# THE REPORT OF BOOK MANAGEMENT SYSTEM

Course: PRJ321 Java Web Application Development

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### 1. A Team Introduction

### 1.1 Group 5

- Tran Khanh Vy
- Cao Gia Hao
- Hoang Gia Thien Phuc

### 1.2 Contact information

khanhvy@gmail.com (Tran Khanh Vy)
giahao@gmail.com (Cao Gia Hao)
thienphuccoder@amail.com (Hoang Gia Thien Phuc)

### 2. Use Case Study

- Book management system is to construct an online-shopping books web pages to manage books, employees and customers can search and buy books.
- System includes 4 actors: Guest, Customer, Employee And Manager
- Here are some of the features offered in the system:
  - Sign up Account: user can sign up to be a customer of the system
  - Search/View list of Books: user can view list of books and detailed of a book.
  - Login: authentication and authorization is required
  - Manage User's Profile: self-manage profile, can update information and disable account.
  - Manage Book Cart: required user can add book to cart and remove book from cart.
  - Order Book: This system is a "Online Order System", so this function needs to implement to let customer can choose and buy the books they want.
  - Manage Book: This system requires user can add new, update or disable book.
  - Manage Employees: requires user can add new, update or disable employee, view list of employee and search employee by specific conditions.

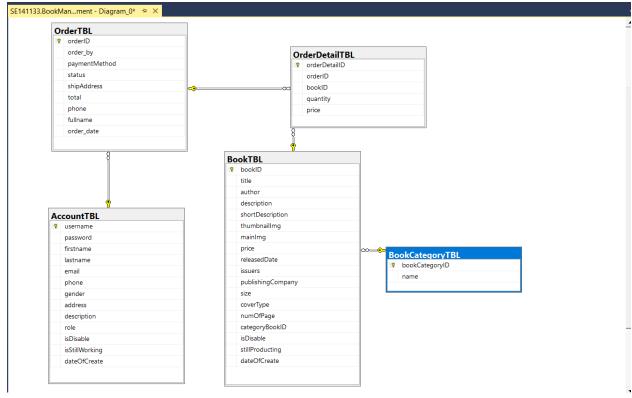
### 3. Database Design

- A book belongs to a specific category of books and each category must contains at least 1 book.
- A customer can have many orders, each customer have an account to access system
- An order can contain 1 or many books
- A book can contain in 1 or many orders
- Account contains role properties to let system know who login (customer, employee or manager)

### 3.1 Logical Design

- CategoryBookTBL(bookCategoryID(PK) varchar(10), name varchar(50)).
- BookTBL(bookID(PK) varchar(10), title varchar(50), author varchar(100), description varchar(5000), shortDescription varchar(100), thumbnailImg varchar(100), mainImg varchar(4000), price decimal(18,2), releasedDate datetime, issuers varchar(100), publishingCompany varchar(100), size varchar(100), coverType varchar(100), numOfPage int, categoryBookID(FK) varchar(10)).
- AccountTBL(username(PK) varchar(10), password varchar(50), firstname varchar(30), lastname varchar(30), email varchar(100), phone varchar(20), gender varchar(20), address varchar(200), description varchar(500), role varchar(20)).
- OrderTBL(orderID(PK) varchar(50), order\_by(PK) varchar(10), paymentMethod varchar(50), status varchar(20), shipAddress varchar(200), total decimal(18,2), phone varchar(20), order\_date datetime).
- OrderDetailTBL(orderDetailID(PK) varchar(50), orderID(FK) varchar(50), bookID(FK) varchar(10), quantity int, price decimal(18,2)).

# 3.2 Physical Design



### 4. System Design

### 4.1 Implementation

- Struts2: Struts2 provides configurable MVC components. It contains Filter Dispatcher act as a main controller, receiving request from client or from another controller, call model(actions) and send response to user. Nowadays, struts2 provides Annotation just need to declare the action above the Action based on ActionSupport class's function.
  - Struts.xml: configure action and class leading to it.

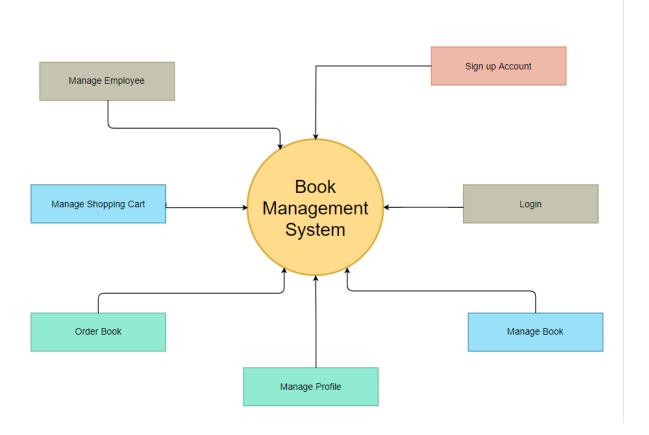
```
K!DOCTYPE struts PUBLIC
  "-//Apache Software Foundation//DTD Struts Configuration 2.0//EN"
  "http://struts.apache.org/dtds/struts-2.0.dtd">
∃ <struts>
      <!-- Configuration for the default package. -->
      <package name="default" extends="struts-default" namespace="/">
          <action name="" class="action.LoadAction">
              <result name="guest">/guest/guestHomePage.jsp</result>
              <result name="customerTag">/user/userHomePage.jsp</result>
              <result name="employeeTag">/employee/employeeHomePage.jsp</result>
              <result name="managerTag">/manager/managerHomePage.jsp</result>
          </action>
          <action name="login" class="action.LoginAction">
              <result name="error">login.jsp</result>
              <result name="success" type="redirectAction">
                  <param name="actionName">${}</param>
              </result>
              <result name="customerCart">/user/userCart.jsp</result>
          </action>
<action name="listBookByCategory" class="action.LoadBookByCategoryAction">
              <result name="guestTag">/guest/guestHomePage.jsp</result>
              <result name="customerTag">/user/userHomePage.jsp</result>
              <result name="employeeTag">/employee/employeeHomePage.jsp</result>
              <result name="managerTag">/manager/managerHomePage.jsp</result>
          </action>
<action name="searchBook" class="action.SearchBookAction">
              <result name="questTag">/quest/questHomePage.jsp</result>
              <result name="customerTag">/user/userHomePage.jsp</result>
              <result name="employeeTag">/employee/employeeHomePage.jsp</result>
              <result name="managerTag">/manager/managerHomePage.jsp</result>
          </action>
          <action name="bookByID" class="action.BookByIDAction">
              <result name="guestTag">/guest/guestBookDetail.jsp</result>
```

 Annotation: declare the action above the Action based on ActionSupport class's function

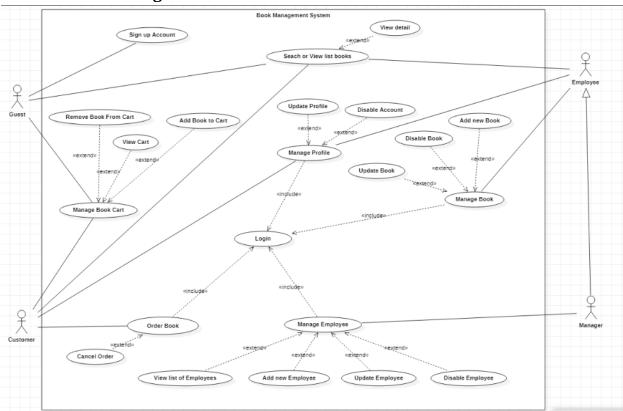
```
@Action(value = "/manager/updateEmployee",
        results = {
           @Result(name = "success", type = "redirectAction", location = "loadEmployee")
            @Result(name = "error", location = "/manager/managerEmployeeFormUpdate.jsp")
            @Result(name = "invalid", location = "/manager/managerEmployeeFormUpdate.jsp")
public String updateEmployee() throws Exception {
   String url = ERROR;
    AccountDAO dao = new AccountDAO();
    boolean valid = true;
    AccountErrorObject errorObj = new AccountErrorObject();
    if (email.isEmpty()) {
       errorObj.setEmailError("Email is not supposed to be empty");
        valid = false;
    if (!email.trim().matches("\\w+@\\w+[.]\\w+([.]\\w+)?")) {
        errorObj.setEmailError("Email must be like abc@abc.abc");
        valid = false;
    if (firstname.isEmpty()) {
       errorObj.setFirstnameError("First name is not supposed to be empty");
        valid = false;
    if (lastname.isEmpty()) {
        errorObj.setLastnameError("Last name is not supposed to be empty");
    if (!phone.isEmpty() && !phone.matches("[0-9]{10}")) {
        errorObj.setPhoneError("Phone must be 10 numbers");
```

- MVC2: Controller uses to receive requests from client or from another controller, call model, send response to view. Model processes data under DB. View is what user interacts.
- Microsoft SQL Server: connect to DB by sqljdbc.jar
- How we implemented:
  - Create a web-based application use struts2 framework
  - Apply template we found free on the Internet
  - Edit some parts to apply struts2 form
  - Connect to DB by mssql-jdbc-8.4.0.jre8.jar
  - Create data transfer object classes: CategoryDTO, BookDTO, AccountDTO, OrderDTO, OrderLineDTO
  - Create data access object classes: CategoryDAO, BookDAO, AccountDAO, OrderDAO
  - Create action classes: contains code to process data
  - Configure action in struts.xml. Some action we use Annotation

# 4.2 Context diagram



# 4.3 Use Case Diagram



# **4.4 Use Case Specification**

### 4.4.1 Sign up Account

Participant Actor	Guest
Entry Condition	<ul><li>Access website bookslife.com</li><li>Choose "Sign up" function</li></ul>
Basic flows	<ol> <li>System will display form to allow guest entry personal information (last name, first name, password, gender, email, phone, etc.)</li> <li>Guest will fill all required information</li> <li>Guest chooses send information to web server</li> <li>System will check information, especially email and phone</li> <li>If email and phone is existing, system will display warming message and do not allow users to create new account</li> <li>Else, system will insert new account into DB and display login page</li> </ol>
Exit Condition	Guest will have an active account

# 4.4.2 Search/View Book

Participant Actor	Guest, Customer, Employee, Manager
Entry Condition	<ul><li>Access website bookslife.com</li><li>Or search books by keyword</li></ul>
Basic flows	<ol> <li>System will display a list of books, which have title, image, price, short description, rating, etc.</li> <li>Users can click to books to see details of books(includes book's title, images, price, description, review, comment of buyers, some similar book suggestions with "Add to Cart" function).</li> </ol>
Exit Condition	List of books

# 4.4.3 Login

Participant Actor	Customer, Employee, Manager
Entry Condition	<ul><li>Access website bookslife.com</li><li>Choose "Sign in" function</li></ul>
Basic flows	<ol> <li>System will display login form to let users input username and password</li> <li>Users entry username and password</li> <li>Users click to "Login" button</li> <li>System will check under DB if username and password are valid or not</li> <li>If find username and password match with a record under DB, then login successfully and display Homepage suit with their role</li> <li>If not, system notifies that inputted username or password is invalid and back to step 1</li> </ol>
Exit Condition	Login Successfully with authorization

# 4.4.4 Update Profile

Participant Actor	Customer, Employee
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Login" function</li> <li>Login Successfully</li> <li>Choose "Update Profile" function</li> </ul>
Basic flows	<ol> <li>System will display customer's information with form to user can input</li> <li>Users change information</li> <li>Users chooses send information to web server</li> <li>System will ask users to confirm change by input user's password to confirm         <ol> <li>If confirms successfully, system will update information of user into                 DB and notify that "Update successfully".</li> <li>If not, system notifies that inputted password is invalid and back to                  step 1, do not allow to update.</li> </ol> </li> </ol>
Exit Condition	An updated profile

### 4.4.5 Disable Account

Participant Actor	Customer
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login Successfully</li> <li>Choose "Disable Profile" function</li> </ul>
Basic flows	<ol> <li>System will display user's information with form to user can input</li> <li>User choose "Disable Account",</li> <li>System will warm user that this action can't be rollback and if want to reactive, user need to confirm email again.</li> <li>System will ask users to confirm change by input user's email and password to confirm         <ul> <li>4.1 If confirms successfully, system will disable account, then logout and return to homepage.</li> <li>4.2 If not, system notifies that inputted email or password is invalid and back to step 1, do not allow to disable.</li> </ul> </li> </ol>
Exit Condition	An disable account

### 4.4.6 Add book to Cart

Participant Actor	Guest, Customer
Entry Condition	- Access website bookslife.com
Basic flows	<ol> <li>System will display a list of books</li> <li>User chooses the book they want</li> <li>User chooses send information to web server</li> <li>If the product exists in cart, increasing quantity of product up to 1. If not, then its quantity is 1.</li> </ol>
Exit Condition	A shopping cart

### 4.4.7 View Cart

Participant Actor	Guest, Customer
Entry Condition	<ul><li>Access website bookslife.com</li><li>Add book to cart</li></ul>
Basic flows	<ol> <li>User chooses "View Cart" function</li> <li>System will display list of products that user added to cart</li> </ol>
Exit Condition	A shopping cart

### 4.4.8 Remove Book from Cart

Participant Actor	Guest, Customer
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Need have book(s) in cart.</li> <li>Click "View Cart" Function</li> </ul>
Basic flows	<ol> <li>User chooses a book to remove from cart</li> <li>User chooses send information to web server</li> <li>System will delete book user choose from cart and display cart without deleted book</li> </ol>
Exit Condition	A shopping cart

### 4.4.9 Order Book

Participant Actor	Customer
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>User needs to sign in</li> <li>Login Successfully with Customer role</li> <li>Cart needs to contain 1 or more product</li> <li>User chooses "View Cart" function</li> </ul>
Basic flows	<ol> <li>User chooses send information of cart to web server</li> <li>System will display a form to let user input full name, phone, shipping information</li> <li>User needs to choose payment method: COD, Cash, ATM card, visa card or local card.</li> <li>User chooses send information to web server to confirm order</li> <li>System records new order and insert it into DB. If insert errors, system display error messages</li> </ol>
Exit Condition	New order was made

### 4.4.10 Create new Book

Participant Actor	Employee, Manager
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login successfully with Employee, Manager role</li> <li>Click to "Create new book" function</li> </ul>
Basic flows	<ol> <li>System will display book form to user can input</li> <li>User inputs all required information</li> <li>User chooses send information to web server</li> <li>System will check validation</li> <li>If valid, insert book into DB and display list book with new inserted book.</li> <li>If not, system will notify that action is failed and try again, back to step 1</li> </ol>
Exit Condition	A new book

# 4.4.11 Update Book

Participant Actor	Employee, Manager
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login successfully with Employee, Manager role</li> <li>Click to "Update book" function</li> </ul>
Basic flows	<ol> <li>System will display a book form with information of the book which employee choose.</li> <li>User change information that need to update</li> <li>User choose send information to web server</li> <li>System will check validation</li> </ol>

	<ul><li>2.1 If valid, update book into DB and notify update successfully.</li><li>2.2 If not, system will notify that action is failed and try again, back to step 1</li></ul>
Exit Condition	An updated book

### 4.4.12 Disable Book

Participant Actor	Employee, Manager
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login successfully with Employee, Manager role</li> <li>Click to "Update book" function</li> </ul>
Basic flows	<ol> <li>System will display a book form with information of the book which employee choose.</li> <li>User choose send information to web server</li> <li>System will check the constraint the column "still in production" is true or not. If not, employee can disable the book. If true, system will notify that this book can not disable</li> </ol>
Exit Condition	A disabled book

# 4.4.13 Create new Employee

Participant Actor	Manager
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login Successfully with Manage role</li> <li>Manager chooses "Create new Employee" function</li> </ul>
Basic flows	<ol> <li>System will display employee form to manager can input</li> <li>Manager inputs all required information.</li> <li>Manager chooses send information to web server</li> <li>System will check validation         <ul> <li>4.1 If valid, insert employee into DB and display list employees with new inserted employee</li> <li>4.2 If not, system will notify that action is failed and try again, back to step 1</li> </ul> </li> </ol>
Exit Condition	A new employee

# 4.4.14 Update Employee

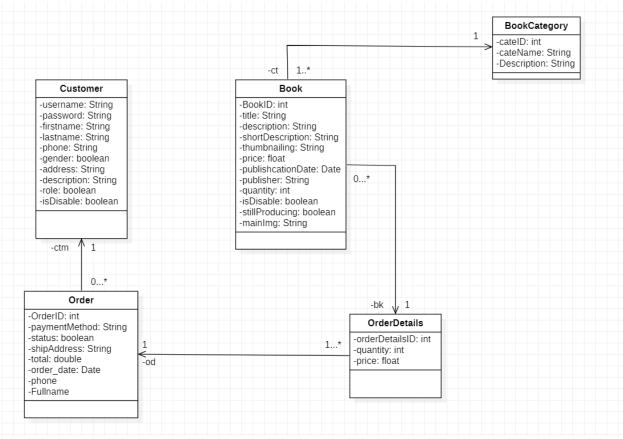
Participant Actor	Manager
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login Successfully with Manage role</li> <li>Manager chooses "Update Employee" function</li> </ul>

Basic flows	<ol> <li>System will display an employee form with information of the employee which manager choose.</li> <li>Manager changes information that need to update</li> <li>Manager chooses send information to web server</li> <li>System will check validation         <ul> <li>4.1 If valid, update into DB and notify update successfully</li> <li>4.2 If not, system will notify that action is failed and try again, back to</li> </ul> </li> </ol>
	step 1
Exit Condition	An updated employee

# 4.4.15 Disable Employee

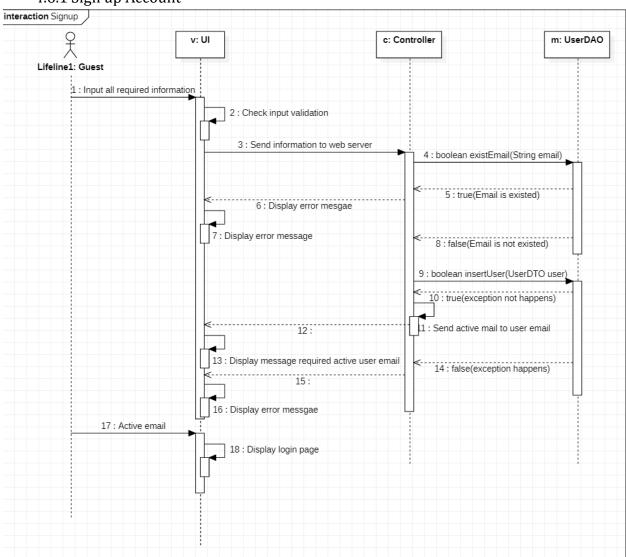
Participant Actor	Manager
Entry Condition	<ul> <li>Access website bookslife.com</li> <li>Choose "Sign in" function</li> <li>Login Successfully with Manage role</li> <li>Manager chooses "Disable Employee" function</li> </ul>
Basic flows	<ol> <li>System will check the constraint the column "still working" is true or not.</li> <li>1.1 If not, manager can disable the employee and system will update under DB.</li> <li>1.2 If true, system will notify that this employee can not disable</li> </ol>
Exit Condition	A disable employee

# 4.5 Class Diagram

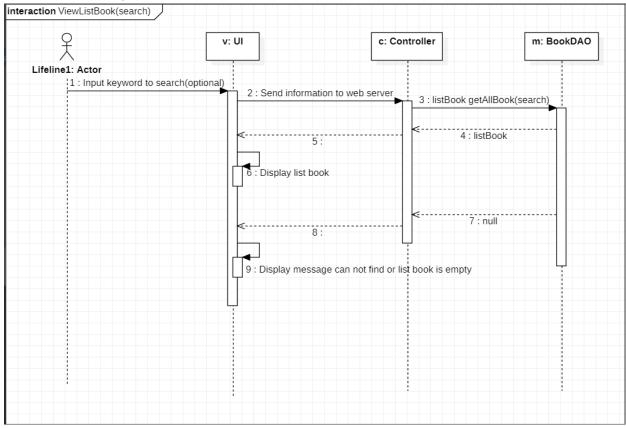


# 4.6 Sequence Diagram

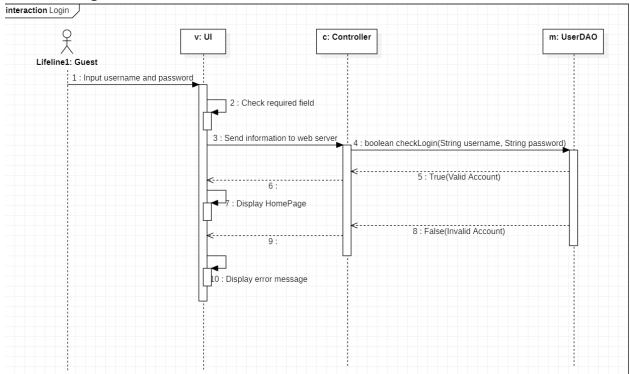
### 4.6.1 Sign up Account



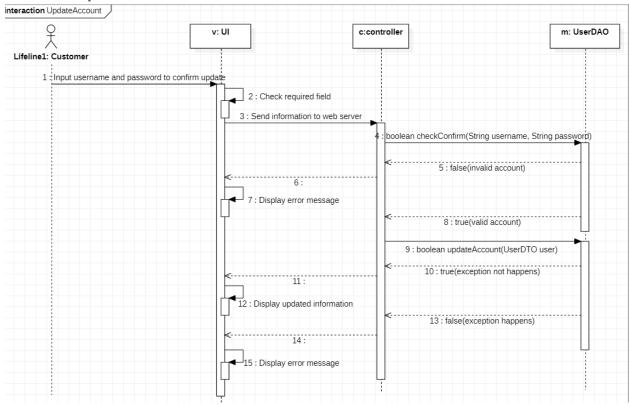
### 4.6.2 Search/View Book



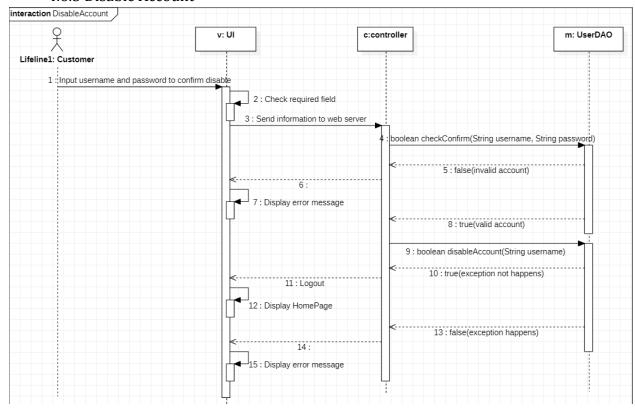
### 4.6.3 Login



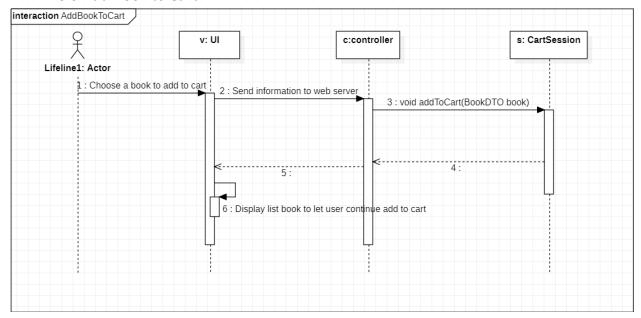
### 4.6.4 Update Profile



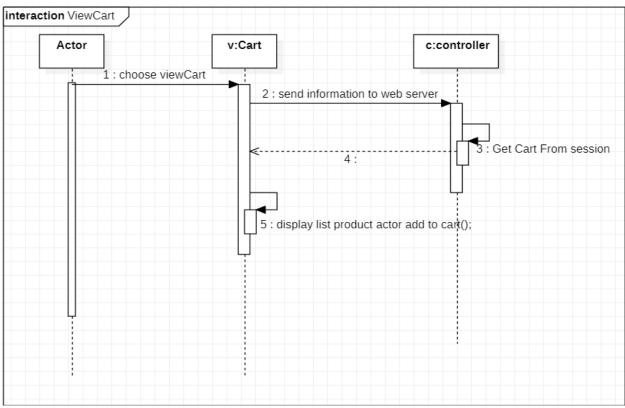
#### 4.6.5 Disable Account



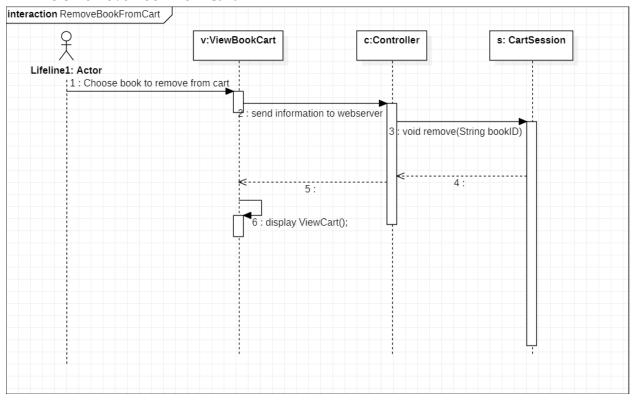
### 4.6.6 Add Book to Cart



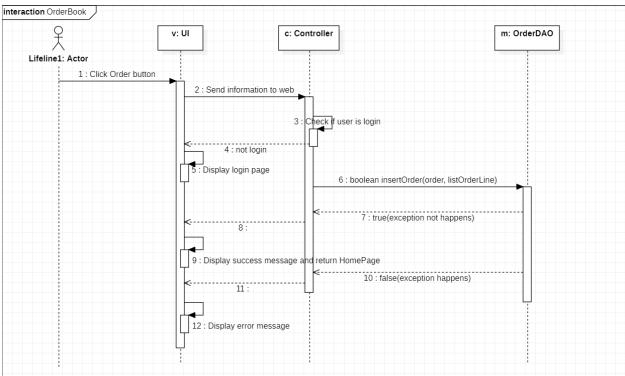
### 4.6.7 View Cart



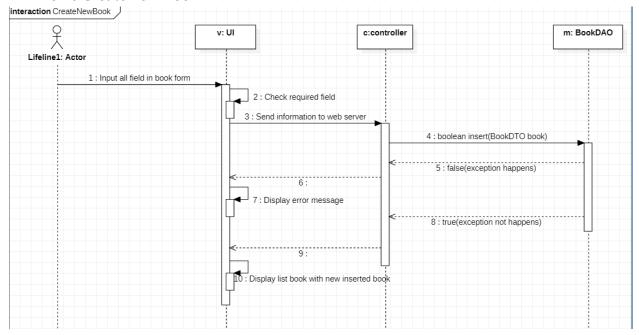
### 4.6.8 Remove Book from Cart



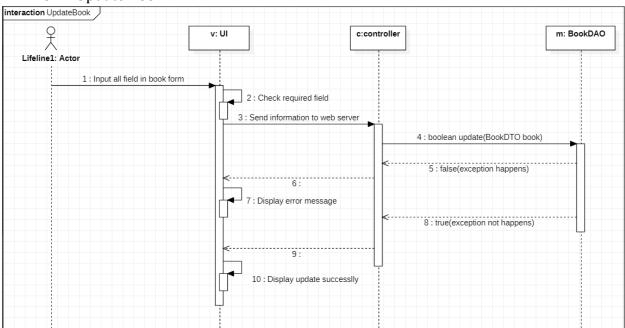
### 4.6.9 Order Book



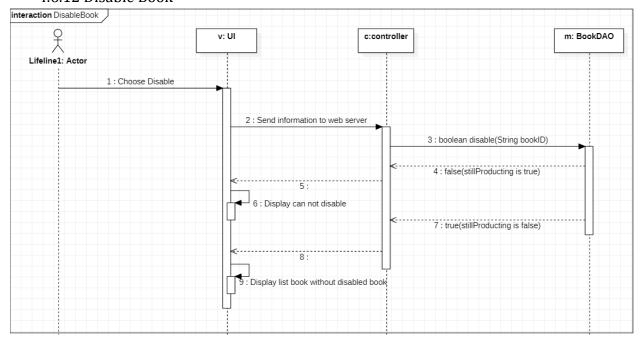
### 4.6.10 Create new Book



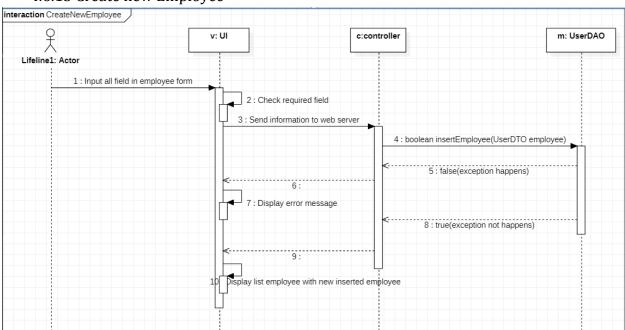
### 4.6.11 Update Book



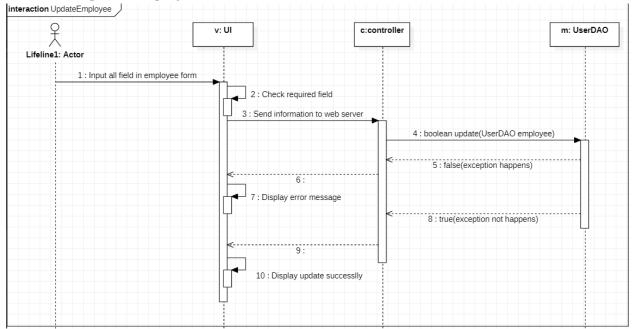
### 4.6.12 Disable Book



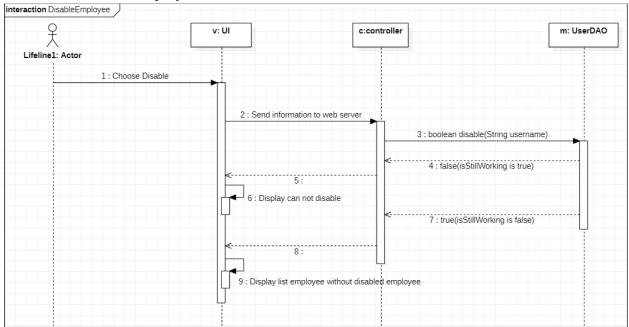
### 4.6.13 Create new Employee



### 4.6.14 Update Employee



### 4.6.15 Disable Employee

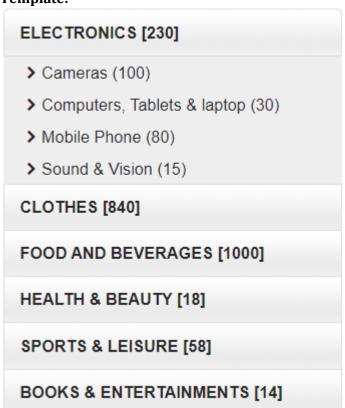


### 4.7. Advanced Technologies

- We use some templates for this. We found it free and suitable for our website project.
  - Green energy website template: Our team use this template for header
    - o Template:



- Bootstrap Shop Free Website template: Website use this template for left nav tabs, display products, shopping cart, etc.
  - o Template:



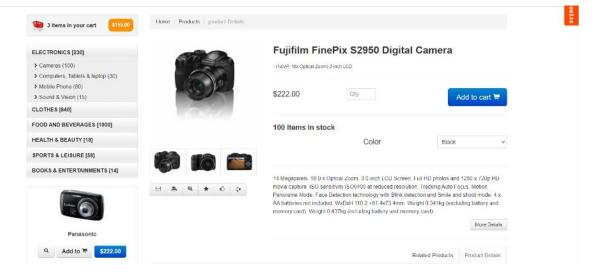


# **Product name**

Lorem Ipsum is simply dummy text.



Product	Description	Quantity/Update	Price	Discount	Tax	Total
	MASSA AST Color: black, Material: metal	1 - + X	\$120.00	\$25.00	\$15.00	\$110.00
Extreme island Eal island ISL SanDisk	MASSA AST Color : black, Material : metal	1 - + X	\$7.00		\$1.00	\$8.00
	MASSA AST Color : black, Material : metal	1 - + X	\$120.00	\$25.00	\$15.00	\$110.00
					Total Price:	\$228.00
				Tot	tal Discount:	\$50.00
Total Tax:					\$31.00	
			-	TOTAL (\$228 - \$	§50 + \$31) =	\$155.00



### Our website:



- > Computers & Technology
- Science & Math
- > Science Fiction & Fantasy
- > Self-help
- > Comics & Graphic Novels
- > Cookbooks, Food & Wine
- > Education & Teaching
- > Engineering & Transportation
- > History
- > Humor & Entertainment
- > Romance



# Clean Code: A Handbook of Agile Software Craftsmanship

Helped bring agile principles from a practitioner's point of view

Add to Cart

38.99\$

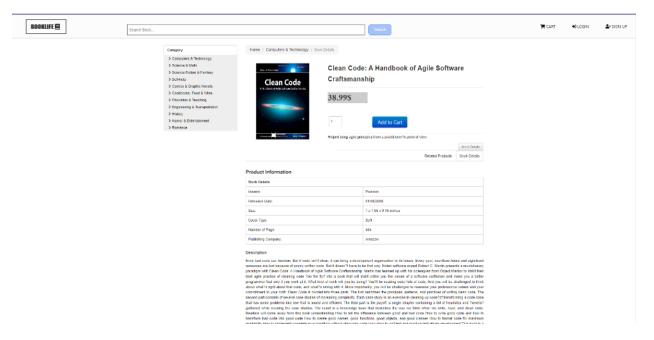
Home / SHOPPING CART

### **SHOPPING CART**

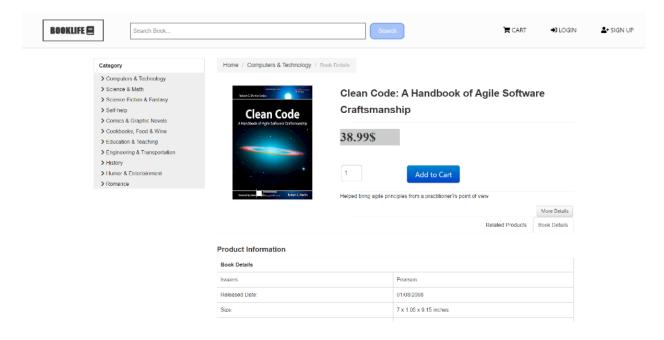
← Continue Shopping

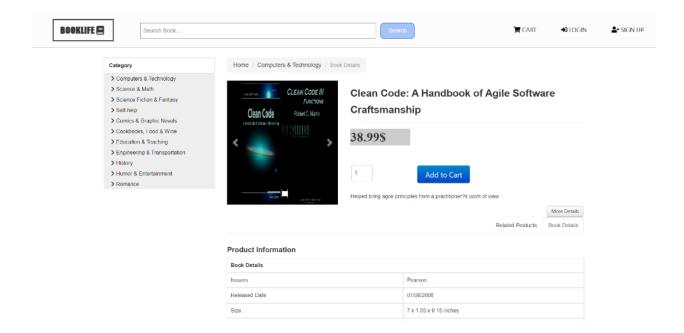
Title	Quantity	Price	Total	
Trumpty Dumpty Wanted a Crown: Verses for a Despotic Age	2	20.66	41.32	Delete
Clean Code: A Handbook of Agile Software Craftsmanship	5	38.99	194.95000000000002	Delete
			Total Price:	236.27

Order



- About the detail of book, we use carousel slide to display list of images of the book (use Bootstrap for this)

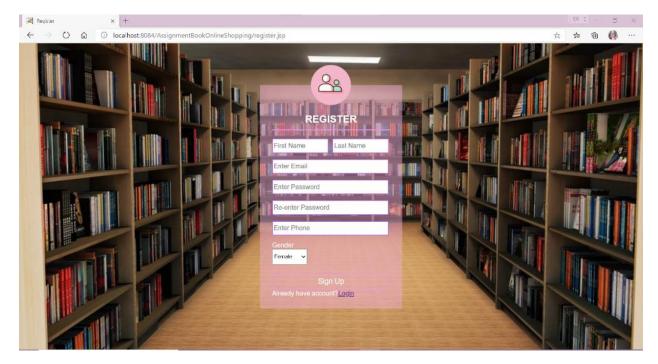




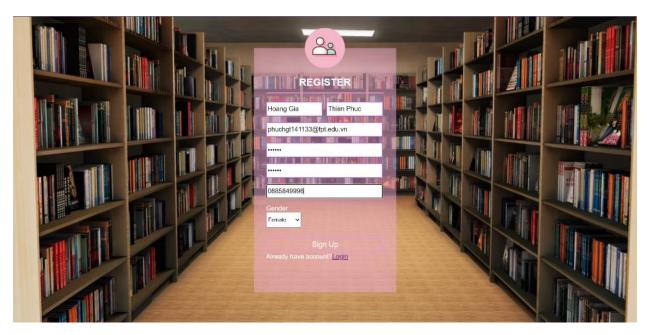
### 5. Screen Shot

### 5.1 Sign up Account

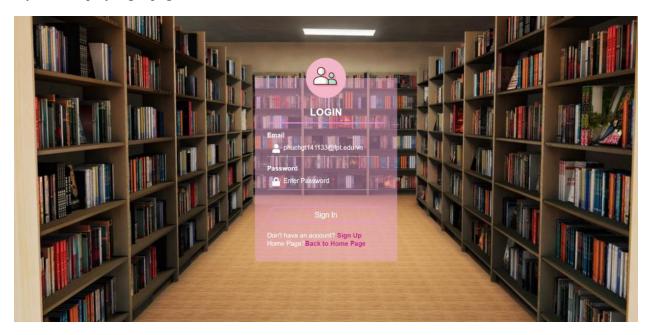
- Sign up form:



- Input all required field with valid data and click Sign Up button

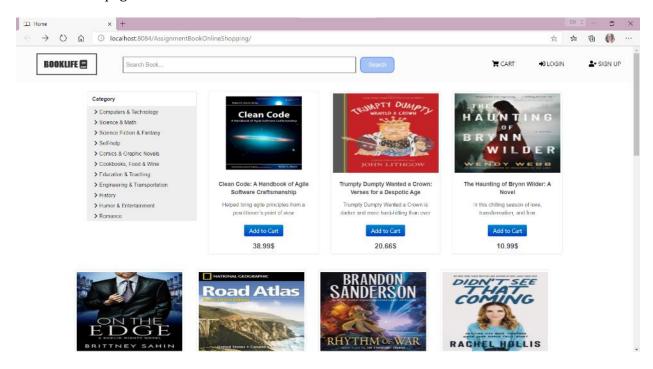


-System display login page

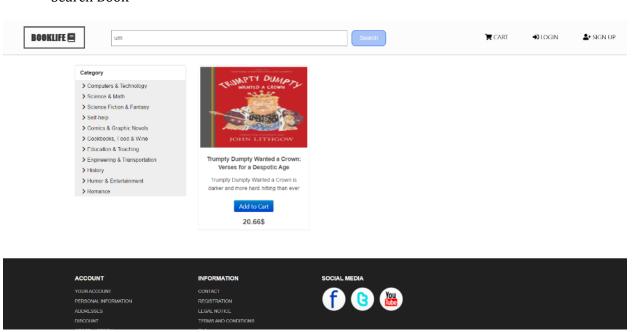


### 5.2 Search/View Book

- Home page



Search Book

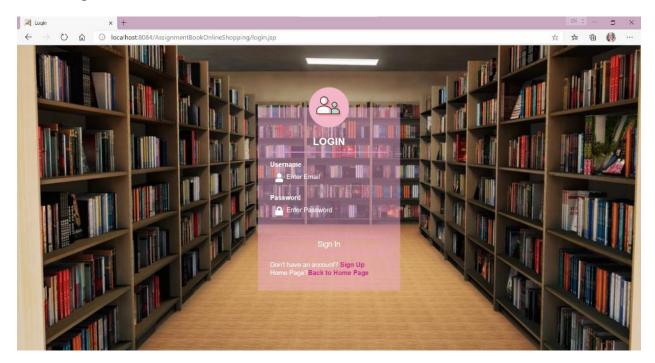


### -View detail of book

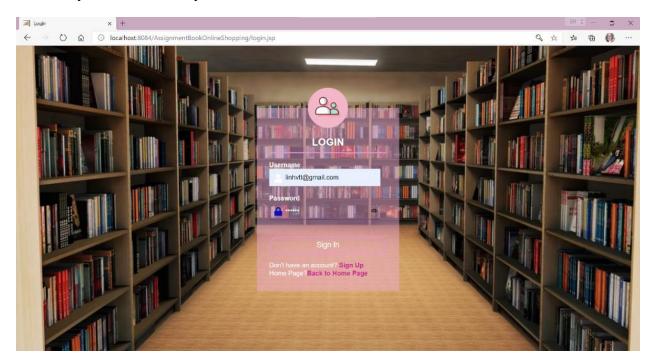


# 5.3 Login

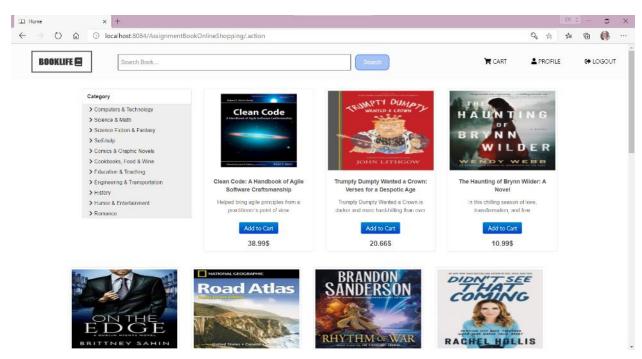
Login form:



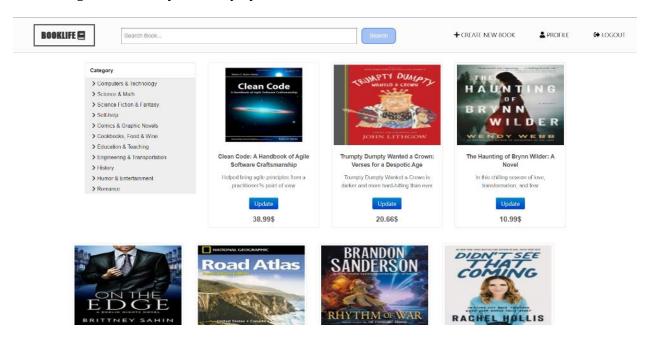
Input username and password:



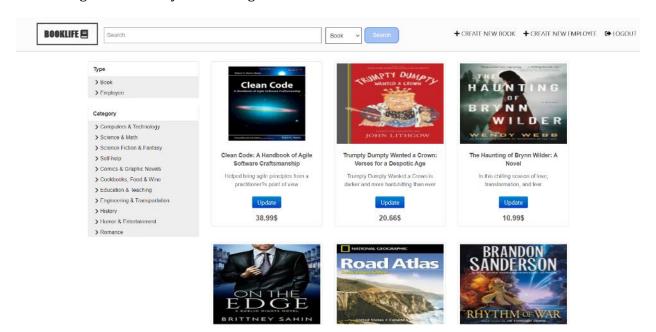
- Login Successfully with customer role:



- Login Successfully with employee role:



- Login Successfully with manager role:

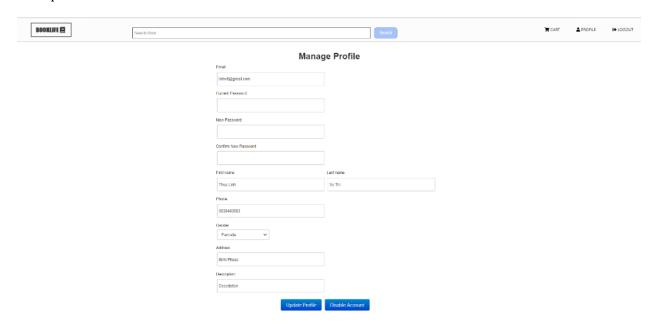


- Login Failed

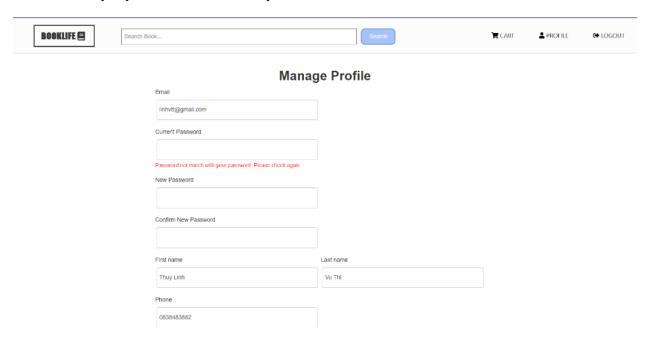


# **5.4 Update Profile**

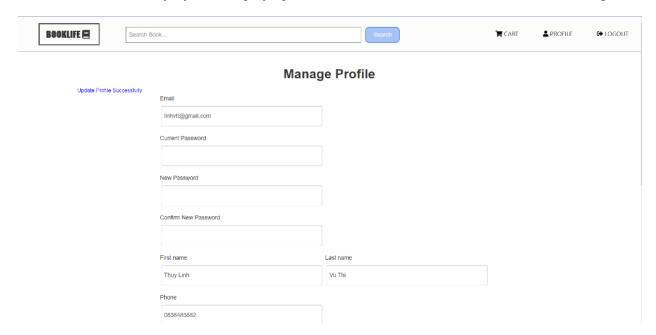
- Display form with customer's information. Customer changes information then chooses Update Profile



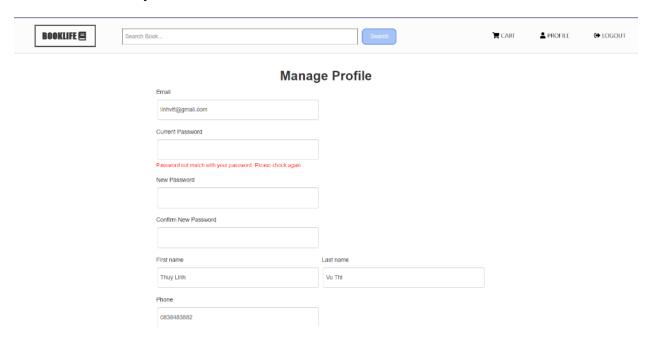
- User must input password to confirm update



- Confirm successfully, system display updated customer's information with success message

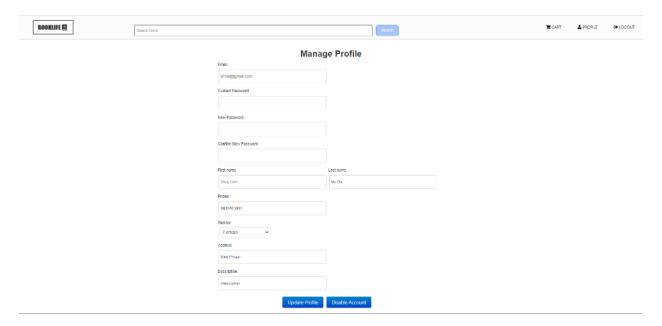


### -Confirm failed, notify error



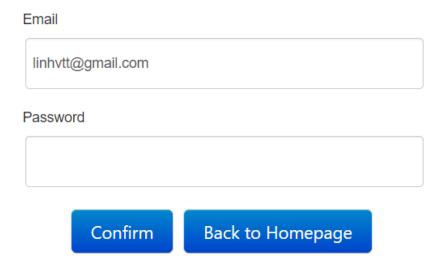
### **5.5 Disable Account**

- Display form with customer's information. Customer chooses Disable Account

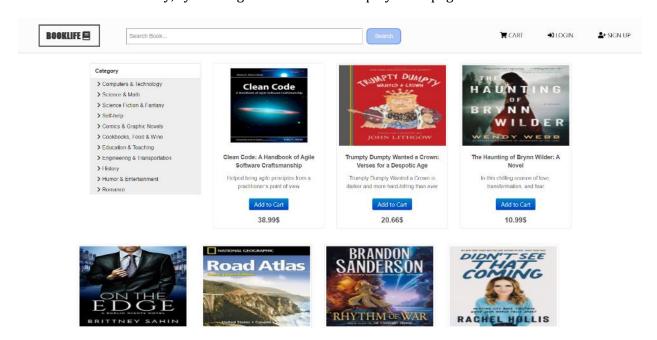


- System displays confirm form

# **Confirm form**



- Confirm successfully, system logout account and display homepage



## -Confirm failed, notify error

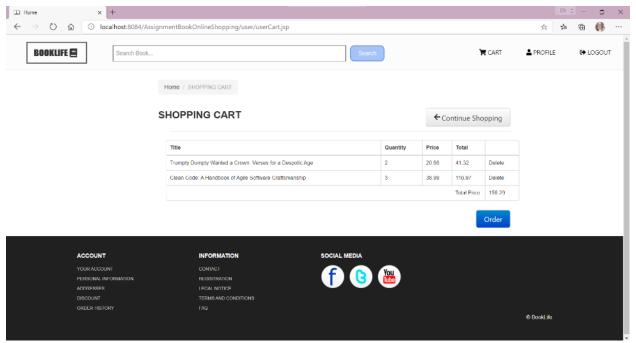
# **Confirm form**

Email			
linhvtt(	@gmail.com		
Passwo	rd		
Must cor	nfirm password to c	an disable account	
	Confirm	Back to Homepage	

#### 5.6 Add Book to Cart

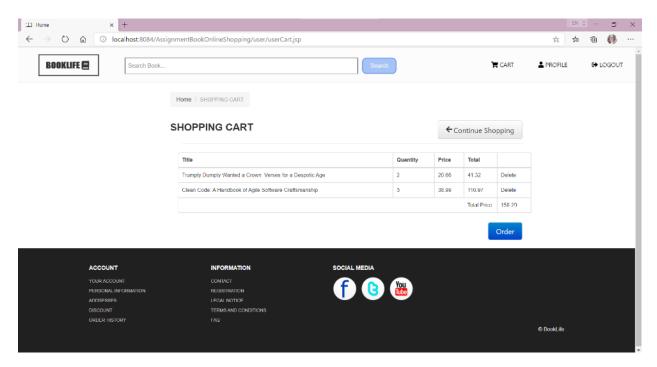


#### 5.7 View Cart

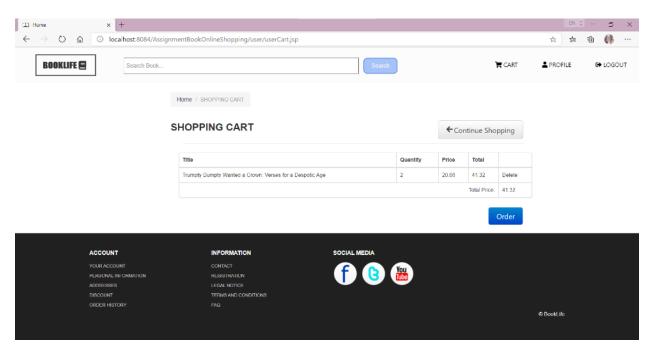


#### 5.8 Remove Book from Cart

Cart before remove book from cart

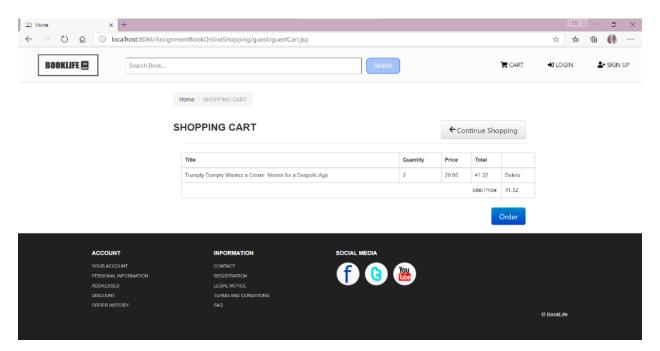


Cart after remove book from cart

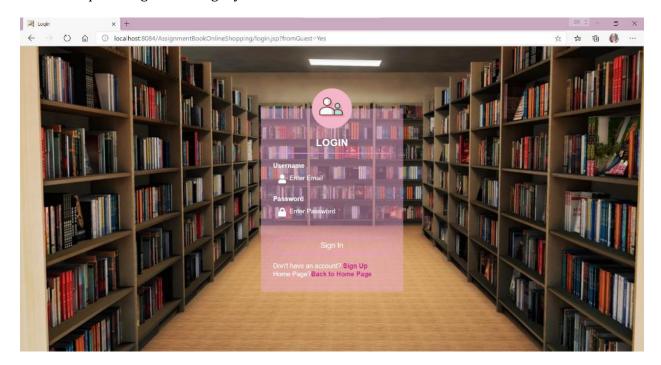


## 5.9 Order Book

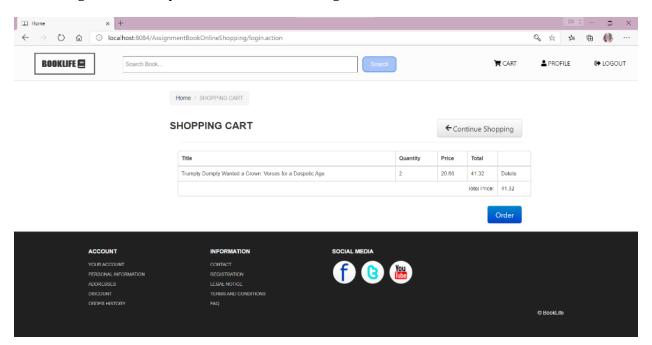
- Click Order



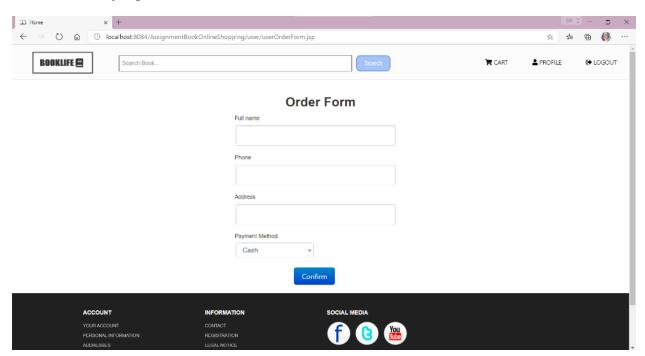
- Required login if not login yet



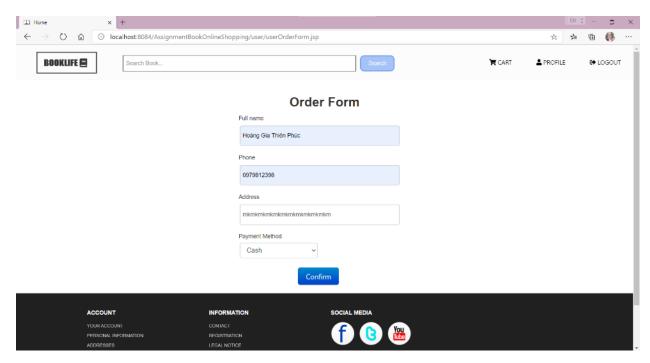
- Login Successfully and Click Order button again



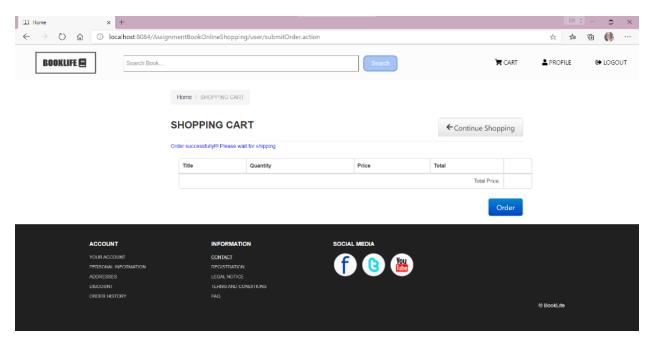
- If already login, after click Order redirect to Order form



- Input shipping information

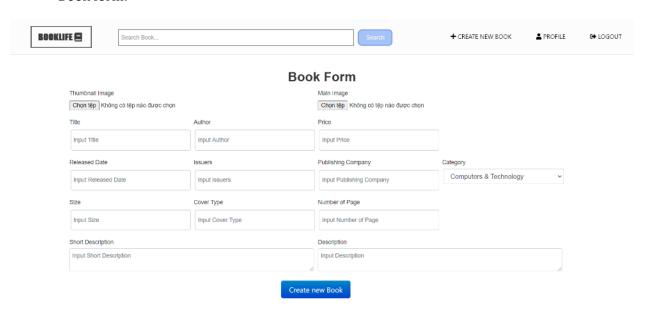


- Order Successfully

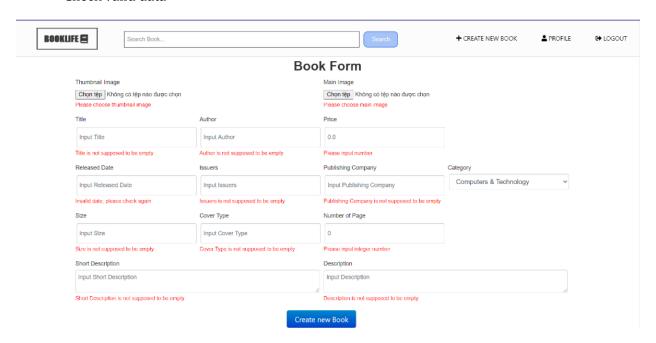


## 5.10 Create new Book

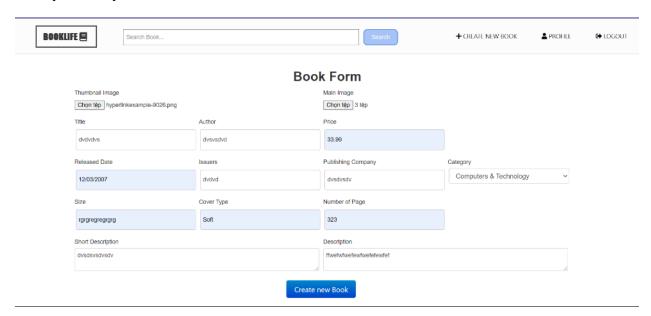
- Book form:



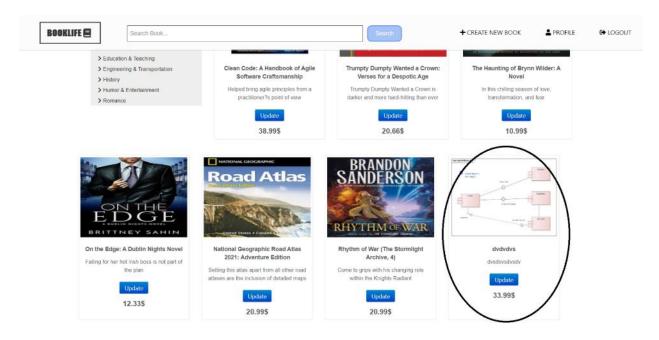
- Check valid data



- Input all required data:

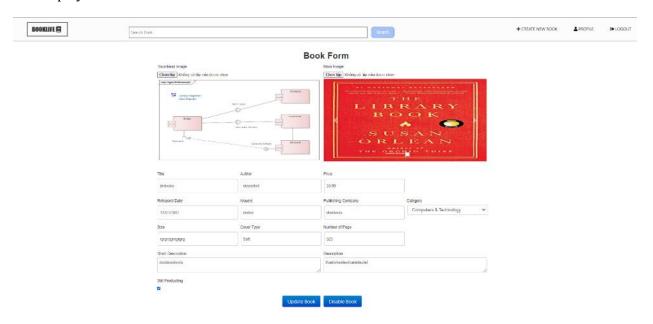


Display list book with new inserted book

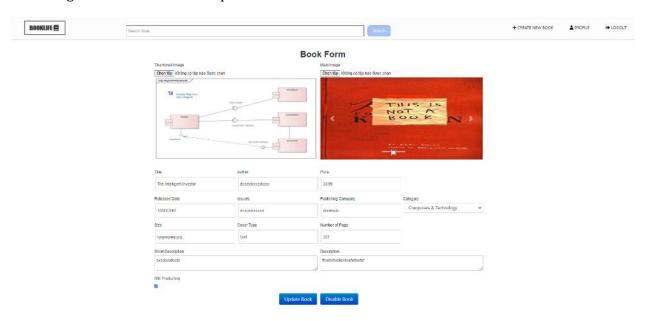


# 5.11 Update Book

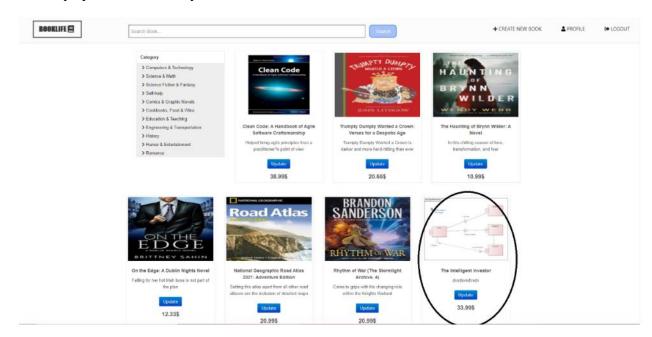
- Display book form with book's information



- Change information need to update

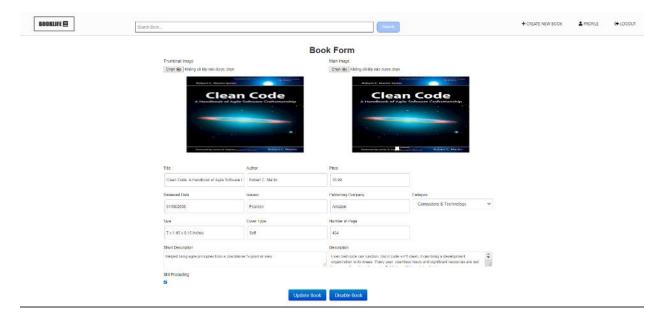


- Display list book with updated book

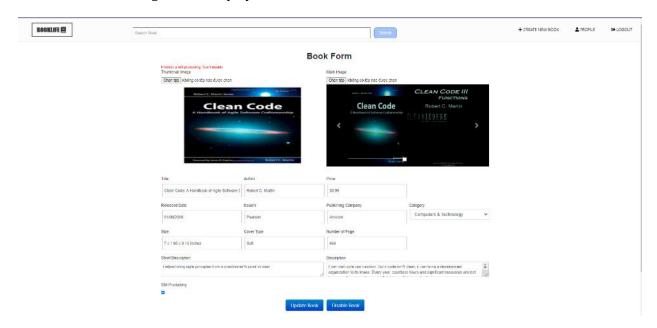


#### 5.12 Disable Book

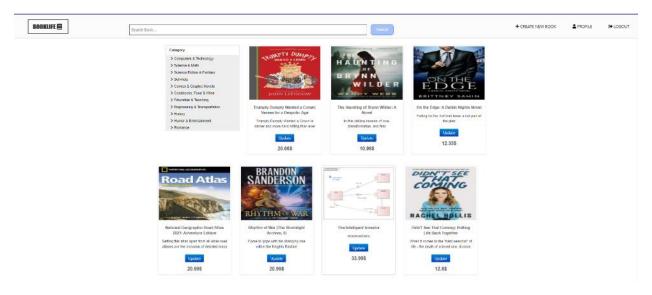
- Display book form with book's information



- If isStillProducting is true, display can not disable

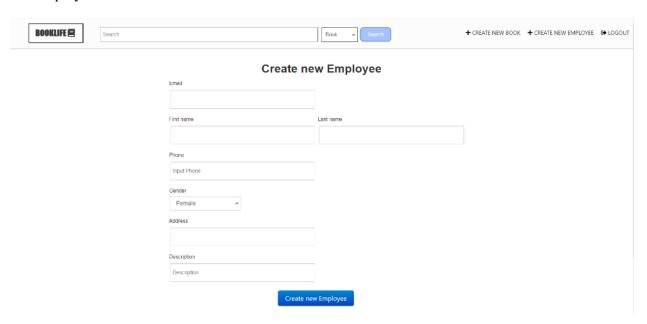


- If isStillProducting is false, disable book and display list book without disabled book

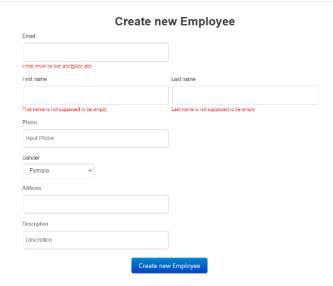


# 5.13 Create new Employee

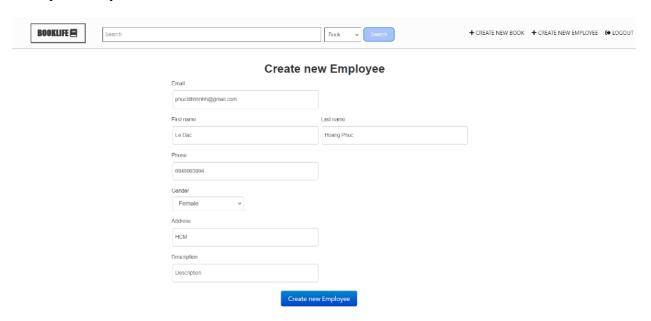
- Employee form



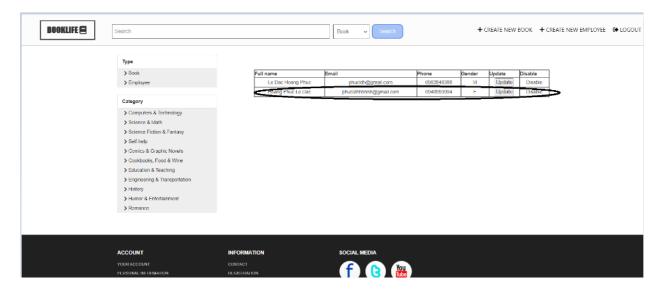
- Check valid data



- Input all required information

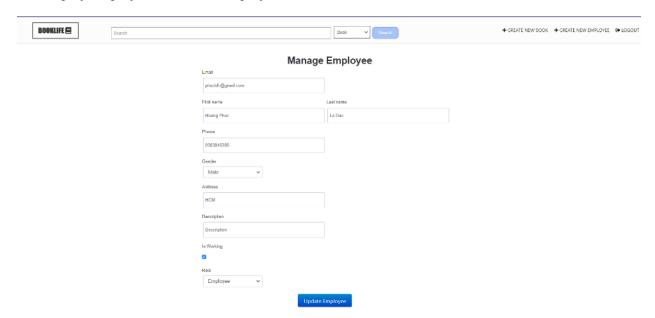


- Display list employee with new inserted employee

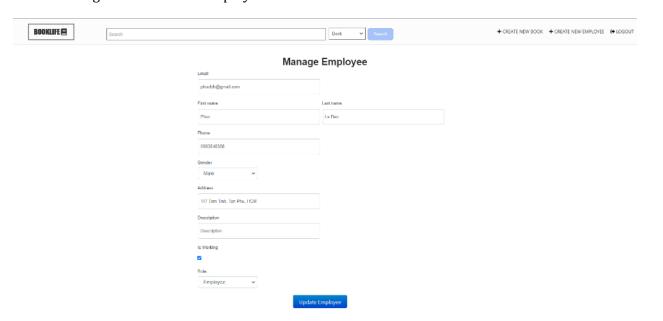


# 5.14 Update Employee

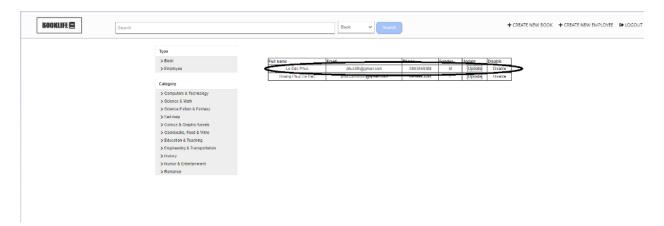
- Display employee form with employee's information



- Change information of employee



- Display employee list with updated employee



## 5.15 Disable Employee

- If isStillWorking is true, display can not disable



- If is StillWorking is false, disable employee and display list employees without disable employee



## 6. Conclusion and Discussion

Pros	Cons	
User's interface looks good and easy to use	Some data must be change auto when user	
	interacts with UI	
All function and page switching are smooth and	Have some hardcodes when notify error or	
reasonable	success	
It closes to reality Book Management System	Sometimes, UI is broken (the footer goes higher)	
It provides a shopping system in accordance	Not display who is login	
with market requirements		
	Do not write log file (who is login, exception,	
	etc.)	

- What out team learned from this assignment:
  - It is not easy to construct a website with manage products and shopping products.

- How to combine template website with struts2 framework form (our template broke many times when we apply struts2 form)
- Develop our logical thinking, how to switch page reasonably and easy for user to
- Understand more about user's experience (the way we switch wrong page can make users uncomfortable and do not know do what is next)
- In the future, if have more time to constructs this system, we will:
  - Display a modal form to let user confirm update or disable account instead of coming to a confirm form page
  - Use ajax to can update information when user interacts with UI
  - When user choose file image, display it to let user confirm that they insert correct images
  - When user update book, they can choose the file they want to update, do not need to update all image files
  - Update UI to display book (the book frames are deviated from the ones above).
  - Display best-seller book.
  - Display profile with image of user and allow them to add their image or edit their image
  - Add view report function for employees and manager
  - Manage quantity of book
  - Add a real-time notification to notify customer about discounts.

#### 7. Contribution

8. Topic	Team Effort	Thien Phuc	Khanh Vy	Gia Hao
Case Study Analysis	100%	40%	25%	35%
Database design	100%	20%	40%	30%
System design	100%	35%	35%	30%
Implementation	100%	50%	20%	30%
Documentation	100%	25%	40%	25%

9. References