

MDS Requirements Specification

Version 1.0

April 19, 2021

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1. Executive Summary

1.1 Project Overview

Despite the situation there have been a few businesses that have been crowded and one of those is supermarkets. We are aiming to create a solution where these types of businesses can have a way of managing their workload for in-store purchases as well as providing a delivery system. This would be helpful for people who for any reason cannot purchase items in-person or do not have the time to. This way they can do so easily. The management system is a way to keep note of daily activities in the business and also keep track of statistics, sales, inventory and more.

Some of the main features we are going to implement:

1. Log-in and register system (different users have different accesses)
2. Pages to keep track of: inventory, orders, sales, statistics.
3. Clients will have a simple page to make their order and check-out.

1.2 Purpose and Scope of this Specification

The purpose of this “Requirements Specification” document is to elucidate its receivers, testers and audience regarding the main compositional columns of the project. The first topic discussed after the summary is the “Product/Service Description” in which details about MDS and what it has to offer will be provided. Other sections, “Requirements” and “User Scenarios/ Use cases” are accountable for the clarification of this project’s objectives and requirements and the illustration of use cases. Target audience for this project are businesses as we aim to offer a service that keeps track of their products, sales and give an overall view on the business. The projects also serves and has a positive impact for the customers since it facilitates their purchasing process by having delivered their order at home and it also avoids in – person shopping, a thing many people would like to do considering the current situation.

In Scope of the Specification:

- Product and Service description.
- Functional, non – functional and domain requirements.
 - Management service
 - Delivery service
- User Scenarios/ Use cases.

Out of Scope:

- Features not involved in the requirements: Administrative decisions such as buying appliances needed for the supermarket or paying the rent (if any).

2. Product/Service Description

We have thought of our application as a management software for the supermarket as well as a delivery service for its customers. The factors affecting our product are divided in the employee’s and owner’s perspective and in the customer’s perspective. The first part aims to provide facilitating

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services for owners and managers by having all the information needed about the supermarket in one application. This information includes: procurement, sales, inventory, statistics and more. Having everything monitored in one application will avoid mistakes in supermarket's purchasing decisions, employee's wages and business analytics.

The delivery service is thought of as a requirement facilitating the customer's shopping process. For many reasons like health issues or lack of time, some people are not able to make their purchase in the supermarket's environment. Considering this, creating a delivery service would benefit these types of customers. The service will be created considering also the delivery worker's needs such as access to the location of the order made through a map.

2.1 Product Context

Our product is related to an ordinary supermarket or market. It will be an independent system that will be available to 6 levels of users: Admin, Manager, Client, Economist, Floor employees, Delivery person. All these 6 levels will be connected with each other.

2.2 User Characteristics

There are 6 types of users within our system:

1. Admin

- Can log in
- Can check statistics within a given time period
- Can check sales of a given time period or for each employee
- Approves manager's requests
- Can log out

2. Manager

- Can create an account and log in
- Can create accounts for the employees, the economist, security and IT.
- Can delete the accounts of clients, not alter them.
- Can update/delete the accounts of employees and economists.
- Can add and update inventory
- Can check statistics within a given time period
- Can check sales of a given time period or for each employee
- Can check on the procurements
- Checks the declared amounts by the delivery persons with the amount of money brought by them (to counter false tips).

- Can log out

2. Client

- Can create accounts.
- Can log in
- Can place orders
- Can buy online/by cash.
- Can view their orders and their progress
- Gets an electronic receipt for their orders
- Can leave reviews or contact the seller
- Can log out

3. Economist

- Can log in
- Can update their profiles (with the approval of the manager)
- Can look into sales and statistics and update them
- Can look into procurements
- Serves as HR (controls employment for the candidates)
- Checks employees' paychecks
- Can log out

4. Cashier

- Can log in
- Can update their profiles (with the approval of the manager)
- Handles customer invoices for the products.
- Can log out.

5. Floor employee

- Logs in
- Can update their profiles and sales (with the approval of the manager)
- Checks products' availability & helps in the procurement
- Eliminates expired products
- Logs out

6. Delivery person

- Can log in.
- Can update their profiles (with the approval of the manager)
- Collects the products bought at the registry.
- Checks the map to find the right address.
- Delivers the products to the customer.
- Declare the amount paid by the customer (in order to calculate tips).
- Can log out.

2.3 Assumptions

It is assumed that if an item is out of stock the manager can log in and make it unavailable until it is back in stock.

It is assumed that the manager can have access to all the employees accounts and details.

It is assumed that the items ordered online for delivery should be automatically subtracted from the inventory and if it is an in-person purchase the manager should subtract it manually from the inventory.

It is assumed that the manager gets a warning message if an item is low on inventory.

Constraints

- Client's requirements should be completed in detail. There should not be functions out of the scope.
- The system should be easy to be understood by each level of user. The interface should not be too complicated and it should not take too long for the users to be able to understand the system enough to use it.
- The project should be finished by June.

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- Since this system is a web application, users should have internet connection in order to access any part of the product.
- Other constraints will be discovered along the way if there are any.

2.4 Dependencies

- The manager or admin is the only level of users to be able to add accounts for the rest of the levels of users.
- Orders made for the restock to suppliers should be approved by the manager.
- Every account must have different login credentials.
- Any other dependencies are to be determined.

3. Requirements

3.1 Functional Requirements

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_01	The web application should have different interfaces and functionalities for different types of users.	The 6 levels of users: Admin, Manager, Client, Economist, Floor employees, Delivery person, should all be different	1	22/04/2021	
BR_02	The login credentials should be unique for each user, especially the clients.	When registering and logging in the users should have a unique username or employee ID so there are no mix-ups with the accounts.	1	22/04/2021	
BR_03	The passwords should be valid when logging in and they will be authenticated.	Every user has to log in with a valid password that has been registered to the web app.	1	22/04/2021	

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BR_04	The user can have the chance to edit and change the password.	This is done by updating the password in the database. Users can change their passwords easily from the page.	1	22/04/2021	
BR_05	The name of the supermarket should be registered.	Every supermarket that uses this service will have to set up information about their business most importantly the name.	1	22/04/2021	
BR_06	Employee hiring and payments.	Hiring and paychecks have to be handled by the economist.	1	22/04/2021	
BR_07	Create accounts for the employees	Manager and admin are the ones that add the accounts for the employees.	1	22/04/2021	

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BR_08	View statistics	Manager, admin, economist	2	22/04/2021	
BR_09	View sales	Manager, admin, economist can view the sales of every employee while the cashiers can view only their own sales.	2	22/04/2021	
BR_10	Packaging of the orders made online by customers.	Floor employees are the ones getting the online orders ready.	2	22/04/2021	
BR_11	Handle suppliers and inventory.	The manager has to handle the suppliers and the new orders for the products that will be added to the supermarket. The manager also gets a notification if a certain product is about to run out of stock or is out of stock.	2	22/04/2021	

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BR_12	Make deliveries	An employee is a delivery person who collects the order from the supermarket and sends it to the customer.	2	22/04/2021	
BR_13	Make orders for out of stock or low on stock products	Manager makes the orders but it has to go through the admin for approval	2	22/04/2021	
BR_14	Electronic receipts	Clients can have an electronic copy of the receipt for their purchase.	3	22/04/2021	
BR_15	View the information of the clients and employees	The manager and admin have access	3	22/04/2021	

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BR_16	Update accounts and profiles.	Every employee can do so with the approval of the admin or manager. Clients do not need an approval	4	22/04/2021	
BR_17	Leave feedback and contact business	Customers are the ones that can leave feedback in the web app and contact the business.	4	22/04/2021	

3.1 Non-Functional Requirements

3.1.1 User Interface Requirements

The software will be in the form of a webpage which can be accessed from everyone with a proper device and internet connection through any browser (Google, Mozilla ect). There are different types of users so for each user there will be a separate interface. If admin or manager is logged in then they will have some clickable buttons with given functions for every task that they should perform. Clients' interface will have some general information about products and delivery on the main page and a menu that redirects them to the other sections. Economist, once logged in can view everything about sales and statistics as well as employees' paychecks. And finally, the delivery worker will have an interface of its own where the location of the order made will be shown in the map.

3.1.2 Usability

Once the software is received by the client, we will make sure that all its users feel comfortable with using it.

Learnability

- The system is easily used and learned.
- For each user, a set of instructions in PDF format can be downloaded from the webpage.
- In case of errors or mistakes, a dialog box will be shown to help users understand.

3.1.2.1. Performance

Specify static and dynamic numerical requirements placed on the system or on human interaction with the system:

- Static numerical requirements may include the number of terminals to be supported, the number of simultaneous users to be supported, and the amount and type of information to be handled.
- Dynamic numerical requirements may include the number of transactions and tasks and the amount of data to be processed within certain time period for both normal and peak workload conditions.

All of these requirements should be stated in measurable form. For example, "95% of the transactions shall be processed in less than 1 second" rather than "an operator shall not have to wait for the transaction to complete".

3.1.2.2. Capacity

- The number of simultaneous users to be supported: 25
- Per-user memory requirements: 30 MB
- Expected application throughput: 2 data packages/ second

3.1.2.3. Availability

- The webpage is going to operate at every time of the day, or 24 hours a day.
- The webpage is going to operate at every day of the week.
- The webpage will be available to all areas with network connection.

3.1.2.4. Latency

- The maximum acceptable time for a service request should be no more than 5 seconds.
- Web application's modules should not take more than 100 ms to be loaded on the server.
- Users' actions such as: log in, register should take a minimum time.

3.1.3 Manageability/Maintainability

3.1.3.1. Monitoring

MDS will monitor the application for every inconsistency it may have in order to be fixed as soon as it can.

Regarding the users, once they enter their correct information they can be logged in and if not, then they can't be logged in. An error message will be shown instead. Admin and manager can monitor every action of the business such as: procurement, sales, deliveries.

Clients can monitor their orders at any time and they are also shown the products in discounts at the main page. Search bar will make things easier for clients in case they want to access a certain product.

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Economist will monitor sales so that he can make analysis regarding the business progress.

3.1.3.2. Maintenance

Different users need to maintain different data in the application. Manager will have personalized buttons for adding, deleting and editing the information of the business' database and its employees. Economist will maintain the sales database by updating it every day with the relevant information.

Regarding the maintenance of the application by MDS, if a crash occurs then the application is going to restart. In case it keeps crashing then it will be disabled to the users (with a message informing them about the situation) and will be solved by MDS.

3.1.3.3. Operations

Operations required by the users are:

- Enter their credential to successfully log in.
- For clients to specify their location.
- In case clients pay with credit card, it is required the information of the credit card.
- Managers should update the database for any change.
- Economist should update the statistics and sales section.
- Admin should approve every action of the manager

3.1.4 System Interface/Integration

The database will be accessible to many users but only admin/manager will have access to modify it.

The connection client – server will be executed by the HTTP protocol. We plan to use these technologies for the development of the website:

- Java
- Spring
- Thymeleaf

3.1.4.1. Network and Hardware Interfaces

Since our application is web – based then the browser will create a connection (TCP) with the server. All browsers can support this kind of connection thus ensuring a successful operation.

3.1.5 Security

3.1.5.1. Protection

To protect the webpage from malicious or accidental access, destruction or misuse we will take these precautions.

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- Encrypt the most sensitive information such as passwords.
- The page will validate passwords and other data for specific conditions before they are stored in the database.
- Each user will only see the information related to them.

3.1.5.2. Authorization and Authentication

- The user authentication will be using username and password.
- Authorization will be based on the level of user type.

3.1.6 Data Management

Entities (not complete list):

- Employee
- Order
- Inventory
- Sales
- Suppliers

Employee specification:

emp_ID integer

emp_name varchar max 20

emp_surname varchar max 20

emp_bd - format YYYY-MM-DD

emp_role varchar max 20

emp_email varchar 50

emp_wage =0

Order specification:

Id int

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item_id int
emp_id int
table_loc_ID int
total int default=0

Inventory specification:

id int
name varchar 100
supplier_id int
amount int

Sales specification:

id int
date DATE - format YYYY-MM-DD
Suppliers specification:
sup_ID int
NAME varchar 50
EMAIL varchar 50
phone_nr int
product varchar 50

3.1.7 Standards Compliance

The process of using and maintaining the application is and will continue to be respectful to any user's privacy. (including admin, manager, client, economist). All personal information will be protected according to the law specifications.

3.1.8 Portability

The system will be web-based therefore it will operate the same regardless of the operating system.

3.3 Domain Requirements

- In case of discounts the clients should be notified. Also clients should be notified when the discount offer is no more valid, by updating the system.
- Once the order is made, the client cannot retrieve his/her order. For this point the client must agree once entering the application.

4. User Scenarios/Use Cases

Scenario 1: Customer Log in

- Customer goes to the webpage
- Goes to the register page
- Enters their information such as username and password and other personal information
- After authentication customer has access to the webpage
- Using the credentials they created customer logs in

Scenario 2: Online order

- Customer logs in
- Views the products displayed and searches any product they want
- Clicks add to cart on the products they want
- Reviews cart
- Proceeds to checkout
- Either chooses to pay on the webpage or cash to the delivery person
- Places order
- Receives an electronic receipt

Scenario 3: Employee registration

- Admin or manager logs in
- Goes to the employee management page

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- Fills the fields with the information that the employee provides
- Clicks add to add the employee information to the database and create their account
- Now the employee can go to the webpage, enter their credentials and they have access to the page

Scenario 4: Employee edits information of the profile

- Employee logs in
- Clicks on the name at the top which gives them access to the profile information
- Edits the wanted information besides the ID which cannot be edited by employee
- Requests approval of change

Scenario 5: Admin log in

- Admin logs in to their profile with correct credentials
- Approves or denies requests made by other employees or manager
- Views anything on the system