# Software Requirements Specification

**for**

# e-GROCERY Inc

**Version 1.0**


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# Revisions

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# 1 Introduction

This section of the software requirements specification (SRS) pertaining to e-GROCERY INC. presents the purpose of the document, reports the scope of the given product, provides the necessary information regarding the document's audience, lists the acronyms and definitions used, the formatting convention followed, and references and acknowledgments.

## 1.1 Document Purpose

The purpose of this document is to define and state the requirements involved in the design and manufacture of the systems that are necessary to construct the appointed product.

## 1.2 Product Scope

The scope of the product consists of a webapp that allows customers to have an all-online experience, allowing for home deliveries, thereby offering conveniency, and opening itself to a wider consumer base. This web app system will be an improvement to the current system which lacks the ability for new users to sign up online.

The new webapp will consist of two components, the customer interface component and the administrator component. The customer interface component will enable consumers to create new accounts, buy/track products, set up weekly delivery system, receive tailored recommendations and make queries. The administrator interface will allow for product cataloguing, user accounts managing, stock management and product analysis.

## 1.3 Intended Audience and Document Overview

The target audience of this document are intended to be potential developers, technical-assessment staff and potential end users. This document is divided into sub sections, as shown on the content page. It's arranged in increasing specificity as it's intended to be read sequentially, however, isolated reading of sections is possible. Product managers and developers are expected to read through Section 2, 3 and 4, as these sections provide a detail understanding of the product and its specification. Testers in particular are required to be comfortable with the requirements (Sections 3 and 4) to assist them in unit testing.

Section 1 briefs about the details of this document. Section 2 dives into the details of producing the product. Section 3 showcases the necessary requirement of the web app. Section 4 goes over the non-functional requirements, pertaining to the operability of the webapp.

## 1.4 Definitions, Acronyms and Abbreviations

| | |
|---|---|
| **Apache** | an open-source web server |
| **API** | Application Programming Interface |
| **CAPTCHA** | a challenge set for the user to proof the user is not a bot but a human |
| **CTO** | chief technology officer |
| **DBA** | database administrator |
| **DDOS** | distributed denial of service |
| **FAQ** | Frequently Asked Questions |
| **HTTPS** | Hypertext Transfer Protocol Secure |

| | |
|---|---|
| **IEEE** | Institute of Electrical and Electronics Engineers |
| **mySQL** | open-source relational database management system |
| **SEO** | search engine optimization |

## 1.5 Document Conventions

This document follows the IEEE formatting requirements. The title of the subsections has been boldened, additionally with the terms in section 1.4. Additionally, the reader may come across boldened terms and statements to emphasize significance. Comments to the reader have been italicized. The references in Section 1.6 follows the IEEE conventions.

## 1.6 References and Acknowledgments

[1] "What Is Apache? - What Is A Web Server?". *Wpbeginner*, 2021, https://www.wpbeginner.com/glossary/apache/.
[2] "e-GROCERY SRS". *Luiz Capretz*, 2021, Software Engineering

# 2 Overall Description

## 2.1 Product Perspective

The webapp being developed is an improvement to the current system which only supports pre-created users, which consist of vendors and not the general public, using a propriety system. The new webapp will enable the client to sell to a wider audience. This has come about due to the purchasing of a new warehouse and thereby excess products to sell. To allow for new consumers to set up accounts, the webapp is required to have an easy-to-use interface and to keep track of all the new customers and logistics, a functional interface between the grocery and the web system is required. The web app product fully replaces the previous system, as the vendors, which are the primary end user of the current system can simply create a user account and purchase goods as before. As such this integrates both types of consumers, vendors and regular customers, into one system. Provided below is a picture (Figure 1) showing a brief overview of the proposed system and the interaction among the customer, warehouse and the grocery.

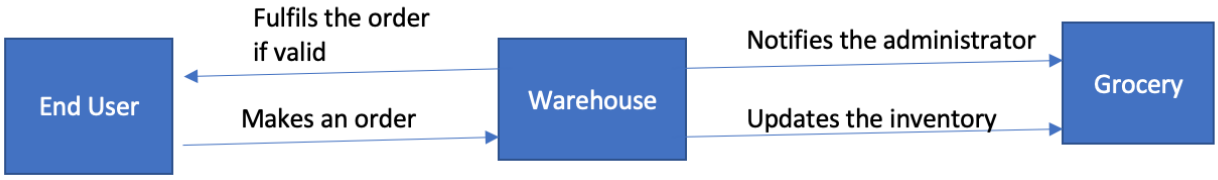


**Figure 1**

## 2.2 Product Functionality

The proposed system would allow users to, at minimum to:

- Register for an account on the platform
- Allow authentication using username and password
- Receive customer assistance
- Browsing and filtering products
- Ordering desired product
- Select the delivery of products
- Select the pickup of product from warehouse
- See the number of items in stock in real time
- View detailed information of selected items
- Receive confirmation email of purchase made

The administrator/grocery would be allowed to:

- Update the inventory of product
- Add/remove product to the catalogue
- Receive notification email of a purchase made
- Change items of catalogue without interrupting customer's experience
- Automatically restock
- Manage offers and coupons

## 2.3 Users and Characteristics

### 2.3.1 Customer:

The customers are expected to have reasonable Arabic and English reading skills, as the website will be available in these two languages for now. The customer is not expected to have high education level or technical experience. The customers are expected to reside in UAE as international shipping will not be available. Customers who reside long way from the warehouse or in other cities are expected to order in bulk, due to the high delivery fee. Customers who are in close proximity to the warehouse may make purchases routinely, to those customers in particular, we would target to sign up for our weekly grocery plan. There would be occasional consumers who would make purchases of seasonal products, such as fruits, and to those customers we would offer coupons to encourage them to become a regular.

### 2.3.2 DBA:

The DBA is expected to have at least 3 years of industry experience and a bachelor's degree. The DBA would have permissions to make changes to the datatype and would have to notify any changes made to the database to the CTO. The DBA is primarily expected to check the database only when tickets are raised with issues pertaining to the database.

### 2.3.3 Data Entry Clerk:

The data entry clerk is expected to have at least graduated high school or equivalent. They can only make changes to the database, only after receiving approval from the DBA. He/She is expected to update the database couple of times a week when a product details needs updating.

## 2.4 Operating Environment

The server side of the webapp would be running on Apache. It seems to be a reliable platform to use as 67% of all webservers run Apache [1].

The client or end users are expected to use their smartphones, PC or mac to access the websites. The client should use preferably use browser that has been recently updated. The browser should have the ability to use SSL to communicate.

The recommended OS to access the websites would be:

- Mac OS Catalina and above
- Windows 10 and above

The recommended browsers to access website would be:

- Microsoft Internet Explorer 10+
- Google Chrome 49+
- Firefox 48+
- Apple Safari 11+

## 2.5 Design and Implementation Constraints

The language barrier could be a constraint as the website will be available in only two languages, Arabic and English. This means that residents that are from South Asian countries, which is majority of the UAE population, may feel uncomfortable using the website. This thereby makes

ease of user interface a higher priority. Ensuring that customers all around UAE receive the product in a reasonable delivery time frame is going to be a constraint. Especially during peak times such as holidays and festivals. Ensuring that the cookies used to track user information are compliant of UAE's privacy laws. Administrator performing real time catalogue operations shouldn't affect customer's experience. All of the past vendors from the current system must be given new accounts and guided on how to use the proposed system. Ensuring the successful SEO of the website as this is the company's first public website. The website should be able to run on any modern browser and any mobile devices released in the last 4 years.

## 2.6 User Documentation

User documentations is particularly be required by the vendors who have been using the current propriety system for a long time, as such it's our responsibility to ensure that the vendors are comfortable transitioning to a new system. To provide such assistance, we would need to create a physical documentation of how a vendor in particular should sign up on the website, and the selections they should make for a vendor account. For regular consumer accounts, we would have a chat bot, that would have a knowledge base of guides and FAQs to answer any customer's question. We would also have 24/7 live chat support available to guide our users through any issues, whether its website or transaction related. The developers should maintain a source code documentation using the IEEE standard for software user documentation.

## 2.7 Assumptions and Dependencies

It is assumed that the webserver used by the client is compatible to run Apache on and that the client will be able to handle issues that arises with a web server that runs on Apache. We are assuming that there won't be more than 5000 concurrent users on our server. Since the current propriety system uses the SHA-2 encryption protocol to save the passwords of the vendors, most of the proposed security systems could be built using technologies and code from the current propriety system.

# 3 Specific Requirements

## 3.1 External Interface Requirements

### 3.1.1 User Interfaces

A user who is not logged into the website will see a version of the website that is quite similar to a user who is logged in, both the users can add/remove items to the cart. However, when the non-logged in user attempts to buy the cart, the user is sent to the signup/login page. Additionally, the non-logged in user won't be able to see the list of items recommended for him and the accounts control setting on the top left of the webpage. The main page of the website would show the items that are the current best sellers, and the items that are newly arrived. We would also have tabs on the top of the webpage right below the logo, the tabs would be labelled as the types of product the shops offers. Additionally, we would have significant area below the tabs for offers and advertisement by the store.

### 3.1.2 Hardware Interfaces

The end users would need a PC, Mac or a smartphone to access the website. These devices preferably have been released within the last four years, to get the best experience possible. The hardware required for server-side processing must be done on server-class computers and not on workstation computers.

### 3.1.3 Software Interfaces

The server would be running on Apache 2+. The system would be using MySQL databases to store the account credentials of its users. For this task, MySQL 8+ is recommended. The server is expected to run on Windows Server 2016+. The transaction of funds by customers would be done by using API of Square Developer, a platform that takes care of the payment system on webapps.

### 3.1.4 Communications Interfaces

The email system on which customers will send remarks and queries to will be hosted on an email server. This server will also send automated responses such as confirmational messages. The website and its resources will be hosted on a web server, which customers can access using a browser. The webapp would also require an HTTPS mode of communication between the server and client due to the sensitivity of transaction data. As such, an SSL certificate would be required. Additionally, the payment gateway, would be using end to end encryption to protect the credentials of customers. The platform would also be using CloudFlare DDoS Protection to protect the server from cyberattacks.

## 3.2 Functional Requirements

The requirements are divided into the subcategories of customer interface component and administrator component. Each category will describe the actions required by each user of the interface. The users of the 3.2.1 would be the customers accessing the website and the intended users of 3.2.2 would be the employees handling the website.

### 3.2.1 Customer interface component

#### *3.2.1.1 Register for an account on the platform*

The user is given the option to sign up for an account or log in to an existing account. During the sign up, the user would be allowed to sign up using other platforms such as their Google Account and Facebook account.

#### *3.2.1.2 Allow authentication using username and password*

The user is asked to sign up using their email address and setting up a password that meets the current standards of security. The user is also sent a confirmation email when they first sign up for an account to verify their account identity. The user should be able to change their password and given an option to log in if they had forgotten their password.

#### *3.2.1.3 Receive customer assistance*

The user can access the customer service details by viewing the website's contact detail on the bottom of the webpage. The user can additionally contact the customer service by clicking on the "Contact Us" button right next to the user's profile picture on the top left of the website.

#### *3.2.1.4 Browsing and filtering products*

The user is able to search for any product using keywords or the exact name on the search bar, which would be located on the left top side of the webpage. The user would also be able to see bunch of categories on the category bar of the webpage. On which if the user hovers the user would be shown the list of subcategories.

#### *3.2.1.5 Ordering desired product*

Any user that's signed in can add products to their cart while browsing, after which, the user would click on the cart, and will be the given to add/remove items from the cart, view the price breakdown of the items and given the option to buy the cart with whatever payment method they prefer. Users that are not signed in can use the same cart functionalities as aforementioned, however, when this set of users attempt to buy the cart, they would be taken to sign up page. However, the items they stored in their cart would be temporarily stored until the current web session terminates.

#### *3.2.1.6 Select the delivery of products*

Users are given the option of preferred delivery methods; the options would consist of home delivery or pickup from warehouse. The user would be encouraged to pick the warehouse method, due to no delivery charges. For the sets of users selecting home delivery, they would be asked to enter their phone number, that would be required to be verified using SMS verification, and their living address.

#### *3.2.1.7 Seeing number of items in stock real-time*

The users would be required to see the current number of items in stock for any product along with their product details. This would require direct connection to the product database. The items needs to be marked as out of stock when the stocks hit zero and items should not be able to place orders of that item in such case.

### 3.2.2 Administrator component interface

#### *3.2.2.1 Update the inventory of product*

The administrator of the system, along with employees such as the data entry clerk, should be able to access the interface to view list of product listings or catalogue. They should be able to add/delete

items from the list and change the product details. They should be also be able to change the categories the product belongs to.

#### *3.2.2.2 Allow central access to entire content*

The administrator should be able to access any content of the website that has to do with the product using an interface panel. This would allow employees to change or view the e-catalog, categories, subcategories, products, orders, content pages, shipments, and customers order details.

#### *3.2.2.3 Email confirmation*

The administrator should receive email confirmations of a purchase after the customer has confirmed their payments. Additionally, when the stock of an items reaches low, an email is sent.

#### *3.2.1.4 Managing coupons and offers*

The administrator should have the ability to set offers and new coupons code. The system should also be able to track which coupons are expired and automatically set offers for items that are in dire need to be sold.

## 3.3 Behaviour Requirements

### 3.3.1 Use Case View

As shown below, Figure 2, is a use case diagram to provide an overview of how the system interacts with its users and how the services interact among themselves. The document from which Figure 2 is taken is referenced in Section 1.6. [2]

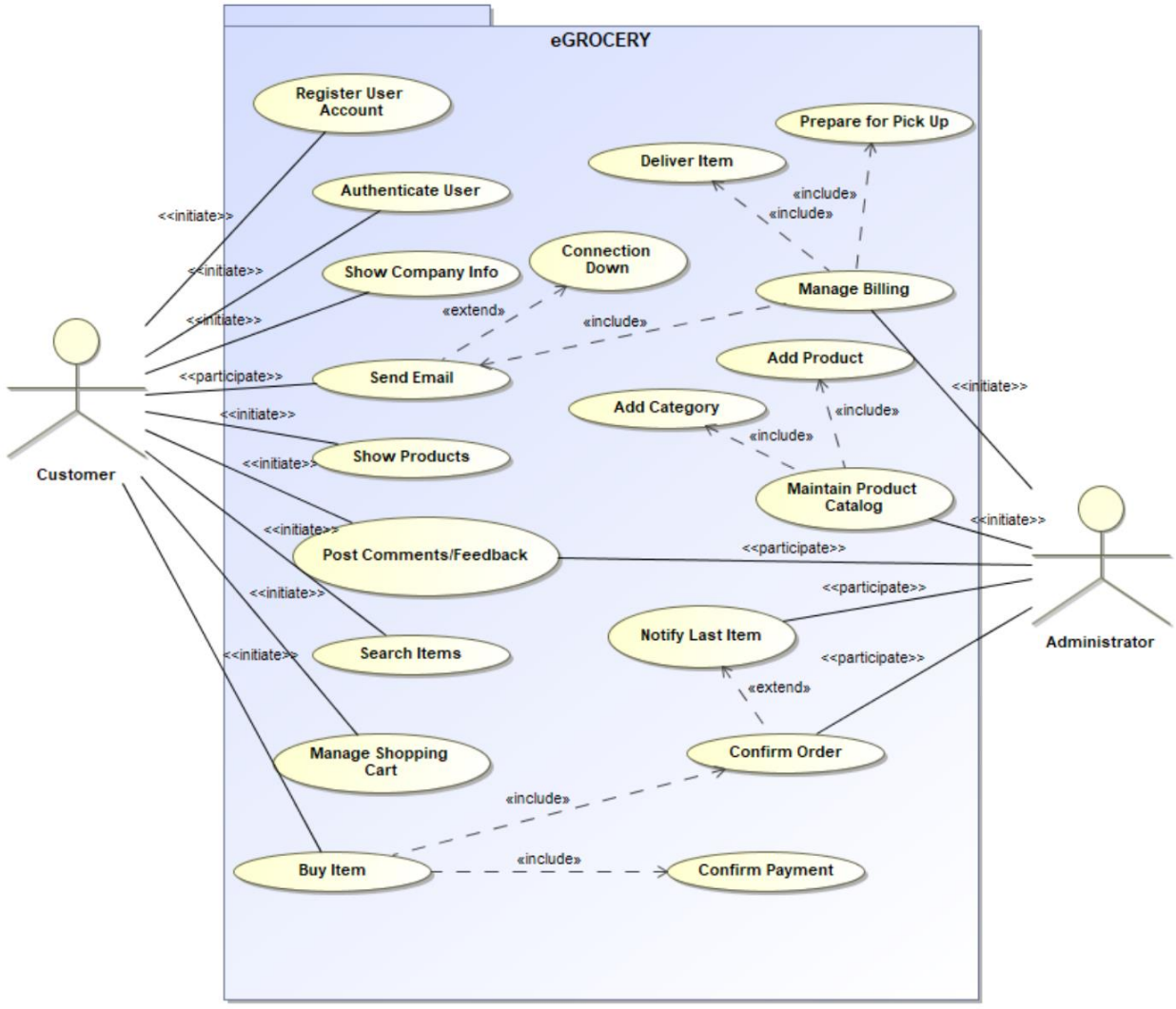


**Figure 2**

# 4 Other Non-functional Requirements

## 4.1 Performance Requirements

The system is required to have a quick response time, not more than a second, and responsive. The first time any users visit the page must not experience much time delay when the home page is loading. As such, ensure no resources that require high storage and bandwidth are used on the home page. The payment processing, regardless of payment methods, should be done swiftly, with no issues that would essentially require the customer to wait. The customer should be given a clear option to cancel transaction if the required transaction is taking more than five seconds. Additionally, the user should be given the option to delete/add items on the shopping cart with no slow page reloads, the reloads should be done in less than a second, and the user should be returned to the previous page position after refreshing.

When administrator or employees make changes to the product catalogue, the user experience should remain unaffected, there should be no glitches or visual bugs, the updating of content should be fluid and smooth. The server administrators must ensure that the servers are capable to at least handling 6000 concurrent viewers at once. The system is expected to be online and available at all times with expected uptime of 99.9%. All types of system maintenances are preferably to be done with no impact on the user's experiences.

## 4.2 Safety and Security Requirements

The system is required to use the HTTPS mode of communication and SHA-2 encryption to store users' password and email addresses. The site should be using a protection method against DDOS. The system should implement Captcha when users are signing up and when users are classified as suspicious of being bots due to unnatural amounts of clicks or the speed of mouse movements.

## 4.3 Software Quality Attributes

The software is expected to be fully tested and bug free. The overall design of the system should be easy to use and navigate for the end users. The software should be mobile friendly.

# 5 Other Requirements

# Appendix A – Data Dictionary

# Appendix B - Group Log