**SOFTWARE DESIGN: GROCERY SHOPPING LIST**

**Client: Rotondwa**

This document lays out the plan for the projects “Grocery Shopping List’ by ‘Code of Duty’ group.

**REQUIREMENTS**

*Requirements Gathering*

The team met with our client, Rotondwa on March 23rd, in which the following were discussed:

The client wanted an application that would simplify how users create their shopping list. It is a platform for daily use, meant to help ease the process of creating shopping lists.

It was decided that the application would be a web application. The application had to have an authentication system to identify users. The client requested that users login/register using various methods such as Facebook or Google. The client requested that each user should be able to see the homepage/catalogue, with all the products and their details, such as the location of the product, price, and description.

Other functionality provided to the user were the ability to add and remove products from their shopping list, ability to checkout and that their checkout history would be stored in the history page. The client also requested that users have the option to clear their entire history and clear their entire cart should they wish to.

*Requirement Analysis*

***Functional system requirements***

1.The website should allow new users to register using Google or Facebook.

2.The website should allow existing users to login using Google or Facebook.

3.The website should display a home page with advertised products.

4. The website should allow users to add new products to their shopping list.

5. The website should allow users to remove products from their shopping list.

6. The website should display a total for the items in the shopping list.

7. The website should allow users to check out the products they have bought.

8. The website should store the user’s shopping list history.

9. The website should allow users to clear their whole shopping list.

10. The website should allow users to clear their whole history.

***Non-functional system requirements***

1.The website should not take more than 10 seconds to load resources.

2.User passwords should be encrypted before being stored in database.

3.The website should lock the account and send a verification email, if a user enters a valid email but incorrect password three times.

Requirement *specification*

**Actor**

Agents that are external to the Grocery Shopping List application and interacts with it. The actors for the Grocery Shopping List are as follows:

1. Grocery Shopper

2. Grocery Seller

**Concepts**

Agents inside the Grocery Shopping List system, that gives it its functionality.

The concepts for the Grocery Shopping List are as follows:

1. Bookkeeper

2. Clerk

3. Diary

4. Catalogue

5. Product

6. Bookshelf

**User Stories**

The following highlight the use cases for the Grocery Shopping List system:

1. As a shopper, I can complete the registration and submit it, to create an account.

2. As a shopper, I can submit my login details it, to get access to my shopping list account.

3. As a shopper, I can request my diary, to view all my previous shopping lists.

4. As a shopper, I can request the catalogue, to view all products available for purchase.

5. As a shopper, I can request my current shopping list, to view all products I wish to buy.

6. As a shopper, I can create shopping list, to remember which products I wish to buy.

7. As a shopper, I can writes add products to my shopping list, to add product to indicate which products I wish to buy.

8. As a shopper, I can delete products from my shopping list, to indicate products I no longer wish to buy.

9. As a shopper, I can delete my whole shopping list, to start afresh a new shopping list.

10. As a shopper, I can check out my entire shopping list when done, to register the shopping list in my diary.

11. As a shopper, I can view the total of my current shopping list, to keep track of how much I am spending.

**User Acceptance Test**

The process of verifying that the user stories for the Grocery Shopping List have been met, is as follows:

1. Given that I am a shopper and I have no "Grocery Shopping List" account, when I complete a registration and submit it then an account is created in the user registry (bookshelf).

2. Given that I am a shopper and I have a "Grocery Shopping List" account, when I login, I can then create a shopping list.

3. Given that I am a shopper, and I am logged into the "Grocery shopping List" system, when I request my diary, I can then see my previous shopping lists.

4. Given that I am a shopper, and I am logged into the "Grocery shopping List" system, when I request the catalogue, I can then see products currently available for purchase.

5. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when I request my current shopping list, I can then see products I have currently selected to buy.

6. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when I click on create then I am given the option to create new a shopping list.

7. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when I add a product to my current shopping list, then it should be added to my shopping list, and I can view it by requesting my current shopping list.

8. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when I have removed a product from my shopping list, then it should no longer be displayed in my shopping list.

9. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when I delete my current shopping list, then it should no longer be displayed.

10. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when check out my current shopping list then it should be added to my diary.

11. Given that I am a shopper, and I am logged into the "Grocery Shopping List" system, when create a shopping list and add products to it, I should then be able to view the total of the products I have added to the list.

**ARCHITECTURAL STYLES**

*Client-server architecture used*

The grocery shopping list implements the multi-tier client-server architectural style which consists of the presentation tier, application tier and the data tier.

- The shopper will interact with the software using a website by browsing through the catalogue, all user inputs will be collected by the presentation tier and process them to the application tier

- On the application tier, the shopping list website make use of Node.js as servers run time and make use of the express to facilitate the communication to with the database.

-The software will make use of the mongoose from the mongoDB on the data tier level to connect the application tier express to the database.

The shopper user interface and the servers communicate via an API and thus the data tier is separated from the clients and thus allow much tighter security and ensures data integrity throughout.

- This separation also allows software developers to develop and test the different layers separately and at ease.

**Representational state transfer**

The shopping list architecture is restful and therefore, it has certain constraints associated with it.

- The server and client evolve separately, that is modification made to the client interface may not affect the server structure

- Each shopping list session is not retained by the server

- Proxy servers can be added in the system, and this will allow to show the most frequently purchased product by each user at the beginning of the catalogue.

- shoppers have no knowledge regarding the intermediate connections made between the website and servers involved

-This architecture makes use of standard interfaces for the request and response, that is the shoppers access multiple resources on the website using server-provided links, (example, clicking on the product and going to the URL that will give the product description)

*Architectural view of the shopping list website*

\*\*\*\*Check the Shopping list architectural view.io\*\*\*\*\*