Raw Food Items E-Mart

Design Document

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1. Introduction

Raw Food Items E-Mart is an online e-commerce platform that deals primarily with the sales of raw materials and packed food materials. It provides an easy-to-use and intuitive interface for the consumers to purchase required goods from all over India. The system will allow customers to browse, search, select and add products to a shopping cart. Then, provided they have the desired products in the shopping cart, check out the product in the cart and decrement the stock in the inventory of the system. The RFIE also allows the seller to manage the inventory with complete create, retrieve, update and delete (CRUD) functionality regarding product availability. It will also enable the seller and customer to interact with a promotion system that manages the discounts and offers to customers' orders. The system will also provide an interface to the users to track the delivery of the products. RFIE uses MySQL for database, ReactJs, React Native and Bootstrap for frontend and REST API for Backend. This system also has additional functionalities to send an Email to the seller regarding the performance of his product. It is sent every week to the seller.

2. Design Considerations

This section describes many of the issues that are needed to be able to be addressed or resolved before embarking on a complete design solution. This document is based on version v1.0 as in the SRS document. There is a need for reference in case any part is not understood or felt incomplete.

2.1. Assumptions

The RFIE design makes several assumptions about the software and hardware requirements as is in the SRS.All the environmental operating requirements of both the user interface and the database can be found in the RFIE requirements. Both the database and the user application make the following assumptions about the operating environment. The system can be described by the operating requirements associated with this document and in

the SRS. This entails sufficient memory and permanent storage space and an adequate CPU for the application.

The application makes the following assumptions about its operating environment. The user machine will have MYSQL database components installed, as they are required for the system implementation. The machine will also have the necessary database setup.

2.2. Design Constraints

The RFIE shall be a web-based system. This system shall be developed using ReactJs, React Native, Bootstrap, RestAPI(backend), Mysql for the database.

2.3. Design Methodology

In designing the RFIE, the following approach shall be used:

The waterfall model will be used as the best language for this kind of system. This is because the waterfall model is suitable for visualizing, specifying, constructing, and documenting the features of the system. The design will take the following approach:

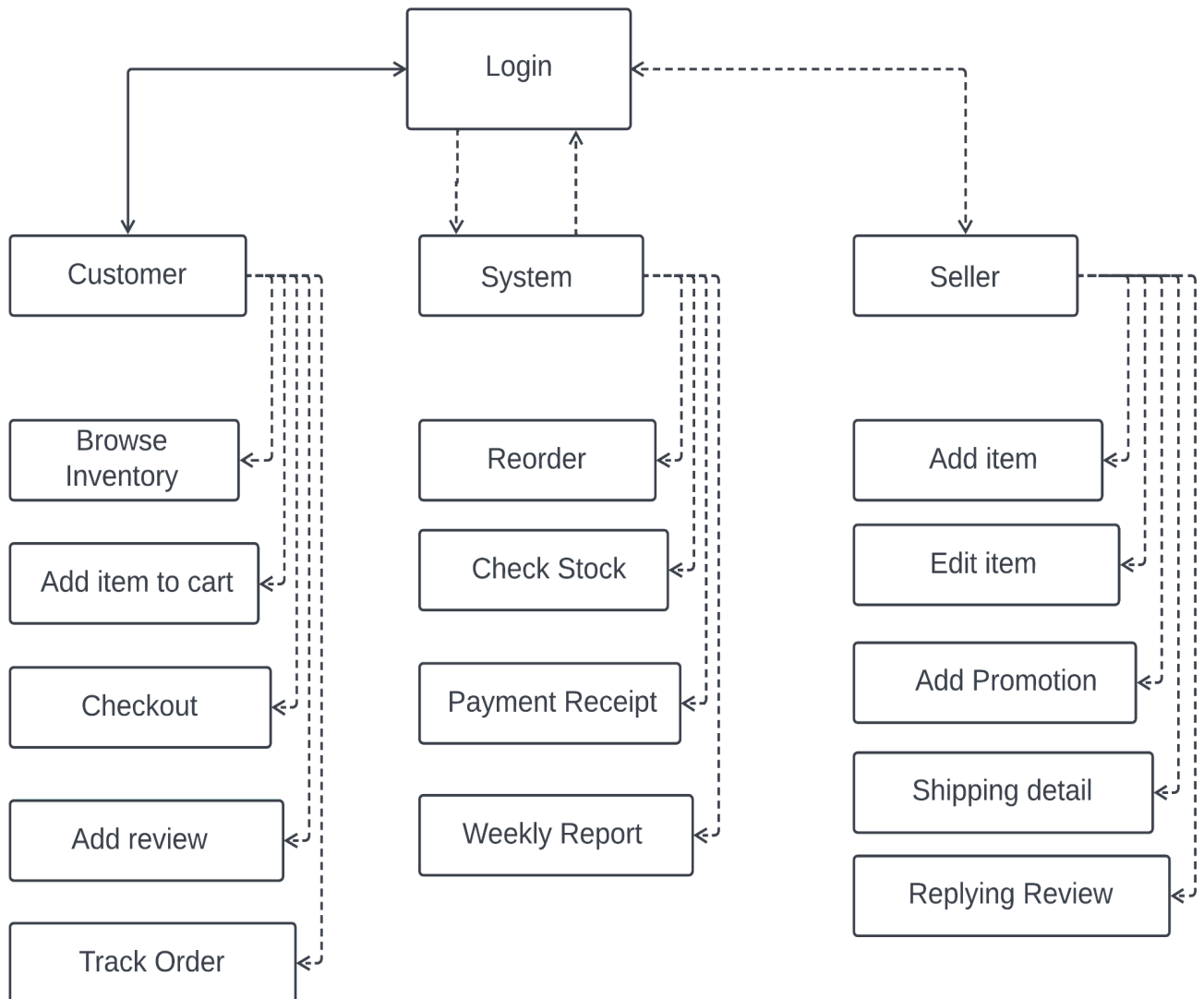1. Designing the database.
2. Creating relationships.
3. Designing the user interfaces and the system processes.
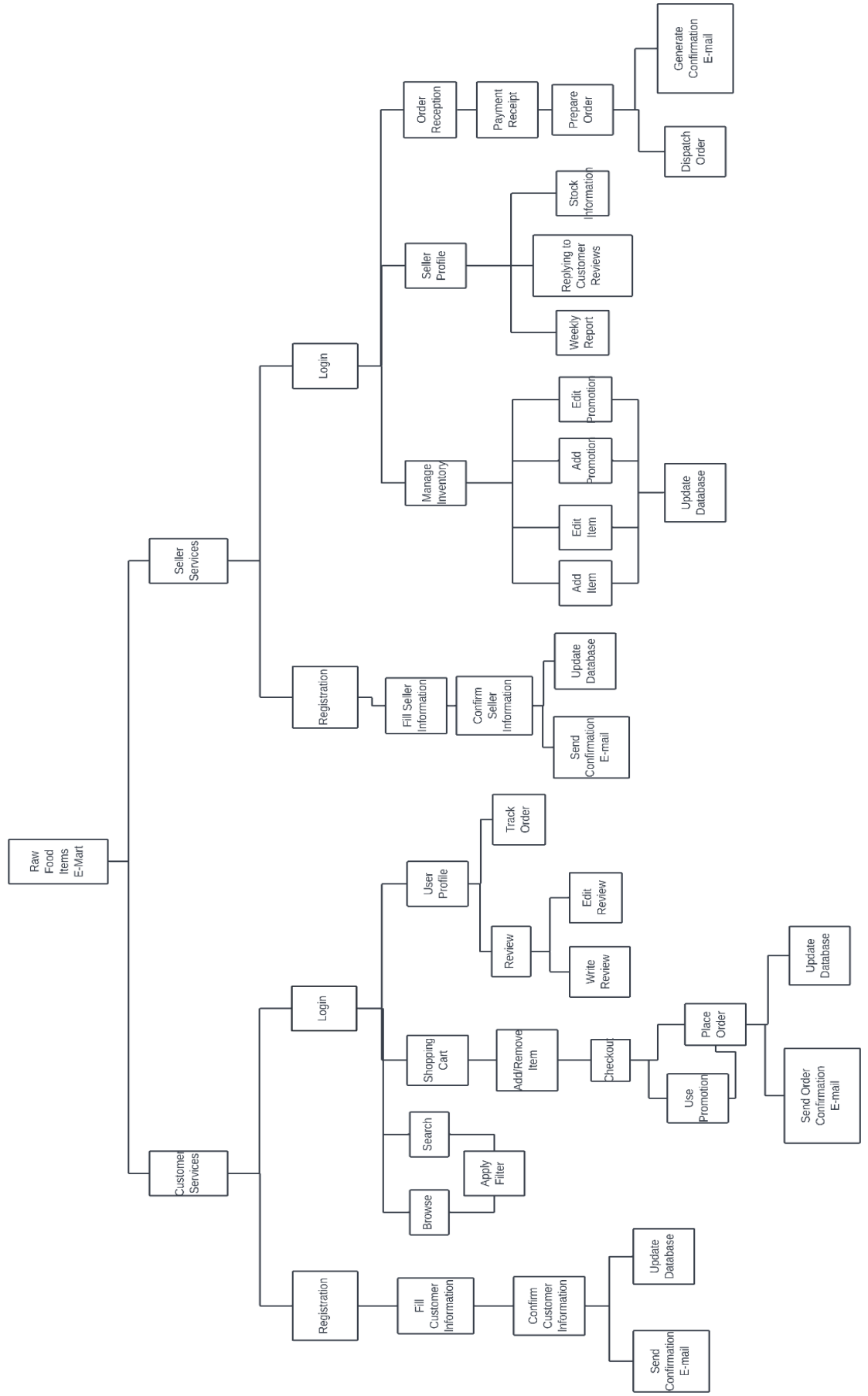
2.4. System Environment

System scalability and security are the requirements for the system architecture of the RFIE. The system will accommodate scalability allowing flexibility within the system to expand, modify or downsize easily to meet the evolving business and technology change.

3. Architecture

3.1. System Design

```
                                    ┌──────────────┐
                                    │    Login     │
                                    └──────────────┘
                                         │   ↑
                                         ↓   │
        ┌──────────────┐         ┌──────────────┐         ┌──────────────┐
        │   Customer   │         │    System    │         │    Seller    │
        └──────────────┘         └──────────────┘         └──────────────┘

        ┌──────────────┐         ┌──────────────┐         ┌──────────────┐
        │    Browse    │         │   Reorder    │         │   Add item   │
        │  Inventory   │         └──────────────┘         └──────────────┘
        └──────────────┘
        ┌──────────────┐         ┌──────────────┐         ┌──────────────┐
        │ Add item to  │         │ Check Stock  │         │   Edit item  │
        │     cart     │         └──────────────┘         └──────────────┘
        └──────────────┘
        ┌──────────────┐         ┌──────────────┐         ┌──────────────┐
        │   Checkout   │         │   Payment    │         │ Add Promotion│
        └──────────────┘         │   Receipt    │         └──────────────┘
                                 └──────────────┘
        ┌──────────────┐         ┌──────────────┐         ┌──────────────┐
        │  Add review  │         │ Weekly Report│         │Shipping detail│
        └──────────────┘         └──────────────┘         └──────────────┘

        ┌──────────────┐                                  ┌──────────────┐
        │  Track Order │                                  │Replying Review│
        └──────────────┘                                  └──────────────┘
```

3.2. Functional Decomposition Tree

Raw Food Items E-Mart

Customer Services
- Registration
  - Fill Customer Information
    - Confirm Customer Information
      - Update Database
      - Send Confirmation E-mail
- Login
  - Browse
    - Apply Filter
  - Search
  - Shopping Cart
    - Add/Remove Item
      - Checkout
        - Use Promotion
        - Place Order
          - Update Database
          - Send Order Confirmation E-mail
  - User Profile
    - Review
      - Write Review
      - Edit Review
    - Track Order

Seller Services
- Registration
  - Fill Seller Information
    - Confirm Seller Information
      - Update Database
      - Send Confirmation E-mail
- Login
  - Manage Inventory
    - Add Item
    - Edit Item
    - Add Promotion
    - Edit Promotion
    - Update Database
  - Seller Profile
    - Weekly Report
    - Replying to Customer Reviews
    - Stock Information
  - Order Reception
    - Payment Receipt
      - Prepare Order
        - Generate Confirmation E-mail
        - Dispatch Order

Modules involved in the system are:

1. **Customer Services:** This module provides all the necessary services on the customer side. It comprises two sub-modules.
    1.1. **Registration:** This module is used for the registration of a new customer on the website. Its sub-modules are as follows.
        1.1.1. **Fill Customer Information:** This sub-module is required to input the user entered details from the interface and store it in a data structure.
        1.1.2. **Confirm Customer Information:** This confirms the entered information of the customer.
            1.1.2.1. **Update Database:** Update the new user into the database.
        1.1.3. **Send Confirmation E-Mail:** Inform the customer of the registration on the site.
    1.2. **Login:** Allow the customer to log in to the website.
        1.2.1. **Browse:** Facilitate the customer to browse the whole inventory of the products in the database.
            1.2.1.1. **Apply Filter:** Helps to filter out as per the need of the customer.
        1.2.2. **Search:** Directly search for a specific product in the store.
            1.2.2.1. **Apply Filter:** Filter out the search results.
        1.2.3. **Shopping Cart:** Initiate a shopping cart space for the customer whenever he/she logs in.
            1.2.3.1. **Add/Remove-Item:** This allows the user to add or remove items in the shopping cart.
            1.2.3.2. **Checkout:** Proceeds to the payment gateway after a final viewing of the cart.
                1.2.3.2.1. **Use Promotion:** Provides the user to apply some promotion to the total price.
            1.2.3.3. **Place Order:** Confirms the order.

     1.2.3.3.1. **Update Database:** Updates the stock inventory and the purchase history of the customer.

    1.2.3.4. **Send Order Confirmation E-Mail:** Sends a confirmation email to the customer once the order is placed.

   1.2.4. **User Profile:** This allows the customer to manage his/her customer profile.

    1.2.4.1. **Review:** Provides the option to review products.

     1.2.4.1.1. **Write Review:** This allows the customer to write a review for a successful order.

     1.2.4.1.2. **Edit Review:** This allows the customer to edit previous reviews.

    1.2.4.2. **Track Order:** Provides the customer with the facility to track the order en route.

2. **Seller Services:** This module provides all the necessary services on the seller's side. It comprises two sub-modules.

 2.1. **Registration:** This module is used for the registration of a new seller on the website. Its sub-modules are as follows.

  2.1.1. **Fill Seller Information:** This sub-module is required to input the user entered details from the interface and store it in a data structure.

  2.1.2. **Confirm Seller Information:** This option verifies the seller's information.

   2.1.2.1. **Update Database:** Updates new sellers into the database.

  2.1.3. **Send Confirmation E-Mail:** Inform the seller of completion of registration through email.

 2.2. **Login:** This allows the seller to log in to the SEO profile.

  2.2.1. **Manage Inventory:** Provides various features to manage the inventory of products provided by the seller.

2.2.1.1. **Add Item:** Add a new item to the inventory.

    2.2.1.1.1. **Update Database:** Update the database with the information of new items.

2.2.1.2. **Edit Item:** Edit an existing item in the inventory.

    2.2.1.2.1. **Update Database:** Update the database with new information on an existing item.

2.2.1.3. **Add Promotion:** Apply a new promotion offer to any existing item in the inventory.

    2.2.1.3.1. **Update Database:** Update the database with new information.

2.2.1.4. **Edit Promotion:** Edit and existing promotion on an item.

    2.2.1.4.1. **Update Database:** Update the database with new information.

2.2.2. **Seller Profile:** This allows the seller to manage his/her profile on the platform.

2.2.2.1. **Weekly Report:** Displays a weekly report of the items sold on the platform.

2.2.2.2. **Replying to Customer Reviews:** Facilitate the seller to directly reply to the customer reviews on any product.

2.2.2.3. **Stock Information:** Provides a detailed report of the stock of each item in the inventory so that the seller is able to identify shortages.

2.2.3. **Order Reception:** Facilitates the fulfillment of the order received.

2.2.3.1. **Payment Receipt:** Generates the payment receipt of the order placed by the customer.

2.2.3.2. **Prepare Order:** Seller prepares the order to be delivered to the customer.

        2.2.3.2.1.   **Generate Confirmation E-Mail:** The customer receives a confirmation email from the seller of the order being delivered.

    2.2.3.3.   **Dispatch Order:** The delivery process of the order is initiated and track order functionality is made available.

3.3. Context Diagram
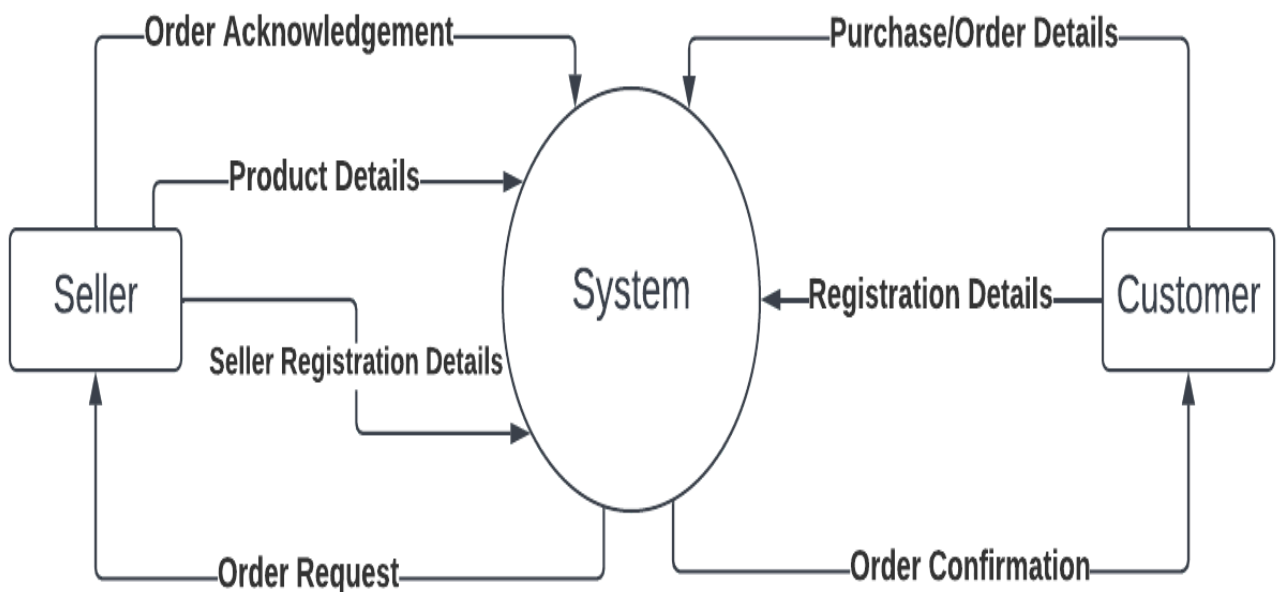
3.4. Data Flow Diagram
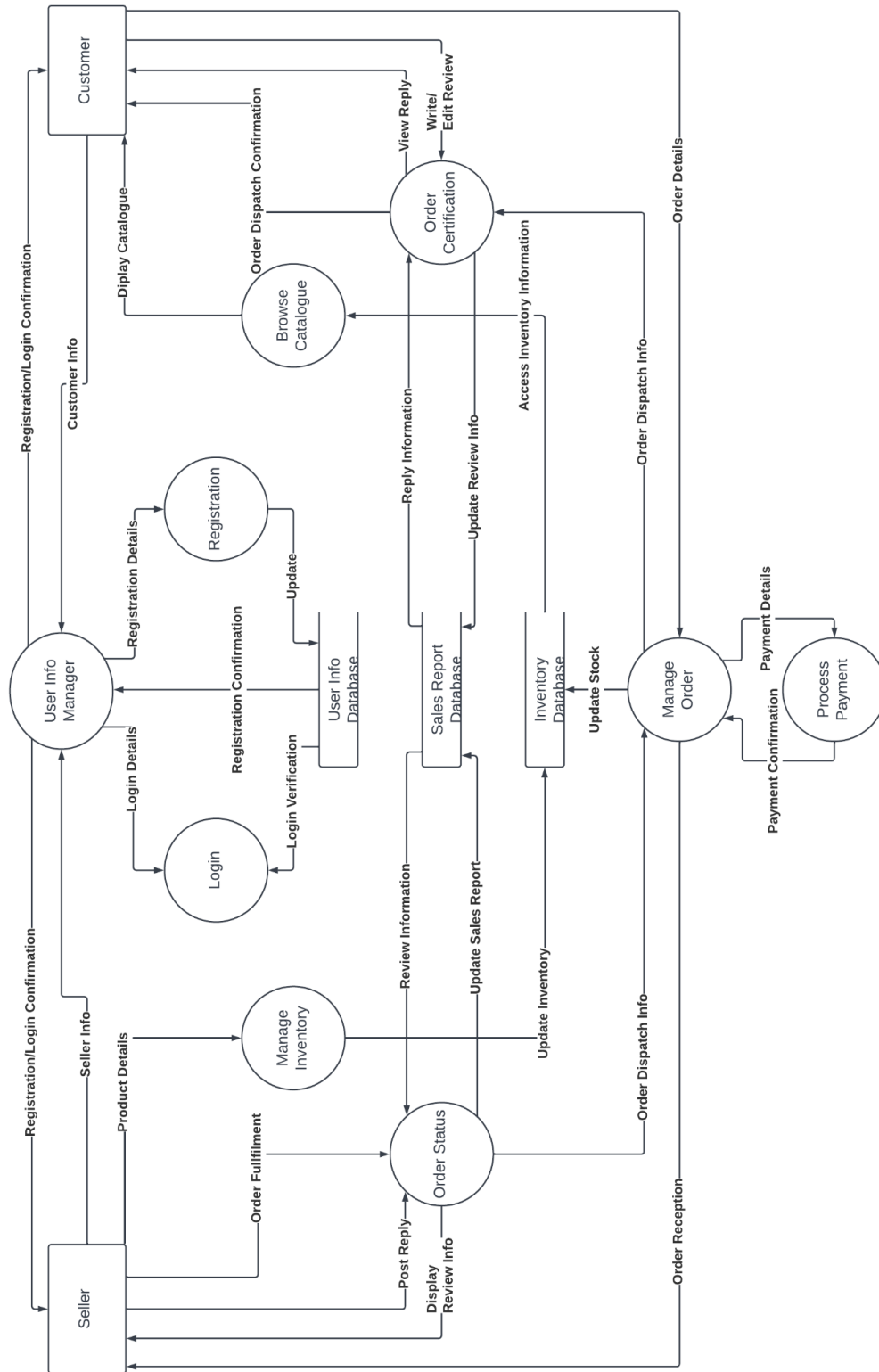
Level-1 DFD

3.5. Data Dictionary

3.5.1. Customer Details

Field	Type	NULL	Default
Customer_id	varchar(30)	NO	None
Password	varchar(16)	NO	None
Name	varchar(30)	NO	None
Permanent Address	varchar(40)	NO	None
Correspondence Address	varchar(40)	YES	None
Contact Number	Int(10)	NO	None

3.5.2. Seller Details

Field	Type	NULL	Default
Seller_id	varchar(30)	NO	None
Password	varchar(16)	NO	None
Name	varchar(30)	NO	None
Address	varchar(40)	NO	None
Contact Number	Int(10)	NO	None
FSSAI License Number	Int(14)	NO	None
GSTIN	Int(15)	YES	NULL

3.5.3. Product Details

Field	Type	NULL	Default
Product_Id	varchar(30)	NO	None
Seller_Id	varchar(30)	NO	None
Product_Name	varchar(40)	NO	None
Product_Type	varchar(20)	NO	Uncategorized
Stock	int(4)	YES	0
Price	decimal(8,2)	NO	None
Expiry Date	date	NO	None
Product Description	varchar(100)	NO	None

3.5.4. Promotion Details

Field	Type	NULL	Default
Product_Id	varchar(30)	NO	None
Seller_Id	varchar(30)	NO	None
Offer Type	varchar(15)	NO	None
Offer Duration	timestamp	YES	1 month

3.5.5. Product Review

Field	Type	NULL	Default
Product_Id	varchar(30)	NO	None
Customer_Id	varchar(30)	NO	None
Review Description	varchar(500)	NO	None

Review Time	timestamp	NO	Current_Time stamp

3.5.6.   Product Review Reply

Field	Type	NULL	Default
Product_Id	varchar(30)	NO	None
Seller_Id	varchar(30)	NO	None
Customer_Id	varchar(30)	NO	None
Reply Description	varchar(500)	NO	None
Reply Time	timestamp	NO	Current_Time stamp

3.5.7.   Customer Card Details

Field	Type	NULL	Default
Customer_Id	varchar(30)	NO	None
Card Number	Int(16)	NO	None
Expiry Date	date	NO	None
Card Holder Name	varchar(30)	NO	None

3.5.8.   Performance Report

Field	Type	NULL	Default
Seller_Id	varchar(30)	NO	None
Total Sale Amount	Int(6)	YES	None
Net Quantity	Int(4)	YES	0
Best Performing Product	varchar(30)	NO	None

Field	Type	NULL	Default
Worst Performing Product	varchar(30)	NO	None
Average Rating Received	Int(2)	NO	5

3.5.9. Order Details

Field	Type	NULL	Default
Customer_Id	varchar(30)	NO	None
Product_Id	varchar(30)	NO	None
Seller_Id	varchar(30)	NO	None
Order_Id	varchar(30)	NO	None
Dispatch Status	Boolean	NO	false
Expected Time	date	NO	None
Destination Address	varchar(40)	NO	None
Order Completed	Boolean	NO	false

3.5.10. Payment Details

Field	Type	NULL	Default
Order_Id	varchar(30)	NO	None
Customer_Id	varchar(30)	NO	None
Transaction_Id	varchar(30)	NO	None
Transaction Time	timestamp	NO	Current_Timestamp
Transaction Type	varchar(20)	NO	None

4.   Component Design

4.1.   Activity Diagram
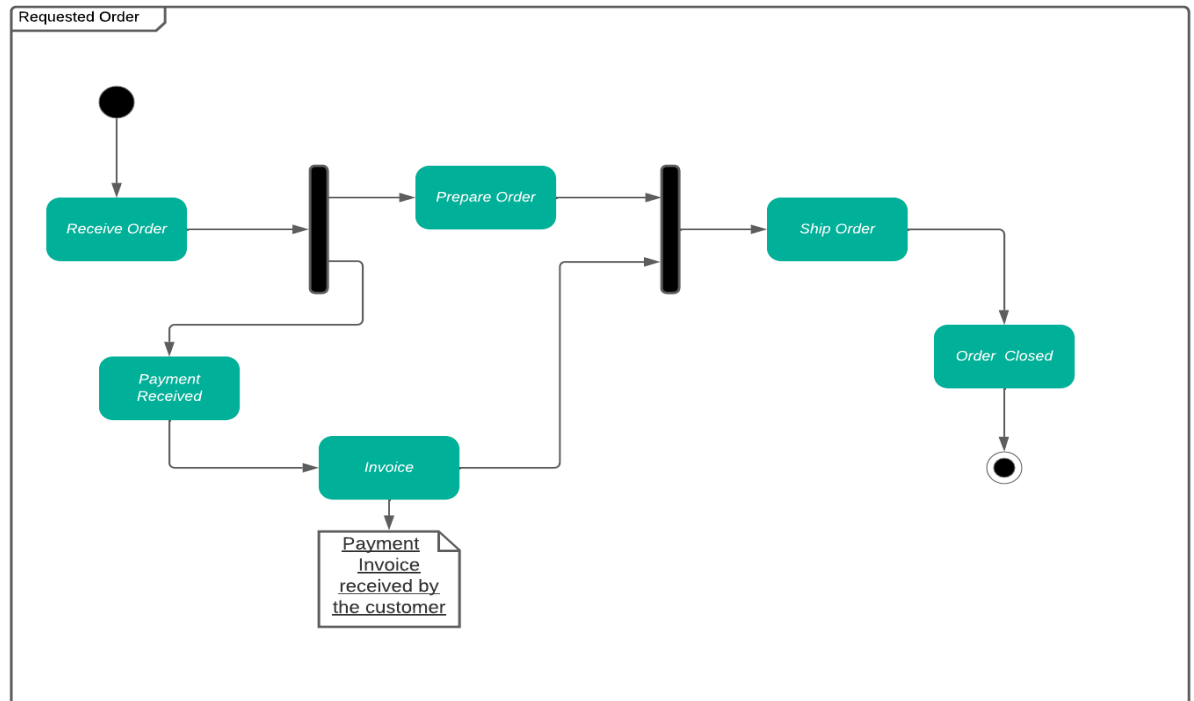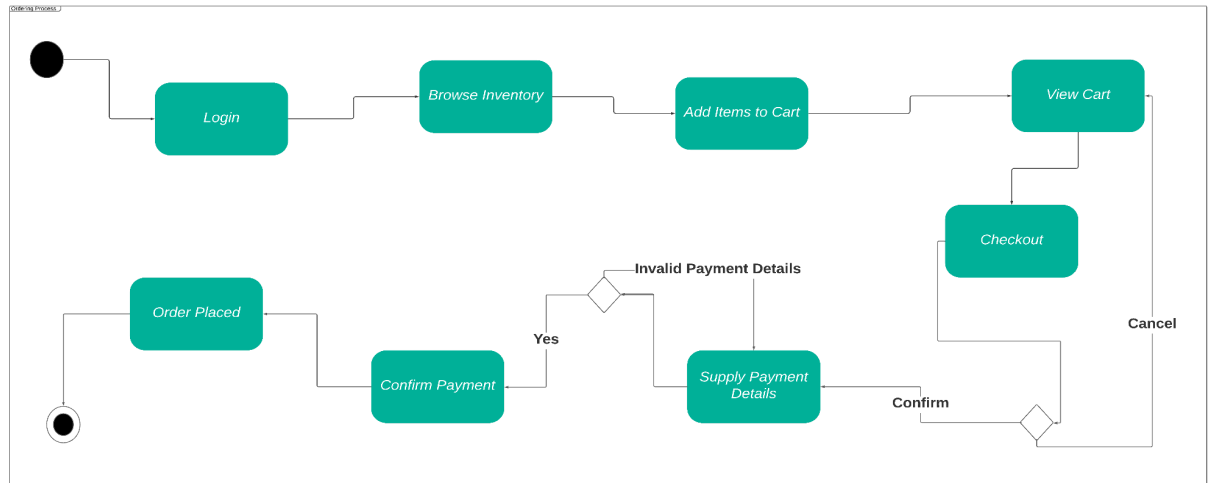
5. User Interface Design
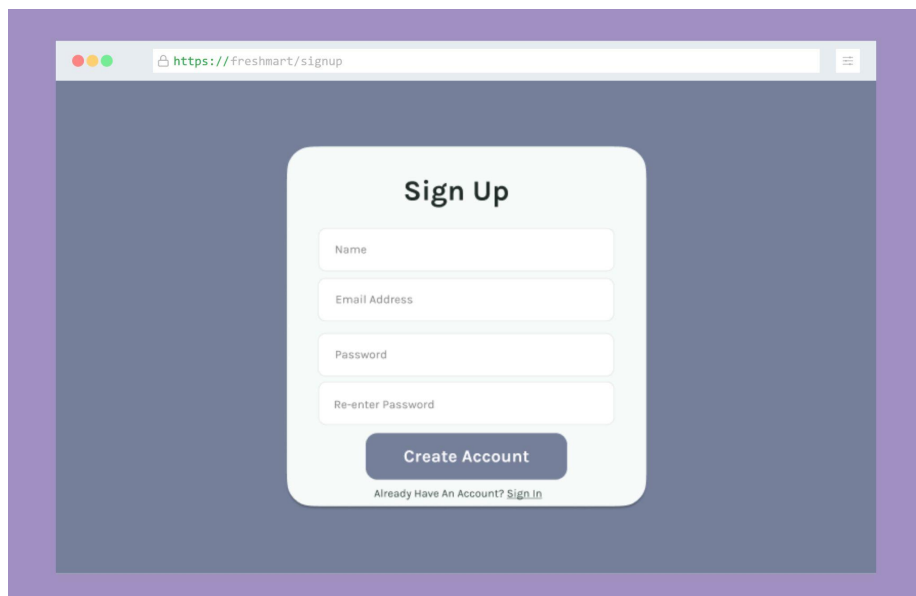
5.1. Principles

- The Concept of Structural – UI is organized in such a way that related things are combined together and unrelated things are separated.
- The Concept of Simplicity – It is easy to follow the provided interface. In the case of a mistake, the system displays an error message.
- The Concept of Visibility – All system functions are available through UI. It does not overwhelm users with too many alternatives.
- The Concept of Feedback – Through the system of messages, the design keeps users informed of actions, errors, or exceptions.
- The Concept of Reusability – In design, the same names were used to perform the same operations with different objects in order to reduce ambiguity.

5.2. UI Components

5.2.1. Signup Page:
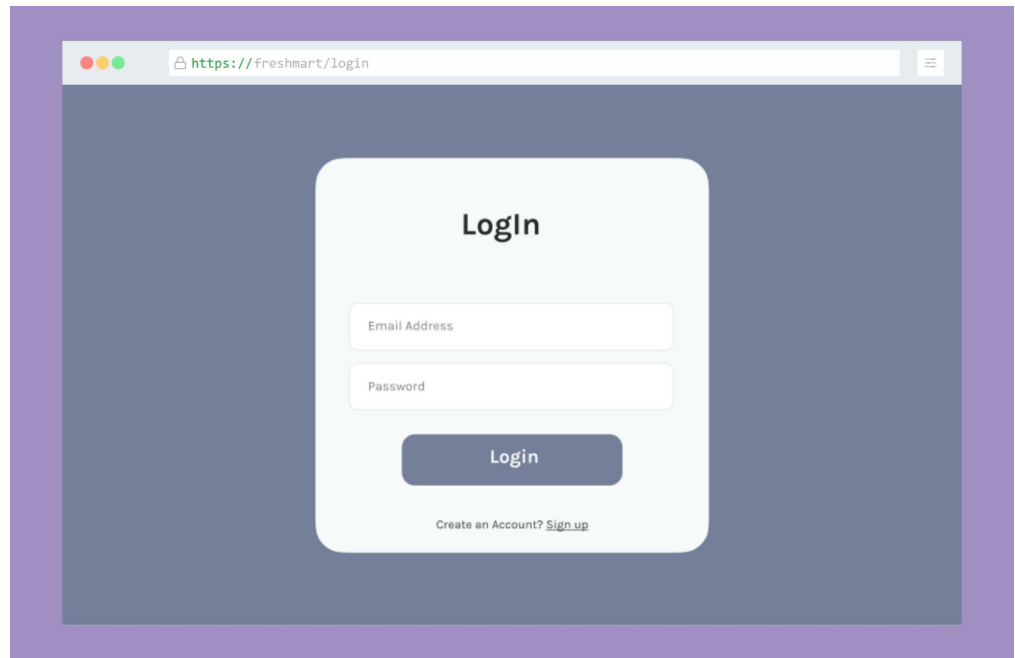
It is a user signup page where users should enter credentials to get registered on a website.
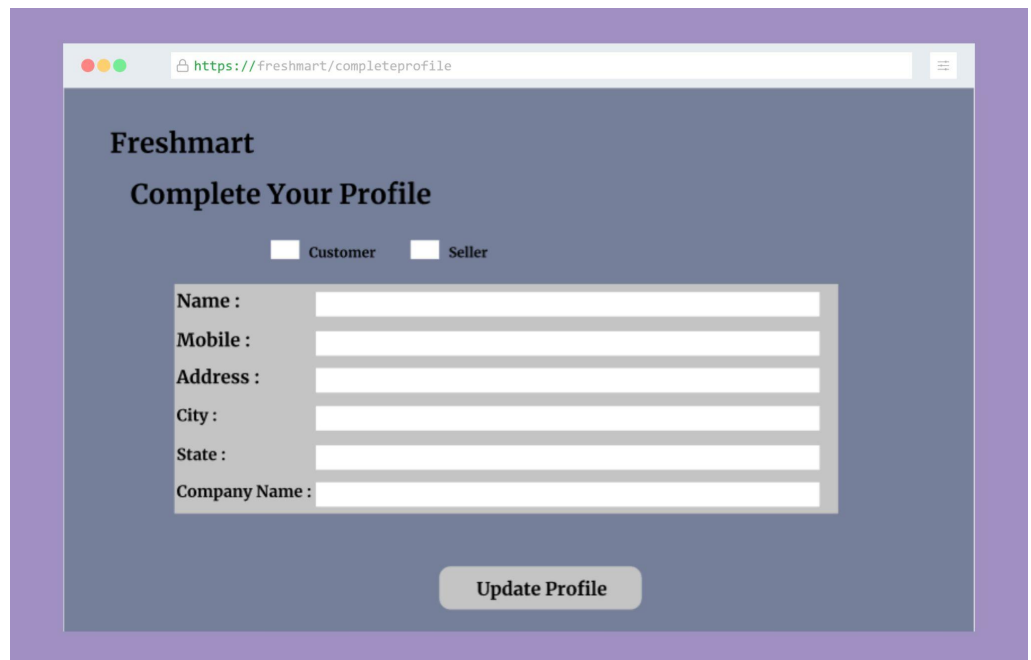
5.2.2. Login Page:

It is a user Login page where users should enter the credentials to buy products.

5.2.3. Update Profile:

It is a user profile page where the user has to enter his complete details and specify that the user is a buyer or seller.
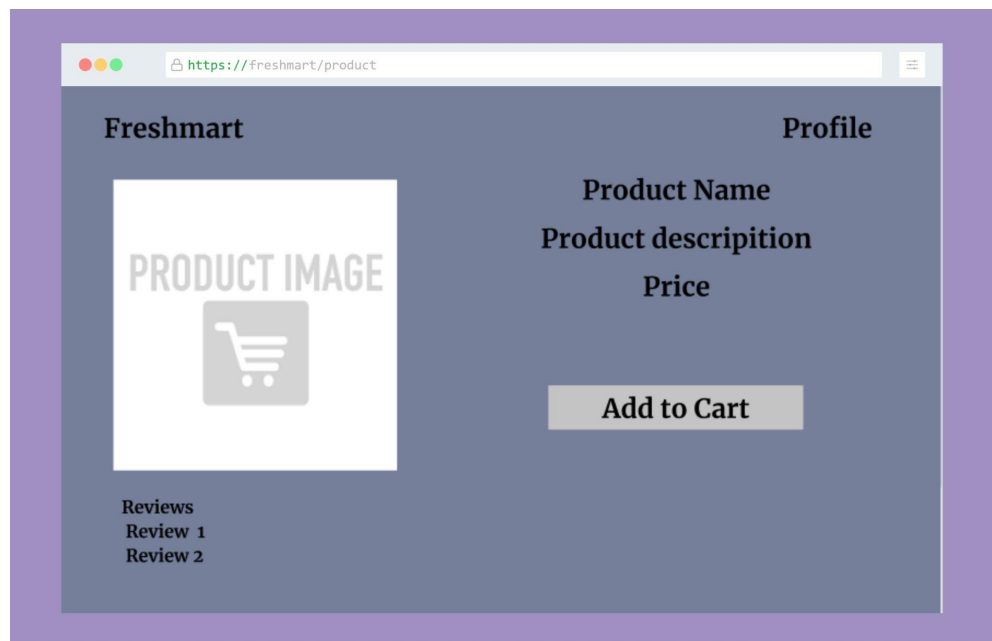
5.2.4. Inventory:
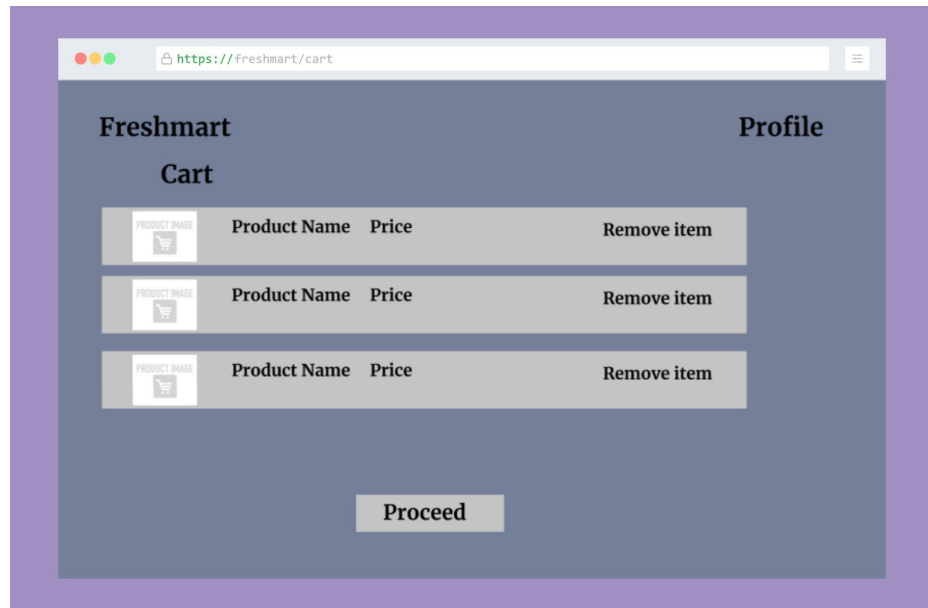
Here users see all the lists of products that are listed on the website.
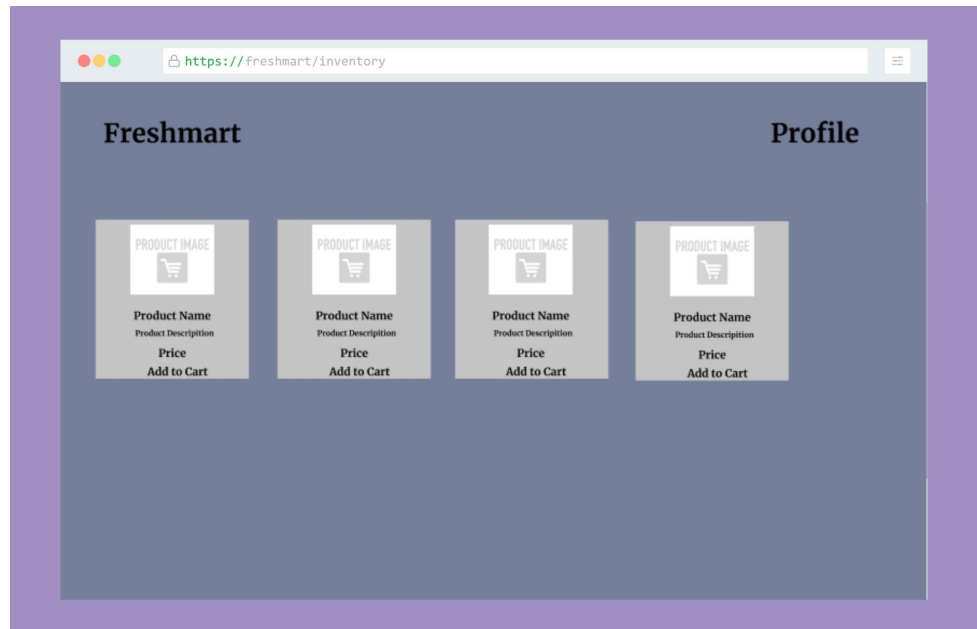
5.2.5. Product:

On this page, the user sees the complete information of the product that is being selected by him in the inventory.

5.2.6. Cart:

When the user clicks on the "Add to Cart" for a product the product is added to the cart.

5.2.7. Shipping Details:

Once the user clicks on the proceed button on the cart page then the user is moved to another page.(shipping details) where the user is required to enter the details.
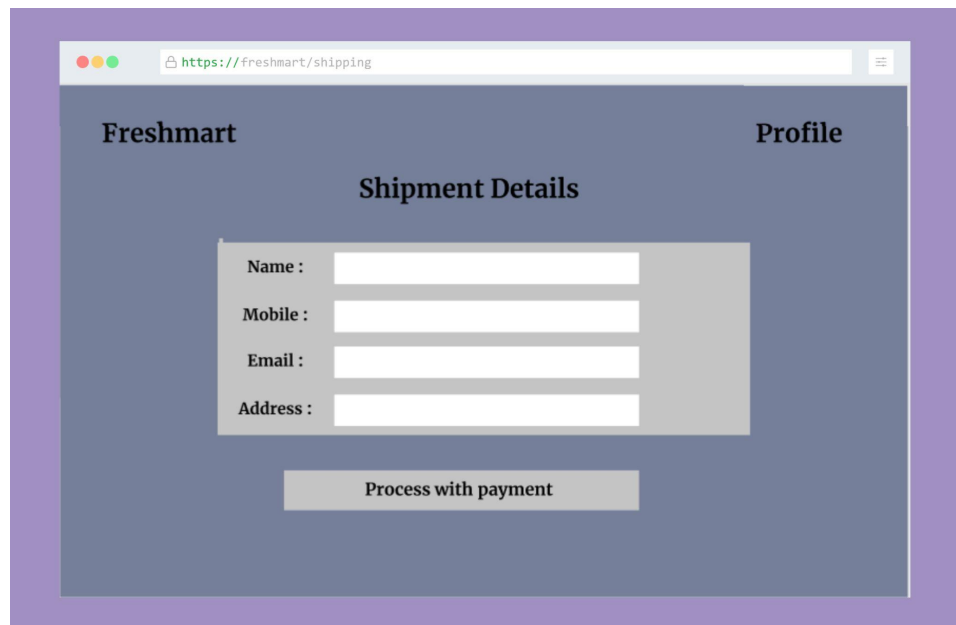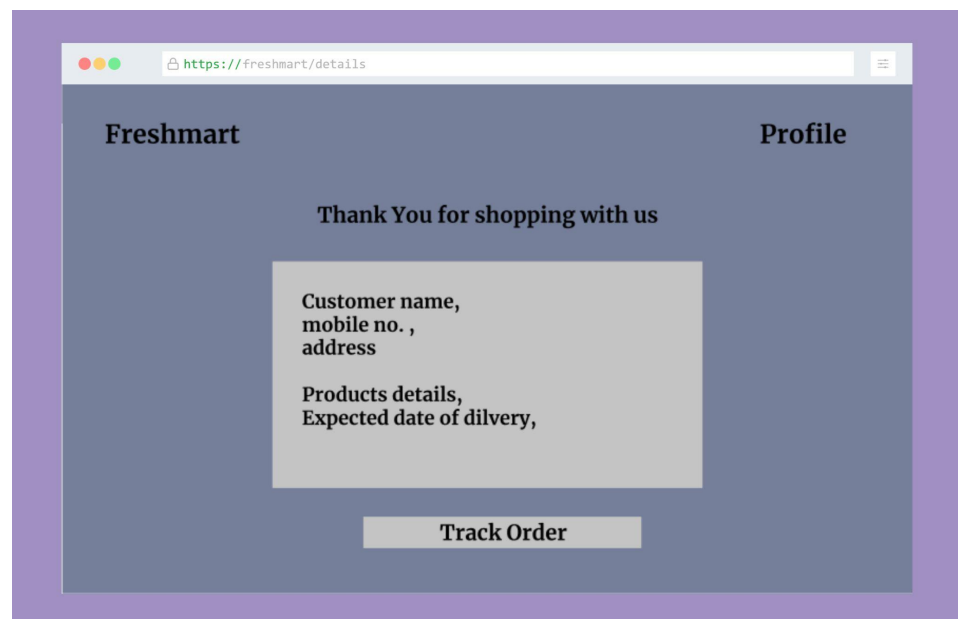
5.2.8. CheckOut:

Before placing the final order the user is shown a page where the total price of all products is given. Here the user can confirm his order before placing it.
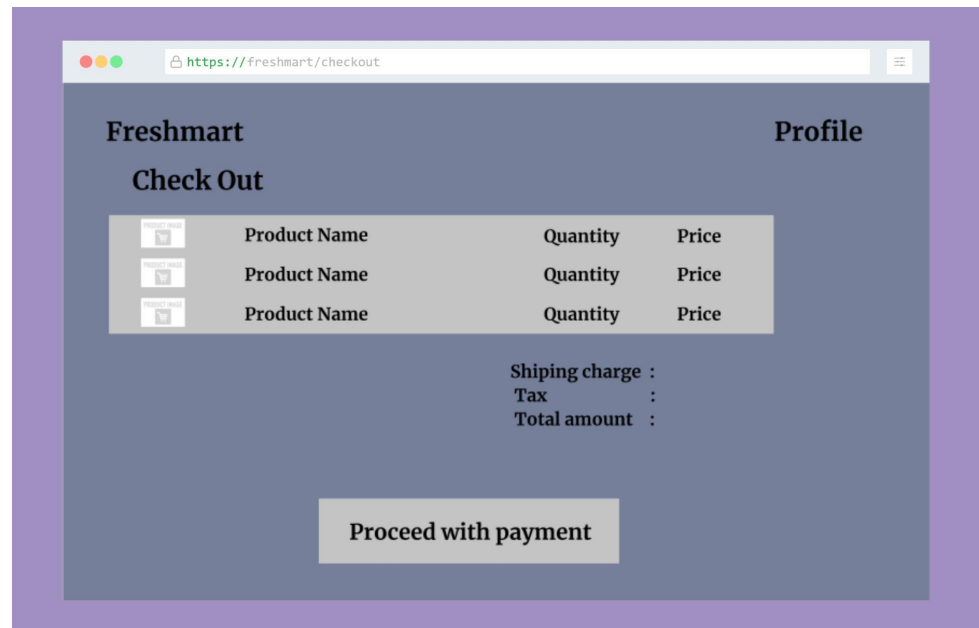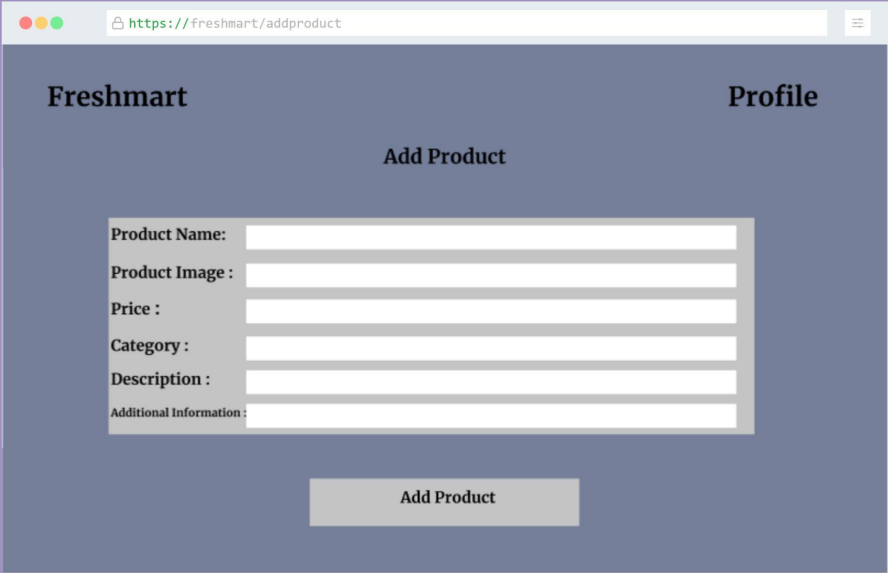

5.2.9. Confirmation page:

The summary of user order is given on this page from here user can track his order as well.

5.2.10.   Add Product:

This page is basically for the Seller from here they can add the product by providing the information about it.

5.2.11.   Dashboard:

This is also for the seller from here The seller gets to know about the product performance like how many products are sold, how many are left in stock etc.