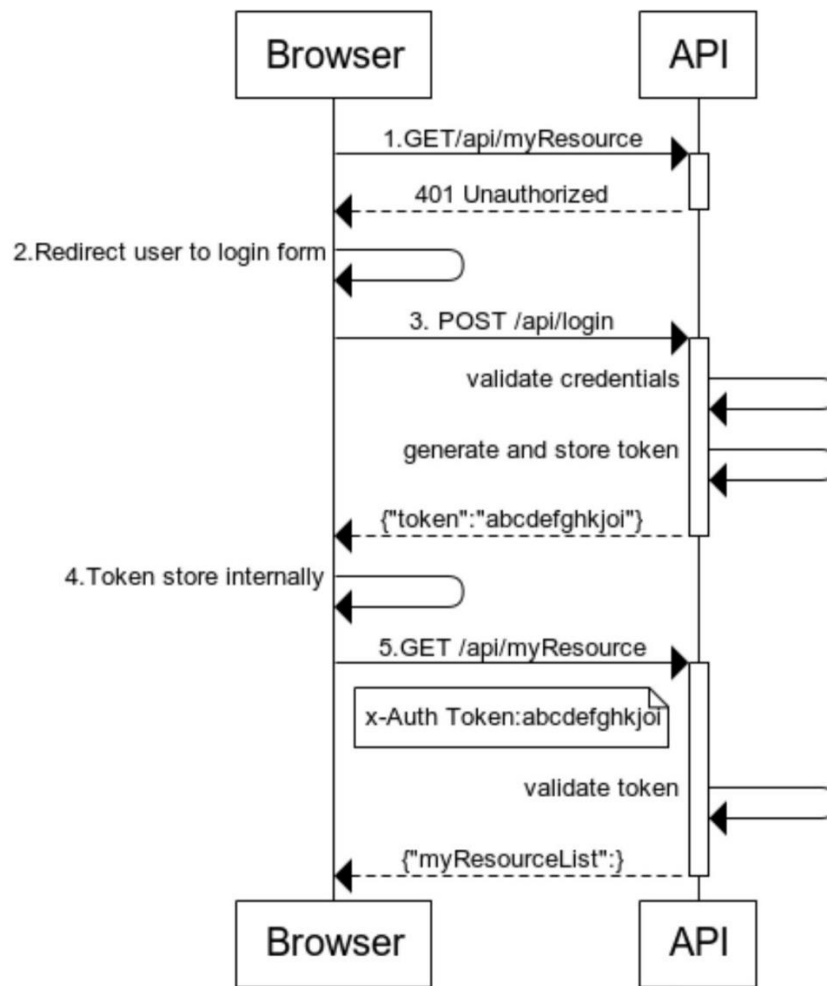
Figure 3: Authentication Sequence Diagram

- Once the user logins as guest he will have an option to create a profile by entering unique username and email address.

- User will receive an automated email with new password for accessing his Reader's Café account. Other than that user has an option to click on forgot password and get new password.

- User can now browse books, view details and information of any required books, add book to shopping cart as well.

- User can also modify his cart by deleting an item or increasing the quantity of selected items. Detailed diagram for shopping cart is provided further. (figure 1.4)

- After this, user gets an option to add more books. If user wants to add, user will be redirected to book list to select more books. Otherwise user will be redirected to checkout page.

- In the checkout page the user is required to enter his payment as well as shipping details. He can either choose to provide new details or select saved information to process his order.

- Upon the successful order placement the user will get a mail to the registered email address indicating the order details and expected shipping date.

- User also has an option to check profile, Order History which includes the previous purchase details.
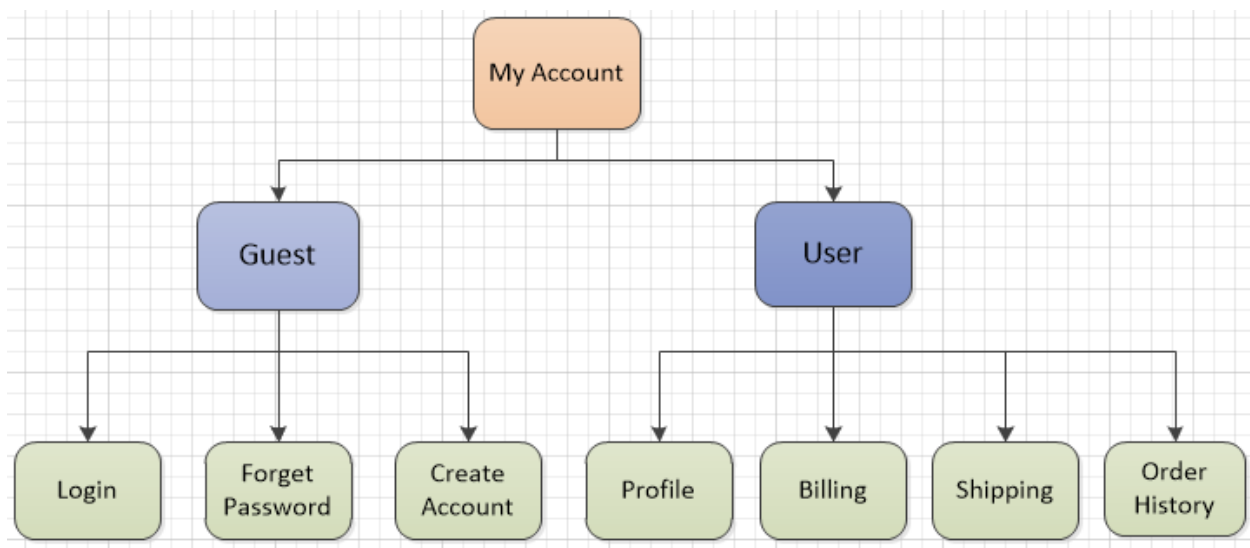
Figure 1.2: Module diagram: User Account

8.Database Diagram for Reader's Café

UserBilling

PK	UserBillingId
	City
	Country
	Name
	State
	Street1
	Street2
	ZipCode
	OrderId
FK1	UserId

UserPayment

PK	UserPaymentId
	CardName
	CardNumber
	Cvc
	DefaultPayment
	ExpiryMonth
	ExpiryYear
	HolderName
	Type
FK1	UserId

UserShipping

PK	UserShippingId
	City
	Country
	Default
	Name
	State
	Street1
	Street2
	ZipCode
FK1	UserId

User

PK	UserId
	Email
	Enabled
	FirstName
	LastName
	Password
	Phone
	UserName

UserRole

PK,FK1	RoleId
PK,FK2	UserId

Role

PK	RoleId
	Name

ShoppingCart

PK	ShoppingCartId
	GrandTotal
FK1	UserId

CartItem

PK	CartItemId
	Quantity
	Subtotal
FK1	ShoppingCartId
FK2	BookId
FK3	OrderId

Book

PK	BookId
	Active
	Author
	Category
	Description
	Format
	InStockNumber
	ISBN
	Language
	ListPrice
	Pages
	SellingPrice
	PublicationDate
	Publisher
	ShippingWeight
	Date

Order

PK	OrderId
	OrderDate
	OrderStatus
	OrderTotal
	ShippingDate
	ShippingMethod

ShippingAddress

PK	ShippingAddressId
	City
	Country
	Name
	State
	Street1
	Street2
	ZipCode
FK1	OrderId

BillingAddress

PK	BillingAddressId
	City
	Country
	Name
	State
	Street1
	Street2
	ZipCode
FK1	OrderId

Payment

PK	PaymentId
	CardNumber
	Cvc
	DefaultPayment
	ExpiryMonth
	ExpiryYear
	HolderName
	Type
FK1	OrderId

Figure 4: Database diagram

9.Bookstore- Shopping Cart Module
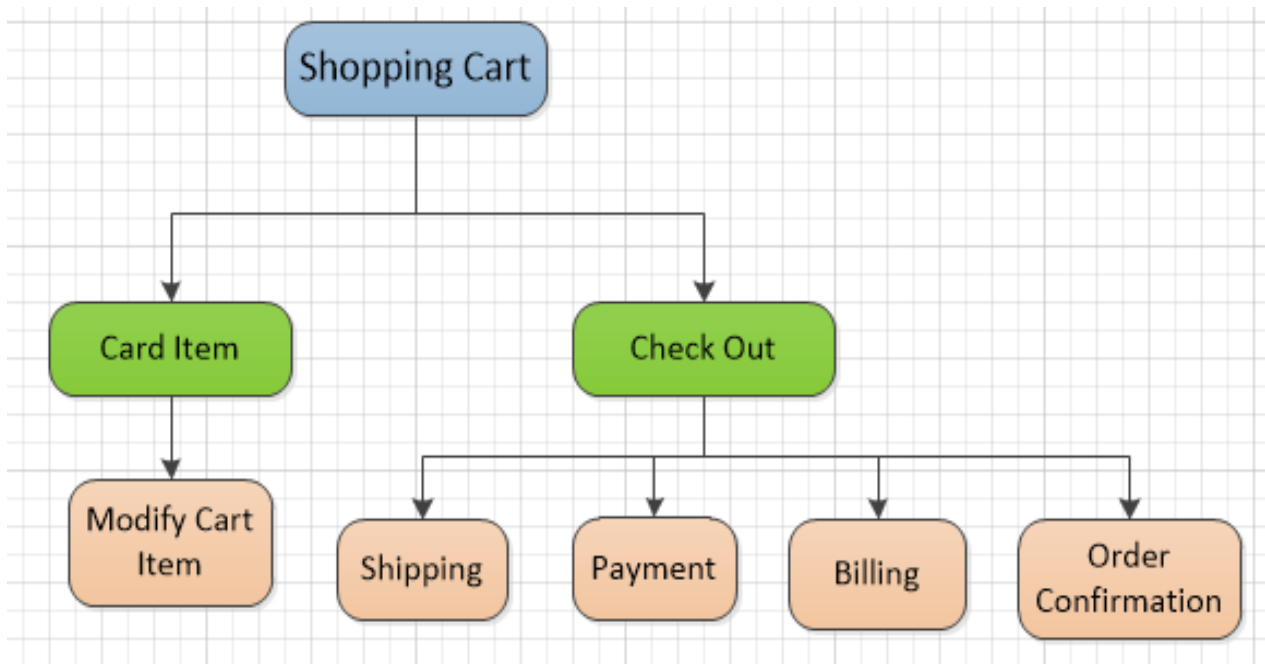
Figure 1.4: Module diagram: Shopping cart

10.Book List Module - Bookstore
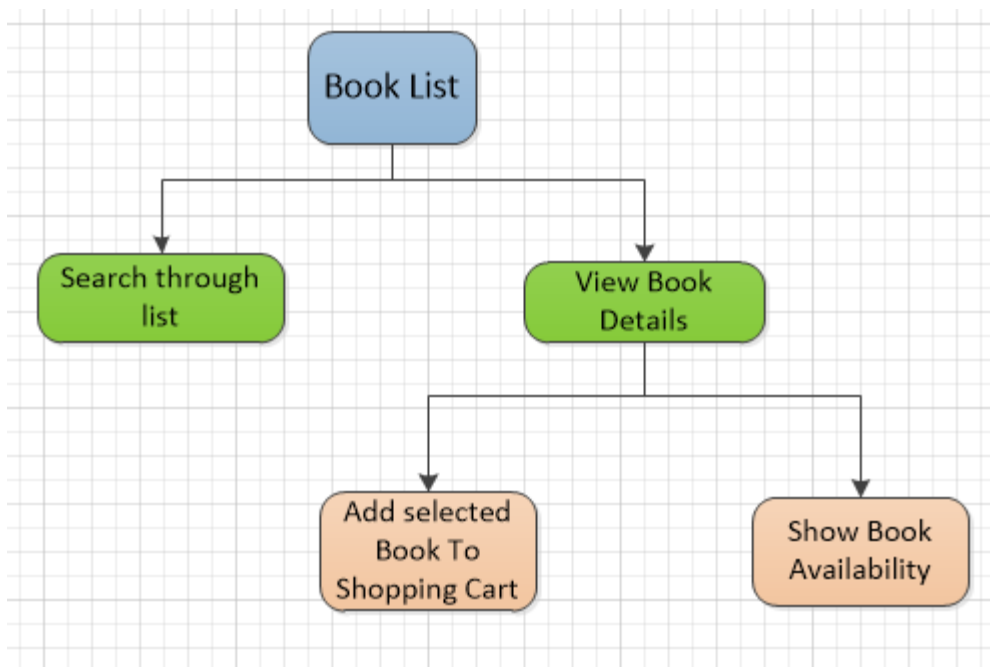
Figure 1.5: Module diagram: Book List

11.System Architecture Diagram

In this project we have used REST-based microservice with Spring Boot. We have displayed important functional modules(services) and databases in following architecture diagram to show mappings between essential components.
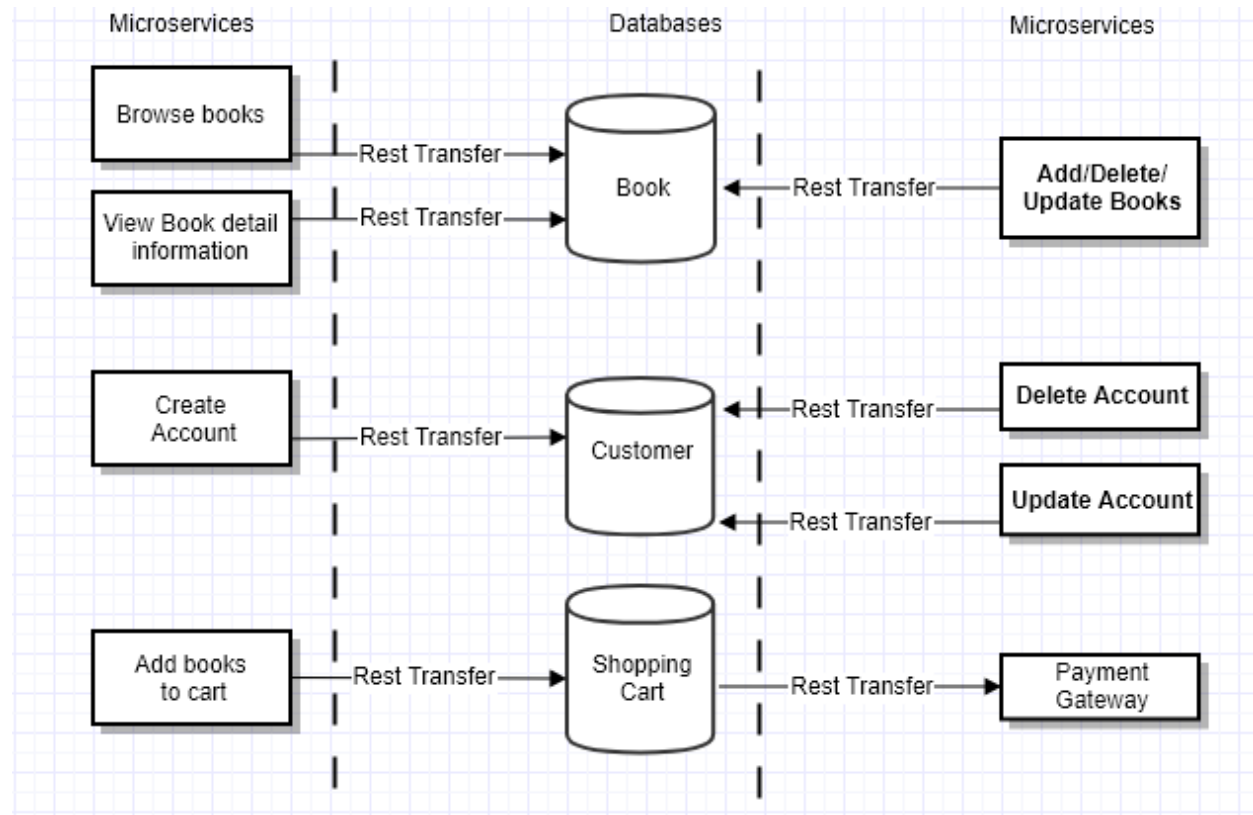
Figure 5: Brief System architecture diagram

12.Prototypes / Screenshots

12.1 Admin Portal

1. Admin can login to the website from admin portal.
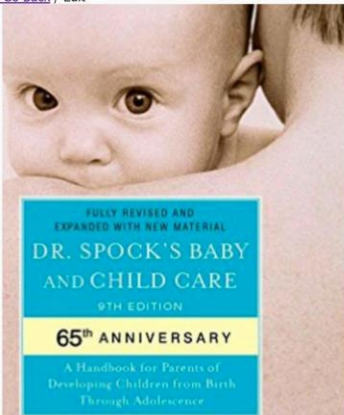
2. He can view the list of books as well as detailed view of each book.

3. Admin can update book information (Let's say quantity)

Update Book Information * is a required field

Title *
Dr. Spock's Baby and Child Care: 9th Edition

Author *   Publisher *
Benjamin Spock M.D.   Pocket Books

PublicationDate *
12/27/2011

Arts & Literature   ▾ Paperback   ▾

Number of Pages   ISBN *
1168   1439189293

List Price   Our Price
12.3   8.71

Shipping Weight
1   ounces English   ▾

Numbers In Stock
5   ↕ 🔘 Active

Description *
Dr. Benjamin Spock is America most trusted name in child care and parenting, and his essential guidebook has topped bestseller lists for over sixty-five years. This fully revised and updated edition of the classic manual provides first time and experienced parents the best information about caring for new babies, toddlers, and adolescents in the twenty-first century.

4. Admin can add new book.

New Book Information * is a required field

Title *

Author *   Publisher *

PublicationDate
mm/dd/yyyy

Management   ▾ Paperback

Number of Pages   ISBN *

List Price   Our Price

Shipping Weight   ounces English

Numbers In Stock   🔘 Active

Description *

Image   [Choose File] No file chosen

[Add Book]   [Cancel]

12.2 User Portal

1.User can view homepage and browse books as guest user
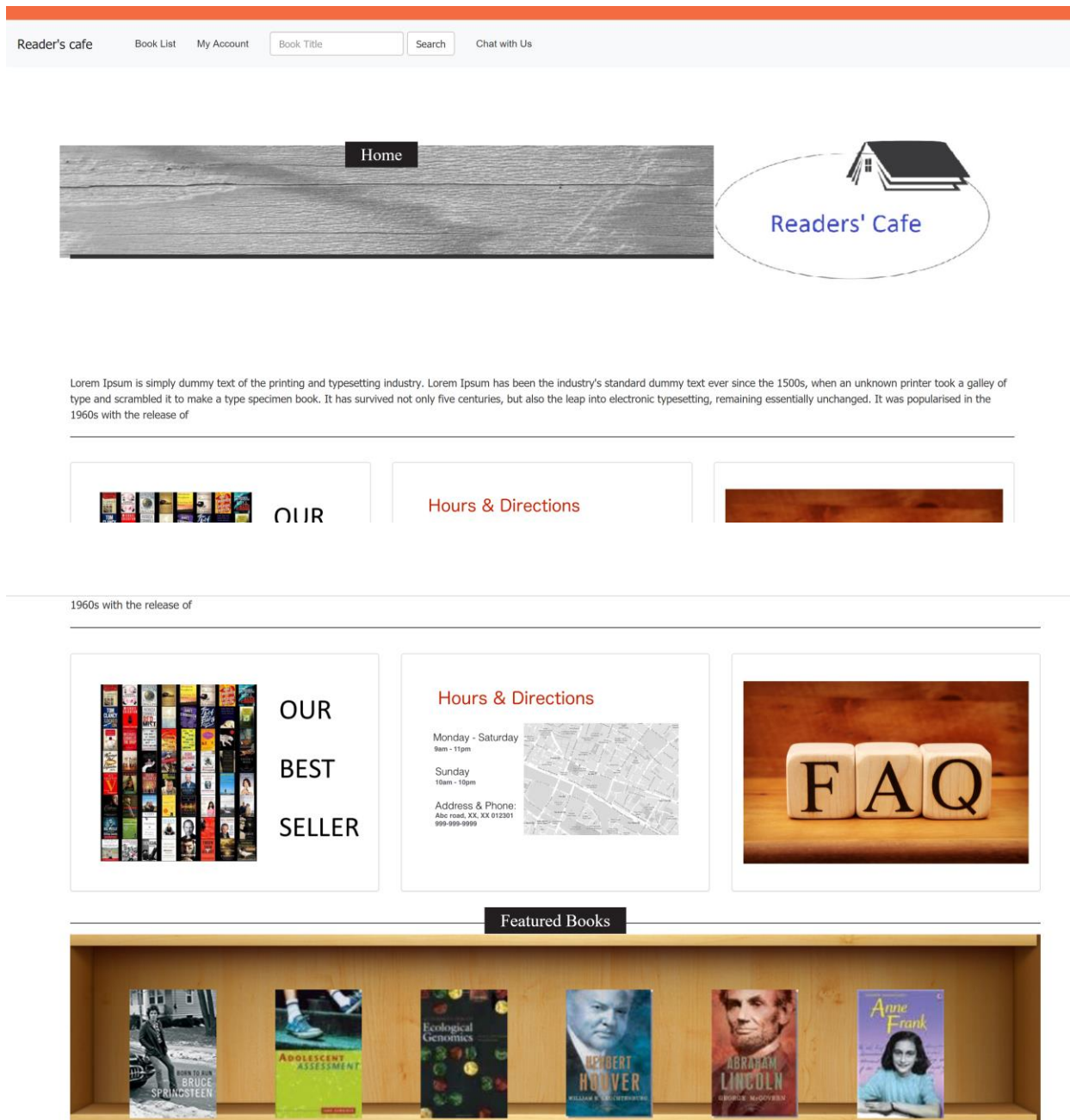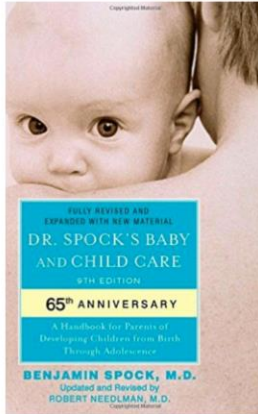
Dr. Spock's Baby and Child Care: 9th Edition

2011-12-27
Benjamin Spock M.D.

PAPERBACK 1168 pages

$8.71 ~~$12.30~~

Dr. Benjamin Spock is America most trusted name in child care and parenting, and his essential guidebook has topped bestseller lists for over sixty-five years. This fully revised and updated edition of the classic manual provides first time and experienced parents the best information about caring for new babies, toddlers, and adolescents in the twenty-first century.
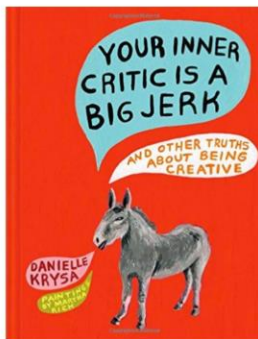
Your Inner Critic Is a Big Jerk: And Other Truths About Being Creative

2016-10-11
Danielle Krysa

HARDCOVER 136 pages

$12.55 ~~$16.95~~

awsome book

Book Info

Back to book list
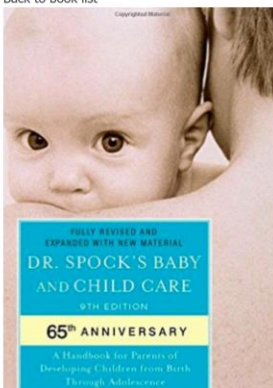
Dr. Spock's Baby and Child Care: 9th Edition

Author: Benjamin Spock M.D.

Publisher: Pocket Books

Publication Date: 2011-12-27

Language: english

Category: Arts & Literature

paperback: 1168 pages

ISBN: 1439189293

Shipping Weight: 1 ounces

Our Price: $ 8.71   In Stock

List Price: ~~$12.30~~   Add to Cart

You Save: $3.59

Qty: 1 ▼

2.For adding books to cart, User needs to create Account. He will get an email after registration with which he can login further to the website

Reader's cafe   Book List   My Account | Book Title | | Search | Chat with Us

Enter Your details here

Login   New Account   Forget Password

An email has been sent to the email address you just registered. Please validate your email adderss and update your password info.

Username *

| shsriniv@syr.edu |

Enter your username

Email Address *

| shsriniv@syr.edu |

A valid e-mail address. All e-mails from the system will be sent to this address.

| Create new account |

← Reply   ← Reply all   → Forward   🗁 Archive   🗑 Delete   ⚑ Set flag   •••

Reader's Cafe - New User

O   orange.syracuse123@gmail.com <orange.syracuse123@gmail.com>
     1:27 AM

To: Sharath Babu Srinivas

Please use the following credentials to log in and edit your personal information including your own password.
Username:shsriniv@syr.edu
Password:6WQ1K9SVSW6USEKBDM

3.User can add his address, payment information.

4. He can select default payment method and address or can add new one.

5.User can add the books to shopping cart and then check out.

6.User can add new payment method, shipping address or select saved ones.

7.After placing order, user will get confirmation message on screen as well as email about order details.

Edit	Orders	Payment	Shipping

Order Date	Order Number	Total	Status
1525584941000	3	8.71	created

Order Detail for purchase #3

Billing Details

Sharath Babu
Srinivas
Columbus Avenue
Syracuse
NY
13210

Payment Information

Sharath Babu
Srinivas
Visa
12345678910
Exp Date: 2/22

Shipping Address

Sharath Babu
Srinivas
Columbus Avenue' '
Syracuse
NY
13210

Order summary

Item Name	Item Price	Item Quantity		Total
		Subtotal		8.71
		Tax	0.5226000000000001	

— ▢ ✕

← Reply   ⇐ Reply all   → Forward   ⊟ Archive   🗑 Delete   ⌶ Set flag   • • •

Order Confirmation - 3

O   **orange.syracuse123@gmail.com** <orange.syracuse123@gmail.com>   ↗
1:35 AM

To: Sharath Babu Srinivas

Dear ,

Thank you for shopping from our book store. We hope you had a good time with our service!

Your order number is: **#3**. Here is your order detail:
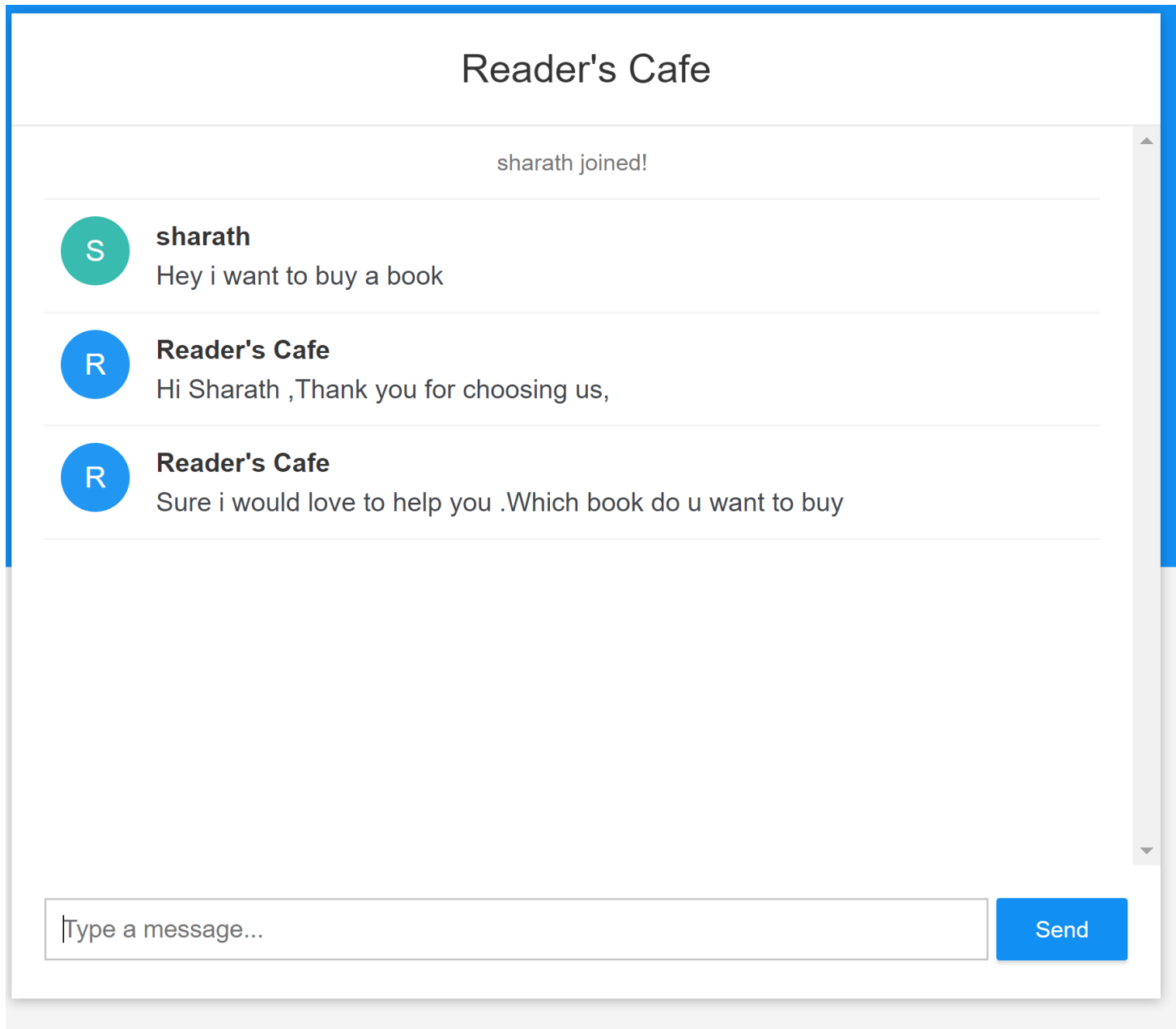
Order Detail for purchase #3

Billing Details	Payment Information	Shipping Address
Sharath Babu Srinivas Columbus Avenue null Syracuse NY 13210	Sharath Babu Srinivas Visa 12345678910 Exp Date: 2/22	Sharath Babu Srinivas Columbus Avenue null Syracuse NY 13210

Order summary

Item Name	Item Price	Item Quantity	Total
Dr. Spock's Baby and Child Care: 9th Edition	8.71	1	8.71
		Subtotal	8.71
		Tax	.52
		Total	9.23

Best,

8. User can communicate with representative through live chat.

13.References:

1. https://jaxenter.com/spring-boot-tutorial-rest-services-and-microservices-135148.html
2. https://spring.io/blog/2015/07/14/microservices-with-spring
3. https://angularjs.org/
4. https://material.angular.io/
5. https://getbootstrap.com/