Software Requirements Specification

for

Grocery Delivery System

**Version 1.0 approved**

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**Revision History**

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# Introduction

## Purpose

* + 1. The purpose of this software is to provide the front-end capability (subsystem 1 and 2) and backend capability (subsystem 3) for a Grocery Delivery System.
       1. The backend subsystem includes a shopper portal, shop manager portal, storage manager portal, and driver portal.
    2. The Grocery Delivery System will enable shop customers to order their groceries from subsystem 1 or subsystem 2.
    3. Subsystem 1 (web portal) and subsystem 2 (mobile application) are shop customer-interactive interfaces that allow shop customers to create an account, add items to their cart, enter coupons, and place their order for groceries.
    4. Subsystem 3 (multi-management portal) will store shop customer information, stock information, and delivery route details. Shop managers, storage managers, shoppers, and delivery drivers can interface with parts of this system, including fulfilling shop customer orders, stock and freshness tracking, and price control.
    5. The Grocery Delivery System should save on costs compared to a normal grocery store based on the efficiency of the implemented systems.

## Document Conventions

* + 1. **Naming Conventions**
       1. Consumers are referred to as “Shop Customers”.
       2. Employees who “shop” for customers are referred to as “Shoppers”.

## Intended Audience and Reading Suggestions

1.3.1 This Software Requirements Specifications for Grocery Delivery System was written with project managers, developers, marketing staff, users, testers, and documentation writers in mind.

1.3.2 The Remainder of the SRS is broken up into two other sections (besides the current section) The Overall Description and The Functional Requirements.

1.3.2.1 The Overall Descriptions section is where the software is explained in its entirety starting with a description of all of the functions of the product, the different people interaction with the product, the design of the product, and other implementation constraints.

1.3.2.2 The Functional Requirements section is where all of the different requirements the product needs on the back end, along with the priority (High, Medium, Low) and a description of each one.

1.3.3 Project Managers can refer to all of sections 1, 2 and 3, developers can refer to sections 1.1, 1.2, 2.2, 2.3, 2.4, 2.5, 2.6, and all of section 3, marketing staff can refer to sections 1.1, 1.3, 1.4, 2.1, 2.2, 2.6, 2.7, users can refer to sections 1.4, 2.1, 2.2, 2.6, testers can refer to sections 1.1, 1.4, 2.2, 2.5, and documentation writers can refer to sections 1.2, 1.5, 2.6, 2.7.

## Product Scope

* + 1. The Grocery Store Delivery System is designed to fulfill shop customer orders through a completely virtual interface.
    2. The software shall have integration of a delivery route system to quickly and efficiently deliver shop customer groceries.
    3. The system should be integrable into existing grocery store hardware to minimize cost and deployment time.
    4. The web portal front-end subsystem shall be compatible with the latest version of Mozilla Firefox and Google Chrome.
    5. The mobile front-end subsystem shall be compatible with the latest version of Android and iOS.

## References

* + 1. Use Case Diagram
       1. <https://github.com/AlexanderTheGrey/GroceryDeliverySystem/blob/master/Use%20Case%20Diagram.png?raw=true>

# Overall Description

## Product Perspective

* + 1. The Grocery Store Delivery System is a new product that can be used as:
       1. A brand new product with integration into newly formed domains.
       2. A replacement for existing systems that are transitioning into a virtual grocery store marketplace.

## Product Functions

* + 1. **Subsystem 1 and Subsystem 2, with function reference to shop customer capabilities**
       1. Secure registration with entry of personal information, delivery information, billing information, and preferences.
       2. Secure logon.
       3. Editing of user details through an integrated settings menu.
       4. Main frontend menu includes category based shopping suggestions, cart navigation, and shop customer details navigation.
       5. Shop customer details page includes order history page, with navigation to order details and tracking page.
       6. Navigation through the virtual grocery store, including a search mechanism.
       7. AI recommender system based on shopping habits and browsing history.
       8. Individual item pages with pictures, a description, nutritional information (where applicable), and a quantity/add to cart field/button. Items with variable weight shall have item-specific weight considerations, with cost-estimate only for weight indeterminate products.
       9. **Cart system to store items added to cart, with the ability to remove a variable quantity from cart and add applicable coupons to their order.**
          1. Upon removal of an item from the cart, the user should be displayed potential items to add to their cart based on their ordering/browsing habits.
       10. Checkout system from cart page that provides a fast, minimalist mechanism for paying for an order and specifying shipping information and applicable coupons. The checkout menu must have a time range for order delivery, with options for quick delivery.
    2. **Subsystem 3, with function reference to shopper capabilities.**
       1. Backend management GUI with role-specific shopper login.
       2. High level management GUI for shop managers, including statistics, shopper timecard, and shopper productivity report.
       3. Order queue with additional information for each order, including shortest shopper route through grocery store for a given order, calculated based on stock positioning and availability.
       4. Stock entry and tracking system, with automated stock depletion based on the order in which orders are being processed.
    3. Providal of weekly coupons, discount information, advertisement, and product price/availability updates (based on user preferences).
    4. Storage management system will allow storage managers to maintain stock availability, location, and freshness.
    5. **Shoppers should also be able to check and fill orders, including checking for storage and freshness of product items.**
       1. The backend system will enable shoppers to fill orders, browse for storage and freshness information of product items, per-order driver delivery name, and profits and losses for the grocery store.
    6. The driver delivery portal will allow drivers to check their tasks and routes.
    7. The backend subsystem will maintain the basic information of delivery drivers, along with their job availability and real-time location.
    8. All drivers will be automatically assigned tasks (orders).

## User Classes and Characteristics

* + 1. **Shop Managers**
       1. Admin privileges on backend system.
       2. Managers of shoppers and intrasystem logistics.
          1. Orders new stock based on consumer demand.
       3. Business-oriented degree.
    2. **Storage Managers**
       1. Elevated privileges on backend system through storage management portal.
       2. Maintain the location and amount of goods for the grocery store.
       3. Keep track of storage transactions through the storage management portal.
       4. Monitor the freshness of goods and send alerts when goods are approaching their use-by-date.
    3. **Shoppers**
       1. Basic privileges on backend system.
       2. Fulfiller of grocery orders and managers of stock.
       3. High school education/some college.
    4. **Delivery Drivers**
    5. Lowest level of privilege through the driver portal to check tasks and routes.
    6. Drivers are automatically assigned tasked (orders).
    7. **Shop Customers**
       1. Full access to frontend systems.
       2. Consumer of grocery store items.
    8. **IT Personnel**
       1. Full access to backend system and hardware.
       2. Technical degree.

## Operating Environment

* + 1. **Minimum hardware requirements**
       1. Support for running Linux-based operating systems.
    2. **Operating Systems**
    3. Backend system should have the preferred Linux-based standalone operating system with built in management GUI.
    4. Supported optional operating systems include Windows, certain Linux distributions, and embedded systems, if required by existing systems.

## Design and Implementation Constraints

* + 1. Backend system must have integration capability into MySQL database software for customer and stock information.
    2. Backend system shall provide control flow for front-end web and mobile systems to the database. Relevant backend system operations must be synchronized with the database continuously.
    3. All user passwords must be stored as salted hashes, with unique salts for each password. Salts shall be obtained using features easily and quickly calculable to avoid login overhead.
    4. Supported languages must include English and Spanish.
    5. SSL certificates must be kept up-to-date.
    6. Maintenance shall be performed by customer’s organization, with optional long term support packages available through software-delivery company.
    7. Recommended external time server for tracking the validity of security certificates.

## User Documentation

* + 1. Primary documentation for shoppers will be provided through an HTML manual integrated into the backend system.

## Assumptions and Dependencies

* + 1. Lack of a virtualized environment may impact deployment time and increase hardware/physical space requirements.
    2. Existing implementations require grocery stores to have basic electronic stock tracking for integration into the database.
    3. Dependency on most major credit card companies and PayPal for transactions

# Functional Requirements

## Registration

* + 1. Priority: High
    2. Registration page allows secure registration for shop customers with getting detailed information about the user.
    3. Includes secure questions to protect the shop customer’s account.
    4. Implements 2.2.1.1 and 2.2.1.2 (Secure registration with entry of personal information, delivery information, billing information, and preferences.) (Secure logon)

## Enter User Details

3.2.1 Priority: High

3.2.2 Shop customers will enter their detailed information as filling out the first name, last name, cell phone number, email address, payment card information, building address, billing address, preferences, and registration parts.

3.2.3 Shop customers can also add a profile picture.

3.2.4 Includes a secure questions menu which the shop customer can choose and answer three questions from there to protect the account.

3.2.5 Database system will have all information for shop customers.

3.2.6 Implements 2.2.1.1 and 2.2.1.2 (Secure registration with entry of personal information, delivery information, billing information, and preferences.) (Secure logon)

## Shop for Groceries

3.3.1 Priority: High

3.3.2 Shop customers will view the product advertisements and navigate through item pages by giving that item specific information such as its price, variety, the number of that product, and use-by date.

3.3.3 Includes a search place, where also items can be searched from category-based shopping suggestions, or from their lastly bought products section.

3.3.4 Shop customer can view more items according to their preferences/shopping habits through the AI recommender system, as implemented in section 2.2.1.7.

3.3.5 Implements 2.2.1.4 (Main frontend menu includes category-based shopping suggestions, cart navigation, and shop customer details navigation)

## Add item to Cart

3.4.1 Priority: High

3.4.2 Chosen items can be added to the cart, and on the corner of the cart shape there will be a number that shows how many products the shop customer wants to buy.

3.4.3 Shop customers can add and remove items from the cart.

3.4.4 Coupons can add to the cart. And there will be a warning if the coupon is not applicable for that specific order.

3.4.5 Items will have a quantity button to make user life easier if buying multiple items.

3.4.6 Implements. 2.2.1.9 and 2.2.1.9.1 (Cart system to store items added to cart, with the ability to remove a variable quantity from cart and add applicable coupons to their order. Upon removal of an item from the cart, the user should be displayed potential items to add to their cart based on their ordering/browsing habits.)

## View Cart

3.5.1 Priority: Medium

3.5.2 Chosen items can be added to the cart, and on the corner of the cart shape there will be a number that s

3.5.3 Shop customers can check the items in the cart or on the order list.

3.5.4 Order list has all the chosen goods and their prices.

3.5.5 Users can see the applied discount to the total price if the coupon barcode or number is provided.

3.5.6 Implies 2.2.1.10 (Checkout system from cart page that provides a fast, minimalist mechanism for paying for an order and specifying shipping information and applicable coupons. The checkout menu must have a time range for order delivery, with options for quick delivery.)

## Modify Item Quantity

3.6.1 Priority: Low

3.6.2 To modify the quantity, it has two buttons: (+) for incrementing and (-) for decrementing the chosen product.

3.6.3 Includes a box to enter a certain amount of the item.

## Checkout

3.7.1 Priority: High

3.7.2 Shows the total price of items and the price after coupons.

3.7.3 Gives different options for shipping according to the emergency there will be fast shipping and a day shipping options.

3.7.4 Address check part for the address that the user wants to ship.

3.7.5 Shop customers can add new payment cards to card information.

3.7.6 After checkout, the order information will show up on the page.

3.7.7 Implements 2.2.1.10 (Checkout system from cart page that provides a fast, minimalist mechanism for paying for an order and specifying shipping information and applicable coupons. The checkout menu must have a time range for order delivery, with options for quick delivery.)

## Place Order

3.8.1 Priority: High

3.8.2 Place order provides success and a fast payment in a secure environment.

3.8.3 Shows the bought items and order information such as: ordered day, arrival date, total amount.

## Secure Web/Mobile Portal Logon

3.9.1 Priority: High

3.9.2 Provides a secure Web/Mobile Portal logon for the shop customer.

3.9.3 Includes a search place for users to search items, and possible items that AI mechanisms offer according to the user chooses.

3.9.4 Main page that allows users to navigate between other functions such as checking out, and viewing orders and tracking information.

3.9.5 Also has an edit button for users when there is a need to edit personal information.

## Edit User Detail

3.10.1 Priority: Medium

3.10.2 To modify the quantity, it has two buttons: (+) for incrementing and (-) for decrementing the number of the chosen product.

3.10.3 User will be able to edit the shipping address, name, payment card information, billing address, cell phone number and profile picture.

3.10.4 After changings users can see the accounts new view.

## View Order Details and Tracking Information

3.11.1 Priority: Medium

3.11.2 After logon by clicking orders, the Shop Customer can view what’s being ordered, the total price, arrival address, arrival time, billing address, and the name to pick up goods.

3.11.3 Shop customers also can see the past orders and all their details.

3.11.4 All the past orders and their details can be seen as the order review which will be ordered from newest to the oldest. The date of order can be seen on the corner of each order details.

3.11.5 Shop Customer will have the tracking number to see the updated location of his/her order. Also the name of the driver delivery.

## Manage Hardware and Software

3.12.1 Priority: High

3.12.2 The IT Manager uses this function.

3.12.3 This extends two parts as Hardware and Software. If the system does not do its functionality in one of these parts, the IT manager works on that in the most efficient way

3.12.4 It allows changes on software to improve the Grocery Delivery System.

## Change Hardware

3.13.1 Priority: High

3.13.2 The IT Manager uses this function.

3.13.3 When there is a need to change the hardware, the IT manager will be available to change that part.

## Update Software

3.14.1 Priority: High

3.14.2 The IT Manager uses this function.

3.14.3 When there is a need for changes and new updates on the software, this provides a large functionality to improve the software.

## Fix Incorrect Data

3.15.1 Priority: High

3.15.2 The IT manager uses this function.

3.15.3 If there is a problem on the data, fix the incorrect data.

## Check Tasks and Routes

3.16.1 Priority: High

3.16.2 Delivery Drivers will have tasks (order), close to the real-time locations and in their time schedules that they provided.

3.16.3 According to the consumers shopping lists, orders will be created automatically for the Delivery Driver.

3.16.4 Delivery Driver will have the Shop Customer’s address and routes to that address. There will be route options for the Delivery Driver so all the options on route will be provided in this section.

3.16.5 Shop customers will access to see in which route the driver and the time their order is coming.

3.16.6 Implies 2.2.6 and 2.2.7, 2.2.8 (The backend system will enable shoppers to fill orders, browse for storage and freshness information of product items, per-order driver delivery name, and profits and losses for the grocery store. The driver delivery portal will allow drivers to check their tasks and routes. The backend subsystem will maintain the basic information of delivery drivers, along with their job availability and real-time location. All drivers will be automatically assigned tasks (orders)

## Manage Orders and Information

3.17.1 This function is for shoppers.

3.17.2 Shoppers can see the order list and the specific information for each item.

3.17.3 From this page shoppers can also check and fill orders, and also update the stock if needed.

3.17.4 Implies 2.2.5

## Maintain Database

3.18.1 This use case for Storage Manager.

3.18.2 Stock quantity and stock freshness can be checked from here. If out of any item or the use-by date expired then can send stock quantity alert or stock freshness alert.

3.18.3 Implies 2.2.4 (Storage management system will allow storage managers to maintain stock availability, location, and freshness.)

## Manage System Logistics

3.19.1 This use case for Shop Manager.

3.19.2 From here the stock alerts can be checked and according to needs new stocks can be ordered.

3.19.3 Shop Managers can change or cancel the order from here based on the need.

3.19.4 Implies 2.2.2.2