# System Requirements Specification

## Index

For

# E-Mall Pro Connect

Version 1.0

# TABLE OF CONTENTS

# E-MALL PRO CONNECT

## System Requirements Specification

**You need to consume APIs exposed by Backend application and implement authentication (if required) in Angular to make application work as FULLSTACK**

# BACKEND-SPRING BOOT RESTFUL APPLICATION

## 1 PROJECT ABSTRACT

"**E-mall Pro Connect**" is a full-stack e-commerce application designed to provide a seamless online shopping experience. It leverages the MEAN stack, with MongoDB as the database, Express.js for the backend, Angular for the frontend, and Node.js as the runtime environment. This platform aims to connect buyers and sellers, allowing users to browse, search for, and purchase a wide range of products.

The system offers a variety of features and functionalities for both customers and sellers, enabling them to manage their transactions efficiently.

**Following is the requirement specifications**:

| | E-Mall ProConnect |
|---|---|
| | |
| Modules | |
| 1 | Admin |
| 2 | Blog |
| 3 | Order |
| 4 | Product |
| 5 | User |

| | |
|---|---|
| Admin Module Functionalities | |
| | |
| 1 | Get list of all users |
| 2 | Get list of all products |
| 3 | Get list of all orders |
| 4 | Get list of all blogs |
| 5 | Get dashboard containing Users, Products, Orders and Blogs count |
| 6 | Get User, Product and Order reports for users count, products count with category and orders count grouped by total order price. |
| 7 | Get sales report by sharing total orders group by their total revenue |
| 8 | Get list of all products |
| 9 | Get insights of all order grouped by each user |

| | |
|---|---|
| Blog Module Functionalities | |
| | |
| 1 | Can create a new blog |
| 2 | Get blog by it’s id |
| 3 | Update the blog by it’s id |
| 4 | Delete blog by it’s id |
| 5 | Get all blogs |
| 6 | Get list of all popular blogs |
| 7 | Add a comment on particular blog |
| 8 | Edit a comment on particular blog |
| 9 | Delete a comment on particular blog |
| 10 | Get list of all categories of blogs |
| 11 | Can like a blog |
| 12 | Get the comments count |
| 13 | Get the blog details by product |

| | |
|---|---|
| Order Module Functionalities | |
| | |
| 1 | Get all orders |
| 2 | Get order by id |
| 3 | Create an order |
| 4 | Update an order it’s id |
| 5 | Delete an order by it’s id |
| 6 | Get order for user |
| 7 | Cancel any order |
| 8 | Get the payment details of any order |
| 9 | Process the payment for any order |
| 10 | Get the analytics of orders with data for totalOrders, average order amount, highest and lowest order amount |
| 11 | Generate the invoice for any order with order id, order date and total amount details |

| | |
|---|---|
| 12 | Track the order shipment by returning status and tracking number |
| 13 | Get the revenue analytics which returns the total, highest and lowest revenue |
| 14 | Check whether the product is ordered or not |

| Product Module Functionalities | |
|---|---|
| | |
| 1 | Create a new product |
| 2 | Get product by id |
| 3 | Update product by id |
| 4 | Delete product by id |
| 5 | Get all products |
| 6 | Get list of all top rated products |
| 7 | Search product by name or description |
| 8 | Apply some discount in cart |
| 9 | Can checkout the cart |
| 10 | Add product to cart |
| 11 | Get all cart items |
| 12 | Update the product in cart |
| 13 | Delete the product in cart |

| User Module Functionalities | |
|---|---|
| | |
| 1 | Create a new user |
| 2 | Get user by id |
| 3 | Update user by id |
| 4 | Delete user by id |
| 5 | Get user by email |
| 6 | Get user activity |
| 7 | Get user favorites |
| 8 | Change the user password |
| 9 | Log the user activity |
| 10 | Login the user |

# 2 Assumptions, Dependencies, Risks / Constraints

## 2.1 Admin Constraints

2.2 When accessing any admin route, it is necessary to check the authentication via token and also the user must be of type admin..

## 2.3 Blog Constraints

2.4 When creating a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.5 When updating a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.6 When deleting a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.7 When add a comment in a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.8 When editing a comment in a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.9 When deleting a comment in a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.10 When liking a blog, if a blog post is not found with a given id, it must return a Blog post not found.

2.11 When getting comments count in a blog, if a blog post is not found with a given id, it must return a Blog post not found.

## 2.12Order Constraints

2.13 When getting an order, if an order is not found with a given id, it must return an Order not found.

2.14 When editing an order, if an order is not found with a given id, it must return an Order not found.

2.15 When deleting an order, if an order is not found with a given id, it must return an Order not found.

2.16 When canceling an order, if an order is not found with a given id, it must return an Order not found.

2.17 When retrieving payment details for an order, if an order is not found with a given id, it must return an Order not found.

2.18 When processing the payment for an order, if an order is not found with a given id, it must return an Order not found.

2.19 When generating an invoice for an order, if an order is not found with a given id, it must return an Order not found.

2.20 When tracking a shipment for an order, if an order is not found with a given id, it must return an Order not found.

## 2.21 Product Constraints

2.22 When getting a product, if a product is not found with a given id, it must return a Product not found.

2.23 When updating a product, if a product is not found with a given id, it must return a Product not found.

2.24 When deleting a product, if a product is not found with a given id, it must return a Product not found.

2.25 When checking out a cart, if a cart is not found with a given id, it must return a Cart not found.

2.26 When applying a discount on a cart, if a cart is not found with a given id, it must return a Cart not found.

## 2.27 User Constraints

- When getting a user, if a user is not found with a given id, it must return a User not found.
- When updating a user, if a user is not found with a given id, it must return a User not found.
- When deleting a user, if a user is not found with a given id, it must return a User not found.
- When getting a user by email, if a user is not found with a given id, it must return a User not found.
- When getting a user activity, if a user is not found with a given id, it must return a User not found.
- When changing user password, if a user is not found with a given id, it must return a User not found.
- When logging an user's activity, if a user is not found with a given id, it must return a User not found.
- When logging, if a user is not found with a given email, it must return a User not found.

# Common Constraints

- All the database operations must be implemented in serviceImpl file only.
- Do not change, add, remove any existing methods in the service file.
- In the service layer, custom methods can be added as per requirements.
- All RestEndpoint methods and Exception Handlers must return data in json format.
- Any type of authentication and authorisation must be added in routes file only.

# 3 Rest endpoints

Rest End-points to be exposed in the routes file and attached with controller method along with method details for the same to be created. Please note, that these all are required to be implemented.

## 3.1 ADMIN CONTROLLER

**Note: All routes must be authenticated and only accessible to admin type user**

| URL Exposed | Purpose |
|---|---|
| 1. /api/admin/users<br>Http Method: GET<br>Parameter: -<br>Return: list of users | Fetches all the users |
| 2. /api/admin/products<br>Http Method: GET<br>Parameter: -<br>Return: list of products | Fetches all the products |

| | |
|---|---|
| 3. /api/admin/orders<br>Http Method: GET<br>Parameter: -<br>Return: list of orders | Fetches all the orders |
| 4. /api/admin/blogs<br>Http Method: GET<br>Parameter: -<br>Return: list of blogs | Fetches all the blogs |

| | |
|---|---|
| 5. /api/admin/dashboard<br>Http Method: GET<br>Parameter: -<br>Return: fetch dashboard | Fetches the dashboard details |
| 6. /api/admin/reports<br>Http Method: GET<br>Parameter: -<br>Return: all reports | Fetches all reports |

| | |
|---|---|
| 7. /api/admin/reports/sales<br>Http Method: GET<br>Parameter: -<br>Return: fetch sales reports | Fetches the sales reports |
| 8. /api/admin/products/inventory<br>Http Method: GET<br>Parameter: -<br>Return: list of names of products | Fetches all the names of products |

| | |
|---|---|
| 9. /api/admin/orders/analytics<br>Http Method: GET<br>Parameter: -<br>Return: fetch analytics of all orders | Fetches the orders analytics |

## 3.2 BLOG CONTROLLER

**Note: Routes which must be authenticated are mentioned with "isSecured" below.**

| URL Exposed | Purpose |
|---|---|
| 1. /api/blogs/create<br>Http Method: POST<br>Parameter: -<br>Return: Blog | Creates a new blog<br>**[isSecured]** |
| 2. /api/blogs/:id<br>Http Method: GET<br>Parameter: id<br>Return: Blog | Fetches a blog by id |
| 3. /api/blogs/:id<br>Http Method: PUT<br>Parameter: id<br>Return: Blog | Updates a blog by id<br>**[isSecured]** |
| 4. /api/blogs/:id<br>Http Method: DELETE<br>Parameter: id<br>Return: Blog | Deletes a blog by id<br>**[isSecured]** |
| 5. /api/blogs/product/:productId<br>Http Method: GET<br>Parameter: productId<br>Return: Blog | Fetches a blog by product id |
| 6. /api/blogs/all<br>Http Method: GET<br>Parameter: -<br>Return: List of blogs | Fetches all blogs |
| 7. /api/blogs/popular<br>Http Method: GET | Fetches the popular blogs |

| | |
|---|---|
| Parameter | - |
| Return | List of blogs |

| 8. /api/blogs/:id/comments | | |
|---|---|---|
| Http Method | POST | Adds a comment on a blog **[isSecured]** |
| Parameter | id | |
| Return | Blog | |

| 9. /api/blogs/:id/comments/:commentId | | |
|---|---|---|
| Http Method | PUT | Updates a particular comment on a blog **[isSecured]** |
| Parameter | id<br>commentId | |
| Return | Blog | |

| 10. /api/blogs/:id/comments/:commentId | | |
|---|---|---|
| Http Method | DELETE | Deletes a particular comment on a blog **[isSecured]** |
| Parameter | id<br>commentId | |
| Return | Blog | |

| 11. /api/blogs/categories | | |
|---|---|---|
| Http Method | GET | Fetches the list of all distinct categories |
| Parameter | - | |
| Return | List of categories | |

| 12. /api/blogs/:id/like | | |
|---|---|---|
| Http Method | PUT | Adds a like on a comment on a blog **[isSecured]** |
| Parameter | id<br>commentId | |
| Return | Blog | |

| 13. /api/blogs/:id/comments/count | | |
|---|---|---|
| Http Method | GET | Counts the number of comments on a blog |
| Parameter | id | |
| Return | Count | |

## Order CONTROLLER

**Note: All routes must be authenticated.**

| URL Exposed | | Purpose |
|---|---|---|
| 1. /api/orders/all | | |
| Http Method | GET | Fetches all the orders |
| Parameter | - | |

| | | |
|---|---|---|
| Return | list of orders | |

| | | |
|---|---|---|
| 2. /api/orders/create | | Creates a new order |
| Http Method | POST | |
| Parameter | - | |
| Return | Order | |

| | | |
|---|---|---|
| 3. /api/orders/:id | | Fetches an order by id |
| Http Method | GET | |
| Parameter | id | |
| Return | Order | |
| 4. /api/orders/:id | | Updates an order by id |
| Http Method | PUT | |
| Parameter | id | |
| Return | Order | |

| | | |
|---|---|---|
| 5. /api/orders/:id | | Deletes an order by id |
| Http Method | DELETE | |
| Parameter | id | |
| Return | Order | |
| 6. /api/orders/user/:userId | | Fetches all order by userId |
| Http Method | GET | |
| Parameter | userId | |
| Return | List of order | |

| | | |
|---|---|---|
| 7. /api/orders/cancel/:id | | Cancels an order by id |
| Http Method | DELETE | |
| Parameter | id | |
| Return | Order | |
| 8. /api/orders/:id/payment | | Fetches the payment details for an order |
| Http Method | GET | |
| Parameter | id | |
| Return | payment details | |

| | | |
|---|---|---|
| 9. /api/orders/:id/pay | | Process the payment for an order |
| Http Method | POST | |
| Parameter | id | |
| Return | Acknowledgement message | |

| | | |
|---|---|---|
| 10. /api/orders/analytics | | |
| Http Method | GET | |

| | | |
|---|---|---|
| Parameter | - | Fetches the analysis of order and return an object with totalOrders, average order amount, highest order amount and lowest order amount |
| Return | Analytics object | |

| 11. /api/orders/:id/invoice | | |
|---|---|---|
| Http Method | GET | Creates an invoice object with details like orderid, order date and total amount. |
| Parameter | id | |
| Return | Invoice object | |

| 12. /api/orders/:id/shipment | | |
|---|---|---|
| Http Method | GET | Checks the shipping status of any order |
| Parameter | id | |
| Return | Shipment object | |

| 13. /api/orders/revenue | | |
|---|---|---|
| Http Method | GET | Analysis the revenue on all orders by returning an object with data for total revenue, highest revenue, lowest revenue |
| Parameter | - | |
| Return | Revenue object | |

| 14. /api/orders/ordered/:userId/:productId | | |
|---|---|---|
| Http Method | GET | Checks whether user has ordered some product or not |
| Parameter | userId<br>productId | |
| Return | boolean | |

## PRODUCT CONTROLLER

**Note: Routes which must be authenticated are mentioned with "isSecured" below and wherever admin user is required will be mentioned as "isAdmin".**

| URL Exposed | | Purpose |
|---|---|---|
| 1. /api/products/all | | Fetches all products |
| Http Method | GET | |
| Parameter | - | |
| Return | List of products | |
| 2. /api/products/create | | Creates a new product **[isSecured] [isAdmin]** |
| Http Method | POST | |
| Parameter | - | |
| Return | Product | |

| 3. /api/products/search | | Searches a product |
|---|---|---|
| Http Method | GET | |
| Parameter | - | |
| Return | List of products | |
| 4. /api/products/top-rated/:limit | | Fetches a list of all top-rated products **[isSecured]** |
| Http Method | GET | |
| Parameter | limit | |
| Return | List of products | |

| 5. /api/products/discount/:userId | | Applies the discount on all products for a user **[isSecured]** |
|---|---|---|
| Http Method | POST | |
| Parameter | userId | |
| Return | Acknowledged message | |
| 6. /api/products/cart/:userId | | Fetches the cart for a user |
| Http Method | GET | |
| Parameter | userId | |
| Return | Cart | |

| 7. /api/products/cart/add/:userId | | Adds a product to cart **[isSecured]** |
|---|---|---|
| Http Method | POST | |
| Parameter | userId | |
| Return | Cart | |
| 8. /api/products/cart/checkout/:userId | | Checks out a cart for user **[isSecured]** |
| Http Method | POST | |
| Parameter | userId | |
| Return | Acknowledged message | |

| 9. /api/products/cart/update/:userId/:itemId | | Updates an item for a user in cart **[isSecured]** |
|---|---|---|
| Http Method | PUT | |
| Parameter | userId<br>itemId | |
| Return | Cart | |

| 10. /api/products/cart/remove/:userId/itemId | | Deletes a particular item in cart for a user **[isSecured]** |
|---|---|---|
| Http Method | DELETE | |
| Parameter | userId<br>itemId | |
| Return | Cart | |

| | | |
|---|---|---|
| 11. /api/products/:id | | Fetches the product by id |
| Http Method | GET | |
| Parameter | id | |
| Return | Product | |

| | | |
|---|---|---|
| 12. /api/products/:id | | Update a product by id |
| Http Method | PUT | |
| Parameter | id | |
| Return | Product | |

| | | |
|---|---|---|
| 13. /api/products/:id | | Deletes a product by id **[isSecured][isAdmin]** |
| Http Method | DELETE | |
| Parameter | id | |
| Return | Product | |

## PRODUCT CONTROLLER

**Note: Routes which must be authenticated are mentioned with "isSecured" below and wherever admin user is required will be mentioned as "isAdmin".**

| URL Exposed | | Purpose |
|---|---|---|
| 1. /api/users/login | | Logins user |
| Http Method | POST | |
| Parameter | - | |
| Return | User | |
| 2. /api/users/create | | Creates a new user **[isSecured] [isAdmin]** |
| Http Method | POST | |
| Parameter | - | |
| Return | User | |

| | | |
|---|---|---|
| 3. /api/users/:id | | Fetches a user by id **[isSecured]** |
| Http Method | GET | |
| Parameter | id | |
| Return | User | |
| 4. /api/users/:id | | Updates a user **[isSecured]** |
| Http Method | PUT | |
| Parameter | id | |
| Return | User | |

| | | |
|---|---|---|
| 5. /api/users/:id | | Deletes a user |
| Http Method | DELETE | |
| Parameter | id | |
| Return | User | |

| 6. /api/users/:id/activity | | Checks the activity of user **[isSecured]** |
|---|---|---|
| Http Method | GET | |
| Parameter | id | |
| Return | Activity of user | |

| 7. /api/users/:id/favorites | | Checks the favorites of user **[isSecured]** |
|---|---|---|
| Http Method | GET | |
| Parameter | id | |
| Return | Favorites | |
| 8. /api/users/change-password/:id | | Changes the password of user **[isSecured]** |
| Http Method | PUT | |
| Parameter | id | |
| Return | User | |

| 9. /api/users/email/:email | | Fetches the user by email **[isSecured]** |
|---|---|---|
| Http Method | GET | |
| Parameter | email | |
| Return | User | |

# 4 TEMPLATE CODE STRUCTURE

## 4.1 Admin code structure

### 1) MODULES/ADMIN: controller

**Resources**

| **AdminController (Class)** | This is the controller class for the admin module. | To be implemented |
|---|---|---|

### 2) MODULES/ADMIN: dao

**Resources**

| **File** | **Description** | **Status** |
|---|---|---|
| **models/admin model** | Models for admin | Already implemented |

| | | |
|---|---|---|
| **schemas/admin schema** | Schemas for admin | Already implemented |

### 3) MODULES/ADMIN: routes

**Resources**

| File | Description | Status |
|---|---|---|
| **Admin routes** | Routes for admin | Partially implemented. |

### 4) MODULES/ADMIN: service

**Resources**

| Class | Description | Status |
|---|---|---|
| **AdminService** | • Defines AdminService | Already implemented. |

### 5) MODULES/ADMIN: service/impl

**Resources**

| Class | Description | Status |
|---|---|---|
| **AdminServiceImpl** | • Implements AdminService. | To be implemented. |

## 4.1 Blog code structure

### 1) MODULES/BLOG: controller

**Resources**

| | | |
|---|---|---|
| **BlogController (Class)** | This is the controller class for the blog module. | To be implemented |

### 2) MODULES/BLOG: dao

**Resources**

| File | Description | Status |
|---|---|---|
| **models/blog model** | Models for blog | Already implemented |
| **schemas/blog schema** | Schemas for blog | Already implemented |

## 3) MODULES/BLOG: routes

**Resources**

| File | Description | Status |
|---|---|---|
| **Blog routes** | Routes for blog | Partially implemented. |

## 4) MODULES/BLOG: service

**Resources**

| Class | Description | Status |
|---|---|---|
| **BlogService** | • Defines BlogService | Already implemented. |

## 5) MODULES/BLOG: service/impl

**Resources**

| Class | Description | Status |
|---|---|---|
| **BlogServiceImpl** | • Implements BlogService. | To be implemented. |

## 4.1 Order code structure

### 1) MODULES/ORDER: controller

**Resources**

| | | |
|---|---|---|
| **OrderController (Class)** | This is the controller class for the order module. | To be implemented |

### 2) MODULES/ORDER: dao

**Resources**

| File | Description | Status |
|---|---|---|
| **models/order model** | Models for order | Already implemented |
| **schemas/order schema** | Schemas for order | Already implemented |

### 3) MODULES/ORDER: routes

**Resources**

| File | Description | Status |
|---|---|---|
| **Order routes** | Routes for order | Partially implemented. |

### 4) MODULES/ORDER: service

**Resources**

| Class | Description | Status |
|---|---|---|
| **OrderService** | • Defines OrderService | Already implemented. |

### 5) MODULES/ORDER: service/impl

**Resources**

| Class | Description | Status |
|---|---|---|
| **OrderServiceImpl** | • Implements OrderService. | To be implemented. |

## 4.1 Product code structure

### 1) MODULES/PRODUCT: controller

**Resources**

| | | |
|---|---|---|
| **ProductController (Class)** | This is the controller class for the product module. | To be implemented |

### 2) MODULES/PRODUCT: dao

**Resources**

| File | Description | Status |
|---|---|---|
| **models/cart model**<br><br>**models/product model** | Models for cart<br>Models for product | Already implemented |
| **schemas/product schema** | Schemas for product | Already implemented |

### 3) MODULES/PRODUCT: routes

**Resources**

| File | Description | Status |
|---|---|---|
| **Product routes** | Routes for product | Partially implemented. |

### 4) MODULES/PRODUCT: service

**Resources**

| Class | Description | Status |
|---|---|---|

| | | |
|---|---|---|
| **ProductService** | • Defines ProductService | Already implemented. |

## 5) MODULES/PRODUCT: service/impl

**Resources**

| Class | Description | Status |
|---|---|---|
| **ProductServiceImpl** | • Implements ProductService. | To be implemented. |

# User code structure

## 1) MODULES/USER: controller

**Resources**

| | | |
|---|---|---|
| **UserController (Class)** | This is the controller class for the user module. | To be implemented |

## 2) MODULES/USER: dao

**Resources**

| File | Description | Status |
|---|---|---|
| **models/user model** | Models for user | Already implemented |
| **schemas/user schema** | Schemas for user | Already implemented |

## 3) MODULES/USER: routes

**Resources**

| File | Description | Status |
|---|---|---|

| | | |
|---|---|---|
| **User routes** | Routes for user | Partially implemented. |

## 4) MODULES/USER: service

**Resources**

| Class | Description | Status |
|---|---|---|
| **UserService** | • Defines UserService | Already implemented. |

## 5) MODULES/USER: service/impl

**Resources**

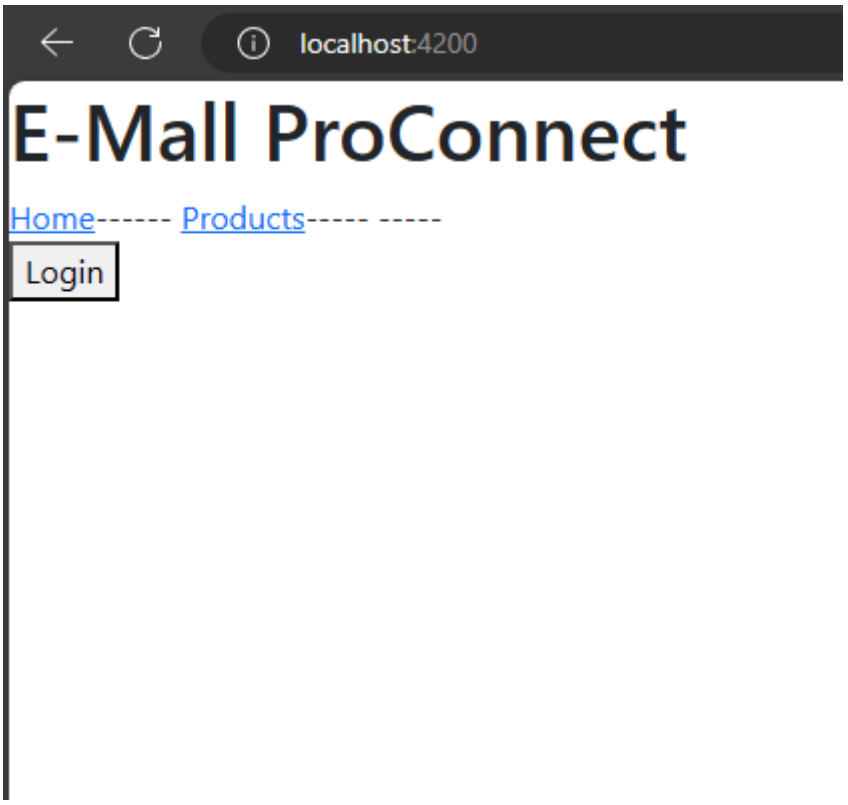
| Class | Description | Status |
|---|---|---|
| **UserServiceImpl** | • Implements UserService. | To be implemented. |

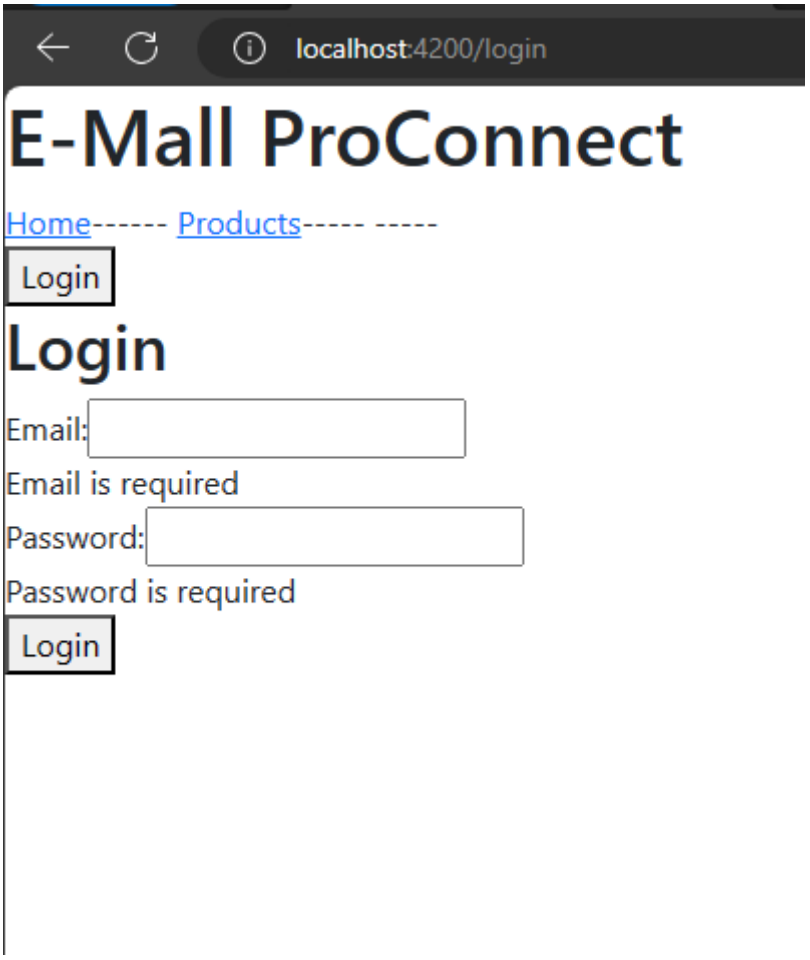
# 1 PROBLEM STATEMENT

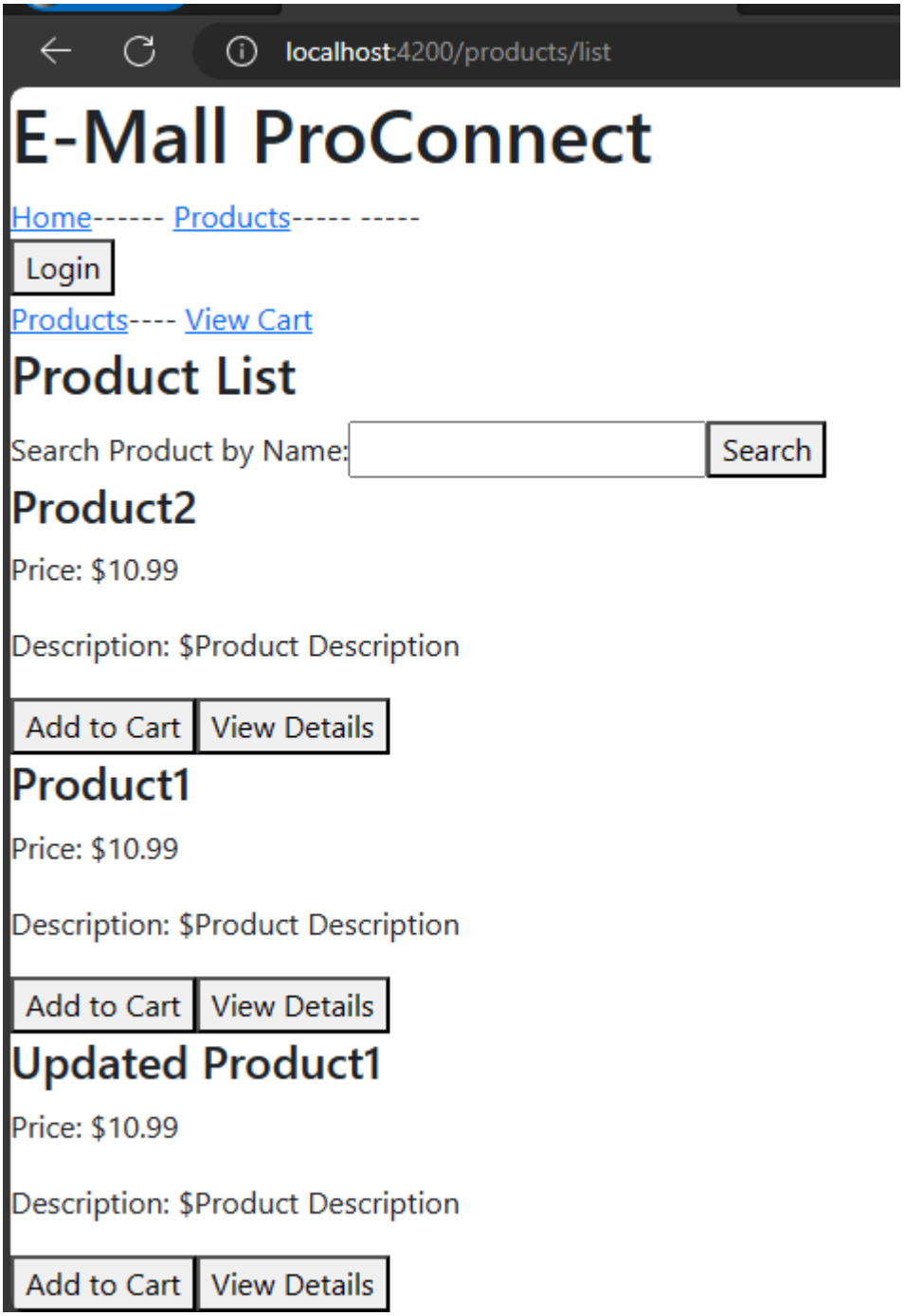
E-Mall ProConnect is SPA (Single Page Application), it enables users to manage various aspects and streamline the process of managing products.

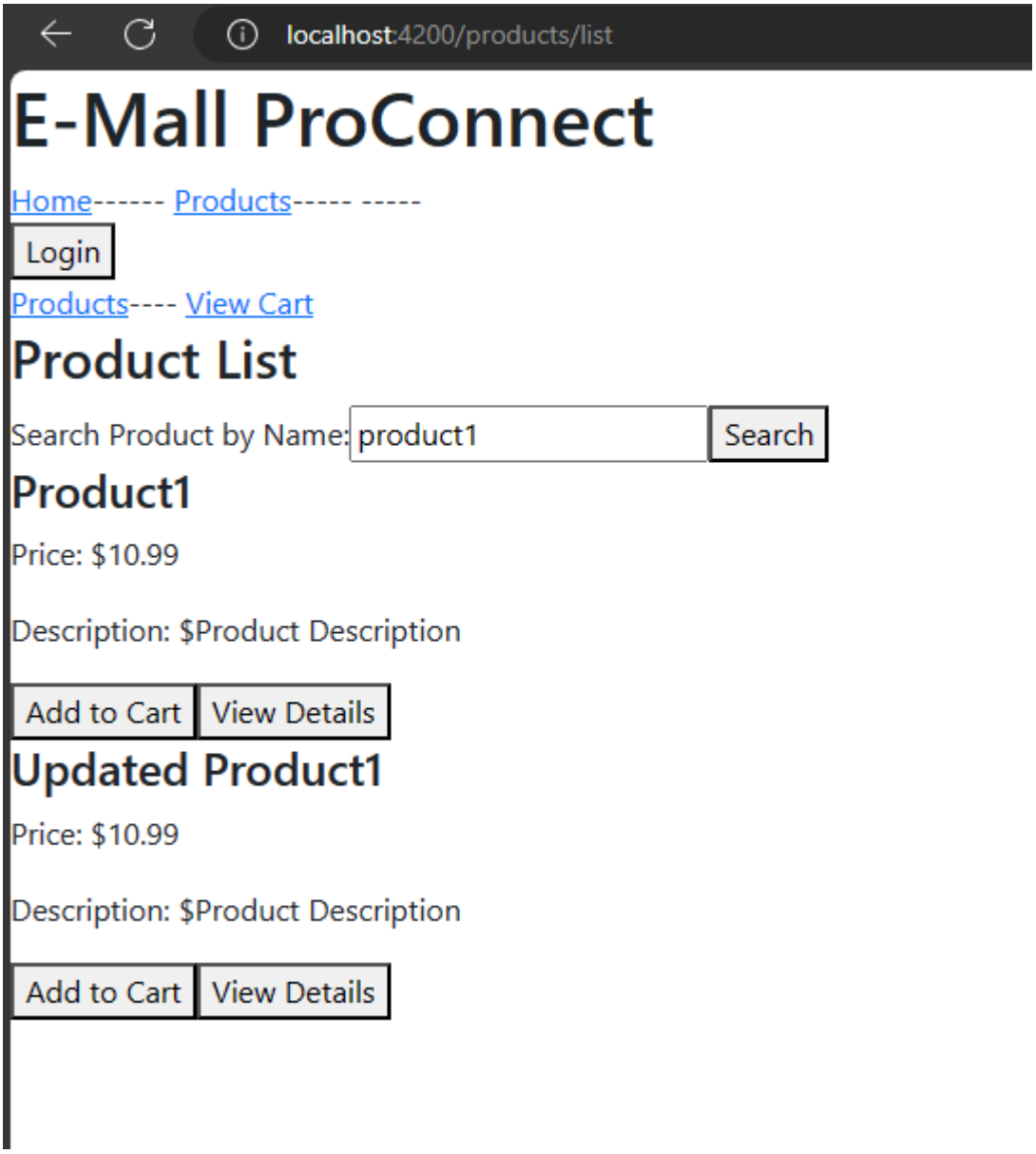
# 2 PROPOSED EMALL PROCONEECT

UI needs improvisation and modification as per given use case and to make test cases passed.




localhost:4200/login
E-Mall ProConnect
Home------ Products----- -----
Login
Login
Email:
Email is required
Password:
Password is required
Login


localhost:4200/products/list
E-Mall ProConnect
Home------ Products----- -----
Login
Products---- View Cart
Product List
Search Product by Name:
Search
Product2
Price: $10.99
Description: $Product Description
Add to Cart
View Details
Product1
Price: $10.99
Description: $Product Description
Add to Cart
View Details
Updated Product1
Price: $10.99
Description: $Product Description
Add to Cart
View Details




# 3 BUSINESS-REQUIREMENT:

As an application developer, develop the E-Mall ProConnect (Single Page App) with below guidelines:

| User Story # | User Story Name | User Story |
|---|---|---|
| US_01 | Home Page | As a user I should be able to visit the Home page as the default page. |

| | | |
|---|---|---|
| US_01 | Login Page | As a user I should be able to visit the Login page once I click on the Login button. |
| US_01 | Products Page | As a user I should be able to see the homepage and perform all operations:<br><br>Acceptance criteria:<br>1. As a user I should be able to furnish the following details at the time of creating a leave application.<br>1.1 Product name<br>1.2 Price<br>1.3 Description<br>1.4 Add to cart button<br>1.5 View details button. |
| US_02 | Product Details Page | As a user I should be able to see the product details as:<br><br>Acceptance criteria:<br>2. Product name<br>3. Description<br>4. Price<br>5. Category<br>6. Image<br>7. Add to cart button<br>8. Blog details like title, content, author name, category and comments<br>9. It should also show likes |

# EXECUTION STEPS TO FOLLOW FOR BACKEND

1. **All actions like build, compile, running application, running test cases will be through Command Terminal.**
2. **To open the command terminal the test takers, need to go to**

   **Application menu (Three horizontal lines at left top) -> Terminal ->New Terminal.**

3. **This editor Auto Saves the code.**
4. **If you want to exit(logout) and continue the coding later anytime (using Save & Exit option on Assessment Landing Page) then you need to use CTRL+Shift+B-command compulsorily on code IDE. This will push or save the updated contents in the internal git/repository. Else the code will not be available in the next login.**
5. **These are time bound assessments the timer would stop if you logout and while logging in back using the same credentials the timer would resume from the same time it was stopped from the previous logout.**
6. **To test any Restful application, the last option on the left panel of IDE, you can find ThunderClient, which is the lightweight equivalent of POSTMAN.**
7. **You can follow series of command to setup express environment once you are in your project-name folder:**
   a. **npm install -> Will install all dependencies -> takes 10 to 15 min**
   b. **npm run start -> To compile and run the project.**
   c. **npm run jest -> to run all test cases and see the summary of all passed and failed test cases.**
   d. **npm run test -> to run all test cases and register the result of all test cases. It is mandatory to run this command before submission of workspace -> takes 5 to 6 min**
8. **You need to use CTRL+Shift+B - command compulsorily on code IDE, before final submission as well. This will push or save the updated contents in the internal git/repository, and will be used to evaluate the code quality.**

# EXECUTION STEPS TO FOLLOW FOR FRONTEND

1. **All actions like build, compile, running application, running test cases will be through Command Terminal.**
2. **To open the command terminal the test takers, need to go to**

   **Application menu (Three horizontal lines at left top) -> Terminal ->New Terminal.**

3. **This is a web-based application, to run the application on a browser, use the internal browser in the environment.**
4. **Follow the steps below to install and use Node.js version 18.20.3 using nvm:**
   a. **Install nvm:**
      **curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.39.1/install.sh | bash**
   b. **Set up nvm environment:**
      **export NVM_DIR="$([ -z "${XDG_CONFIG_HOME-}" ] && printf %s "${HOME}/.nvm" || printf %s "${XDG_CONFIG_HOME}/nvm")" && [ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh"**
   c. **Verify nvm Installation:**
      **command -v nvm**
   d. **Install Node.js Version 18.20.3:**
      **nvm install 18.20.3**
   e. **Set the installed Node.js version as active:**
      **nvm use 18.20.3**
5. **You can follow series of command to setup Angular environment once you are in your project-name folder:**
   a. **npm install -> Will install all dependencies -> takes 10 to 15 min**
   b. **npm run start -> To compile and deploy the project in browser. You can press <Ctrl> key while clicking on localhost:4200 to open project in browser -> takes 2 to 3 min**
   c. **npm run test -> to run all test cases. It is mandatory to run this command before submission of workspace -> takes 5 to 6 min**
6. **You need to use CTRL+Shift+B - command compulsorily on code IDE, before final submission as well. This will push or save the updated contents in the internal git/repository, and will be used to evaluate the code quality.**