# Software Requirement Specification Document for Qanaa Pharmacy

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Table 1: Document version history

| Version | Date | Reason for Change |
|---|---|---|
| 1.0 | 18-Mar-2024 | SRS First version's specifications are defined. |
| 2.0 | 29-May-2024 | SRS Final version |

**GitHub:** https://github.com/GeorgeAyy/ASWE

# Contents

**Abstract**

The Qanaa Pharmacy Web Application project is a forward-thinking solution that leverages HTML, CSS, JavaScript, SpringBoot, EJS, and SQL to redefine healthcare access. It addresses the demand for convenient and efficient medication ordering, health information access, and customer engagement while streamlining internal pharmacy operations. Key features include a user-friendly interface for prescription ordering, expert health insights, and seamless interactions. With this innovative technology stack, our development approach ensures a seamless and secure user experience. This project promises to significantly impact how our community accesses pharmaceutical services, providing a visionary solution to modern healthcare needs.

# 1 Introduction

## 1.1 Purpose of this document

The SRS document's primary purpose is to define the scope and goals of the Qanaa Pharmacy Web Application. It guides our development team in constructing an advanced online medicine platform. By outlining requirements, applications, and technologies, it fosters a shared vision among stakeholders and developers. Adherence to these requirements throughout development ensures alignment with Qanaa Pharmacy's healthcare transformation mission. In a broader business context, this SRS document enhances the customer experience and pharmacy operations, paving the way for innovation.

## 1.2 Scope of this document

This Software Requirements Specification (SRS) document outlines the scope for the Qanaa Pharmacy Web Application. It comprehensively defines the boundaries and expectations for the website's development, encompassing features such as medication ordering and internal pharmacy operations streamlining. However, it's important to note that the document does not include the development of a mobile application version. Integrations beyond the chosen technology stack and specified features are also outside the document's scope, setting expectations for the project's detail and requirements.

## 1.3 Business Context

In an ever-evolving pharmacy landscape, the Qanaa Pharmacy Application operates within a dynamic business context. The pharmaceutical industry is witnessing a profound shift towards accessible and convenient healthcare solutions. Qanaa Pharmacy aims to address these changing market trends by establishing an innovative online platform that caters to the evolving needs of its customers. The website will provide a user-friendly interface for ordering pharmaceutical products, accessing vital health information, and engaging with pharmacy services seamlessly. This strategic move aligns with the broader industry shift towards digital health, aiming to bridge the gap between healthcare seekers and trusted pharmacies. By fostering convenience and reliability through a secure online experience, the Qanaa Pharmacy Web Application integrates seamlessly with Qanaa Pharmacy's strategic vision to lead the way in accessible and customer-centric healthcare services.

# 2 Similar Systems

## 2.1 Academic

- In this article author Alwon, B. M highlights the evidence that suggests high risks from purchasing medicine online, the author mentions that using logos may provide some level or assurance but there must be other indicators to provide the safety of these websites. It's objective is to identify characteristics of online pharmacies which are related to whether websites are regulated or non-regulated.It mentions that identified websites were screened for regulatory status, adherence to regulatory standards. Characteristics of regulated and non-regulated websites were compared to identify differences that could be used to improve patient safety [1]

- In this research paper it's aim was to study an up-to-date and comprehensive review of the scientific literature focusing on the broader picture of online pharmacies by scanning several scientific and institutional databases, with no publication time limits. It concludes that online pharmacies are an important phenomenon that is continuing to spread, despite partial regulation, due to intrinsic difficulties linked to the impalpable and evanescent nature of the Web and its global dimension. To enhance the benefits and minimize the risks of online pharmacies, a 2-level approach could be adopted. The first level should focus on policy, with laws regulating the phenomenon at an international level. The second level needs to focus on the individual. This approach should aim to increase health literacy, required for making appropriate health choices, recognizing risks and making the most of the multitude of opportunities offered by the world of medicine 2.0. [2]

- In this article the author talks about the purchasing experience and begins with the statistic that thirty-seven website pharmacies offered prescription drugs without requiring an original prescription. All of the NABP approved and "legally compliant" websites, except one, either demanded original prescriptions or (for two websites) accepted faxed prescriptions but followed-up with the prescribing physician to establish provenance. These website pharmacies appeared to focus on building a long-term relationship with the consumer. [3] Indeed, seven of the 18 websites described by NABP as "recommended" would not even sell prescription drugs to an individual unless he or she was connected with a medical insurer. All of the "not recommended" and "highly not recommended" website pharmacies claiming to require prescriptions accepted faxed or emailed copies without contacting the prescribing physician to confirm. One website openly advertised the provision of drugs off prescription. Other website pharmacies offered to supply drugs after the consumer filled out an online evaluative questionnaire, which varied in length and complexity.

## 2.2 Business Applications

- Misr Online Pharmacies [4] is a digital platform designed to provide a wide range of pharmaceutical products and healthcare services to consumers in a convenient and secure manner.

# 3 System Description

## 3.1 Problem Statement

The Qanaa Pharmacy Web Application addresses critical challenges within the pharmaceutical domain. Currently, customers face hurdles when attempting to conveniently access medications, healthcare information, and pharmacy services. In the existing system, the absence of a user-friendly online platform complicates prescription ordering and impedes access to vital health insights. Furthermore, internal pharmacy operations often lack the efficiency needed to deliver top-notch customer service. These issues underscore the need for the proposed system, which aims to provide a seamless online experience, streamline pharmacy operations, and empower customers in their healthcare journey. The Qanaa Pharmacy Web Application intends to revolutionize the way pharmaceutical services are accessed, enhancing convenience, reliability, and customer engagement in response to these pressing challenges.

## 3.2 System Overview

The Qanaa Pharmacy Website is a comprehensive online pharmaceutical platform that consists of multiple key components. The primary components include a user-friendly web interface for customers to browse, search, and order medications. It also offers secure user authentication, enabling users to create and manage profiles. The system includes a robust database powered by SQL for managing medication inventory and user accounts.

Key features and functionalities encompass prescription ordering, health information access, secure payment processing, and a dynamic search function to find products efficiently. Additionally, the system provides pharmacy staff tools for order management, inventory control, and seamless customer engagement. Altogether, the Qanaa Pharmacy Web Application aims to deliver a user-centric, secure, and efficient online pharmacy experience, bridging the gap between healthcare seekers and pharmaceutical services in the digital age.

## 3.3 System Scope

The Qanaa Pharmacy Website system is designed to offer a seamless online pharmaceutical experience while addressing the following key objectives:

- Prescription Ordering: The system will allow customers to conveniently order medications online.
- Health Information Access: Customers can access vital health information and insights through the platform.
- Secure Payment Processing: The system will integrate secure payment processing for a seamless user experience.
- Dynamic Search Function: Users will have access to a robust search feature to efficiently find pharmaceutical products.

Internal Pharmacy Operations: The system will provide tools for pharmacy staff to manage orders, control inventory, and engage with customers.

However, it's important to clarify that the system will not include:

- Mobile Application Development: The development of a mobile application version is outside the defined scope.

## 3.4 System Context

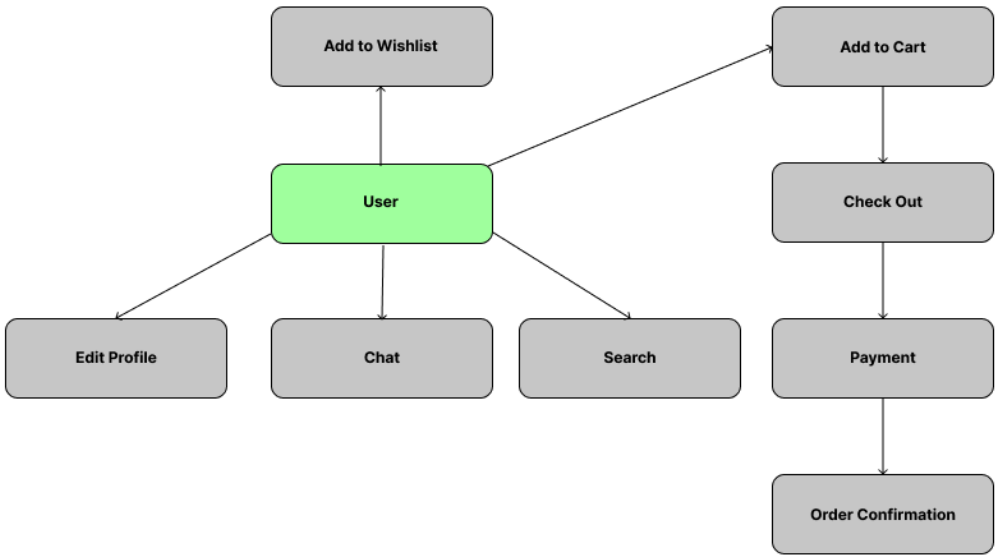



Figure 1: Contextual view of the system within its environment

## 3.5 Objectives

The objectives of the Qanaa Pharmacy Web Application specify the desired outcomes and benefits of implementing the system

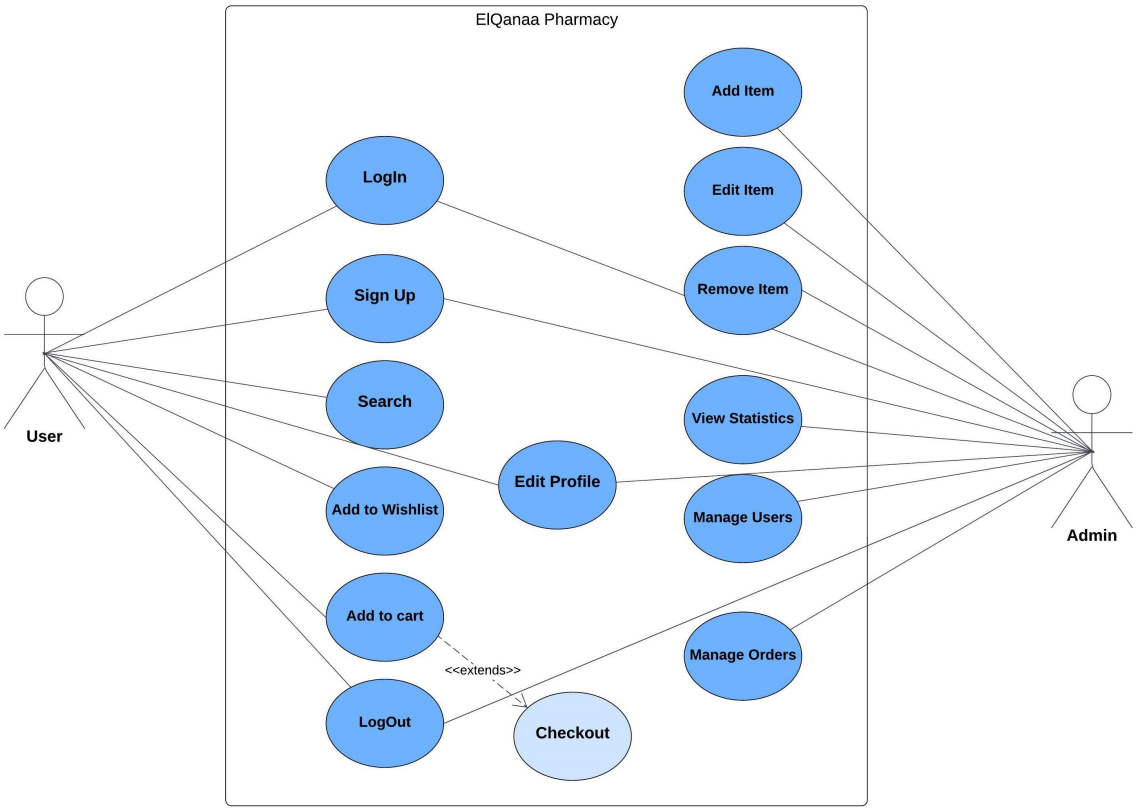
- Efficient Medication Management and Ordering
- Optimized Pharmacy Operations
- Enhanced User Security and Privacy
- Efficient Product Search and Information Retrieval
- Fostering Customer Convenience

## 3.6 User Characteristics

1. Patient or Customer Users: Patients or customers use the system to order medications and access health information, expecting a user-friendly interface and secure, convenient ordering.
2. Pharmacy Staff Users: Pharmacy staff manage orders and inventory, relying on efficient tools to enhance internal operations and customer engagement.
3. System Administrators: Administrators maintain the system, requiring tools for system upkeep, user access management, and data security.
4. Guest Users: Guest users may browse and explore the application without creating accounts, making the platform accessible to potential customers seeking information before registration.

# 4 Functional Requirements

## 4.1 System Functions




**Overview of the sysytem's functions**

- ID:01 Users can "Add to Wishlist" by saving products for future reference.
- ID:02 Users can "Add to Cart" by placing products in their shopping cart for purchase.
- ID:03 Users can "Check Out" to complete their purchase.
- ID:04 Users have the ability to "Edit Profile" by modifying their profile information.
- ID:05 Users can "Search" for products or information within the system.
- ID:06 Users can make "Payment" securely for their purchases.
- ID:07 The admin can "CRUD User" accounts.
- ID:08 The admin can "CRUD Orders".
- ID:09 The admin has control over "CRUD Products" allowing the addition, modification, and removal of products.
- ID:10 The admin can "View Statistics" to access system statistics and analytics, gaining insights into system performance and user behavior.

## 4.2 Detailed Functional Specification

Table 2: Add to Wishlist Function Requirements

| | |
|---|---|
| Function | Add to Wishlist |
| ID | ID:01 |
| Priority | High |
| Critical | 8/10 |
| Description | Allow user to add his desired item to his wishlist |
| Input | Item data |
| Action | Item with the entered data is added to the user's wishlist if available in stock |
| Output | Confirmation of the process |
| Precondition | User must be registered |
| Post-condition | Item is added to the user's wishlist |
| Dependencies | User login, Database functionality |
| Risk | Internet connection is required |

Table 3: Add to Cart Function Requirement

| | |
|---|---|
| Function | Add to Cart |
| ID | ID:02 |
| Priority | High |
| Critical | 8/10 |
| Description | Allow user to add an item to his cart so that he can complete a purchase |
| Input | Item details |
| Action | Item is added to the user's cart if available |
| Output | Confirmation if completed successfully and an alert if the item is out of stock |
| Precondition | User must be logged in to the system |
| Post-condition | Item is added to the user's cart so he can proceed to checkout |
| Dependencies | User login, Database functionality |
| Risk | Internet connection is required |

Table 4: Checkout Function Requirement

| Function | Checkout |
|---|---|
| ID | ID:03 |
| Priority | High |
| Critical | 10/10 |
| Description | Allow users to place orders for products. |
| Input | Selected items, shipping details, payment information. |
| Action | Validate product selection, shipping details, and payment information. Create and confirm the order in the system. |
| Output | Confirmation of the placed order, order ID, and payment receipt. |
| Precondition | User is logged in and has selected products for purchase. |
| Post-condition | Products are reserved, payment is processed, and the order is added to the system. |
| Dependencies | User login, Payment Processing. |
| Risk | Internet connection is required, payment security concerns. |

Table 5: Edit Profile Function Requirement

| Function | Edit Profile |
|---|---|
| ID | ID:04 |
| Priority | High |
| Critical | 10/10 |
| Description | Allow user to edit his personal information |
| Input | New user attributes values, including fname, lname, address, password, and email. |
| Action | Validate and upload new user details to the system. Display it to the user. |
| Output | Displayed new user details instead of the old ones. |
| Precondition | User must be registered and logged in to the system to edit his profile. |
| Post-condition | New user attributes are updated in the system and viewable to the user. |
| Dependencies | User Login, Database Functionality. |
| Risk | Internet connection is required |

Table 6: Create Product Function Requirement

| | |
|---|---|
| Function | Add product "CRUD products" |
| ID | ID:09 |
| Priority | High |
| Critical | 10/10 |
| Description | Allow admin to create a new product so that users can be able to purchase it. |
| Input | Product details, including name, description, price, images, and attributes. |
| Action | A new product is created in the database holding the attributes the admin entered. |
| Output | Confirmation message of the creation of the product. |
| Precondition | The product not existing. |
| Post-condition | Product is added to the database and available for users to purchase. |
| Dependencies | Admin Product Management, Database Functionality. |
| Risk | Internet connection is required, product data accuracy. |

Table 7: Update Product Function Requirements

| | |
|---|---|
| Function | Update Product "CRUD products" |
| ID | ID:09 |
| Priority | High |
| Critical | 10/10 |
| Description | Allow admin to edit product details |
| Input | Product details including name, description, price, images, and attributes needed. |
| Action | Save updated inputs to the database and update the system. |
| Output | Confirmation of the data saved to the database. |
| Precondition | Product having some wrong or outdated details. |
| Post-condition | System updates with the new product details. |
| Dependencies | Admin Login, Database Functionality. |
| Risk | Internet connection is required, product data accuracy. |

# 5 Design Constraints

## 5.1 Standards Compliance

To ensure the effective use and functionality of the Qanaa Pharmacy Web Application: Users must have a stable and reliable internet connection to access and utilize the Qanaa Pharmacy Web Application. The application's performance and functionality are contingent upon internet availability.

### 5.2 Hardware Limitations

- RAM and CPU:

  Typically, a device with 4GB of RAM or more and a modern multi-core CPU should be sufficient for our web application.

- Screen Size:

  Our web application is responsive and adapts to various screen sizes, from small smartphone screens to large desktop monitors.

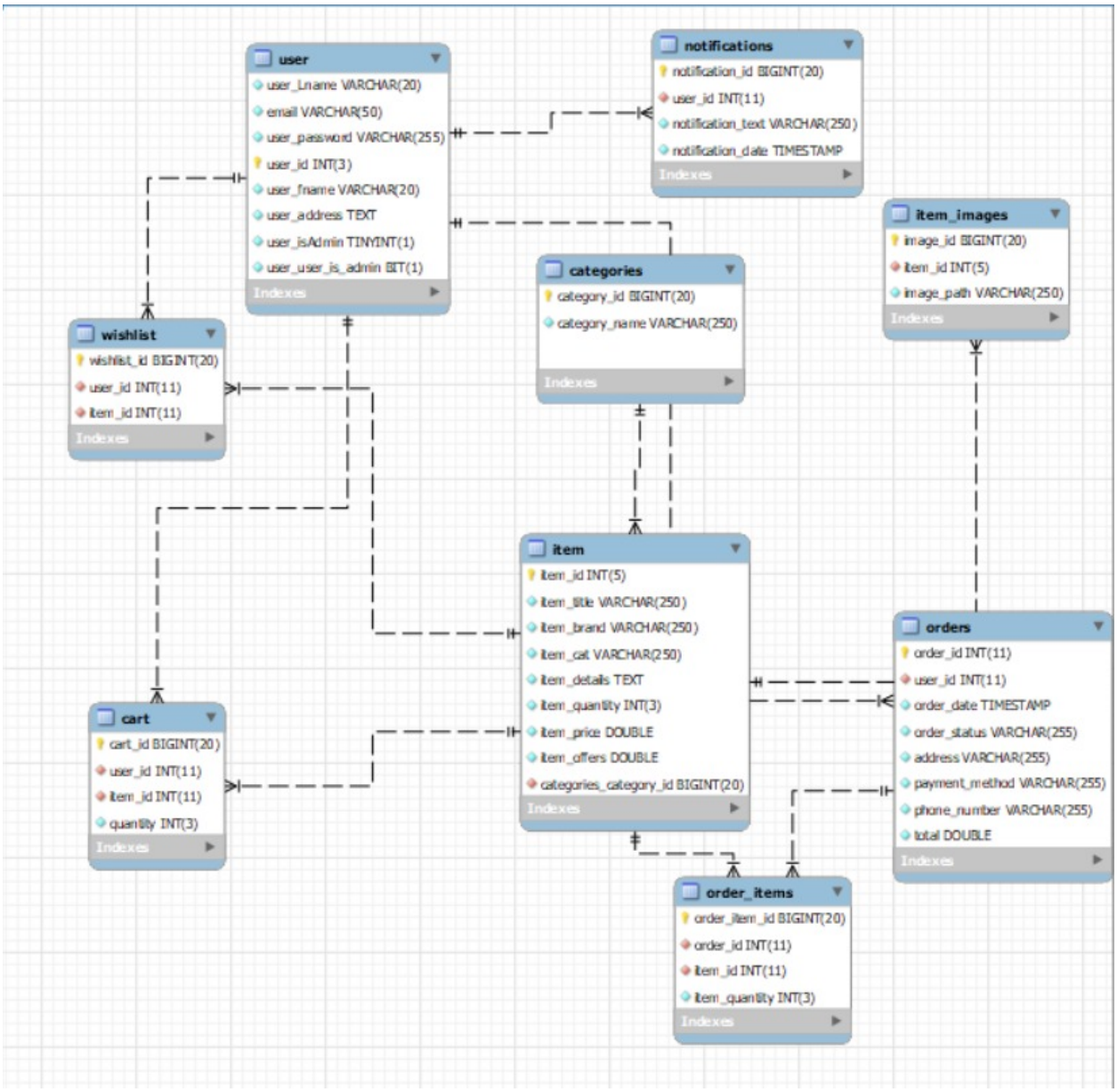
### 5.3 Other Constraints as appropriate

- The web application only supports the English language

## 6 Non-functional Requirements

- Performance: The Qanaa Pharmacy Web Application must provide a responsive user experience.
- Security: User data will be stored and transmitted securely using encryption protocols to protect sensitive information. Regular security testing will be conducted to identify vulnerabilities and maintain a high level of security.
- Availability: The system will be available 24/7, with scheduled maintenance windows communicated to users in advance.
- Usability: The user interface will be intuitive and user-friendly, catering to users of diverse technical expertise, enhancing accessibility and overall user satisfaction.
- Compatibility: The application will be compatible with the major web browsers (e.g., Chrome, Firefox, Safari, Edge) and common operating systems and devices.
- Regulatory Compliance: The application will adhere to healthcare and pharmaceutical regulations, ensuring that user data and health information are managed in compliance with legal requirements.
- Maintainability: The system code should be clearly written and easily read, along with providing comprehensive documentation for the website.
- Cost efficiency: Minimizing the cost associated with developing, designing and implementing and to be adapted with changes.

# 7 Data Base




ER Diagram

**In this schema we have nine tables:**

- *User table*
- *Orders table*
- *Cart table*
- *Item table*
- *Category table*

- *Notifications table*
- *Wishlist table*
- *Item images table*
- *Order item table*

1. **User table:**
   This table is responsible for storing information about the user entered while registration as user_fname, user_lname, user_password, user_email and user_address.

2. **Orders table:**
   This table is responsible for holding the record of the order the user completed including this order_id, order_date, order_status and a foreign key of the user_id from the user class that matches the order with the user.

3. **Cart table:**
   This table is responsible for the final step before the checkout where it has the user_id and the item_id he ordered in addition to its quantity.

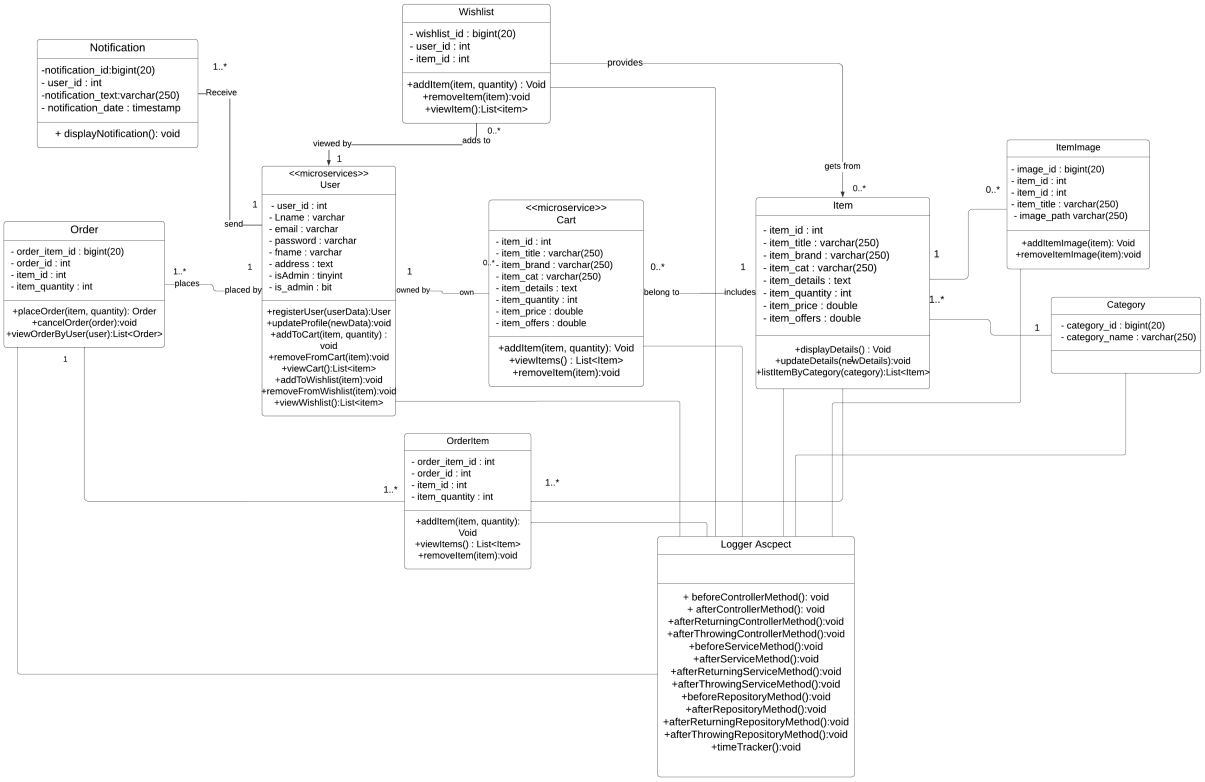
4. **Item table:**
   This table is responsible for storing each item detail such as its item_id, item_price, item_details and item_brand

5. **Notification table:**
   This table is responsible for sending the suitable notifications to the user after each operation possible using the void function displayNotification().

6. **Wishlist table:**
   This table is responsible for storing the items the user added to his wishlist in addition to its own attributes such as wishlist_id and foreign keys user_id to assign it to a specific user and item_id to add this item from the database according to its id.

7. **Item image table:**
   This table is responsible for storing the all the images for the items available on the system having foreign key item_id and image_id to assign each image to its corresponding item.

# 8 Preliminary Object-Oriented Domain Analysis




UML Class Diagram

1)A cart is owned by one user and contains one or more items.

```
context Cart

invariant:

    self.owned by->size() = 1
```

2)Notification must belong to a valid user

```
context Notification

invariant:

  User.allInstances()->exists(u | u.user_id = self.user_id)
```

3)Order must have a valid quantity

```
context Order

invariant:self.item_quantity > 0
```

4) Ensures that the price and quantity of an item are both non-negative.

```
context Item

invariant: self.item_price >= 0 and self.item_quantity >= 0
```

5)Each Item must belong to one Category

```
context Item

invariant:

    self.belong to->size() = 1
```

6)Each ItemImage must reference an existing Item

```
context ItemImage

invariant:

    Item.allInstances()->exists(i | i.item_id = self.item_id)
```

7)Item quantity in Cart must be less than or equal to available quantity:

```
context Cart
invariant:
   self.own->forAll(c | c.item_quantity <=c.item.item_quantity)
```

8)An Order can only be placed by an existing User

```
context Order
invariant:
 User.allInstances()->exists(u | u.user_id = self.placed_by)
```

OCL: System Constraints

# 9 Operational Scenarios

Scenario 1: User Registration and Account Creation

- A new user accesses the e-commerce pharmacy platform and initiates the registration process.
- The user provides personal information and creates an account with a unique username and password.
- The system verifies the user's email address.
- The user's account is successfully created, and they can now log in and browse the catalog.

Scenario 2: Browsing and Product Search

- The user selects a product from the search results.
- The user views detailed information about the product, including usage instructions and side effects.
- The user decides to purchase the product and adds it to their shopping cart.

Scenario 3: Order Placement and Checkout

- The user reviews the items in their shopping cart.
- The user proceeds to the checkout page, where they enter their shipping address and payment details.
- The system calculates the total order cost, including taxes and shipping fees.
- The user confirms the order, and payment is processed securely.

Scenario 4: Product Reviews and Ratings

- After receiving the order, the user has the option to review and rate the purchased products and the overall shopping experience.
- The user's feedback is displayed on the product pages for other users to see.

# 10 Project Plan

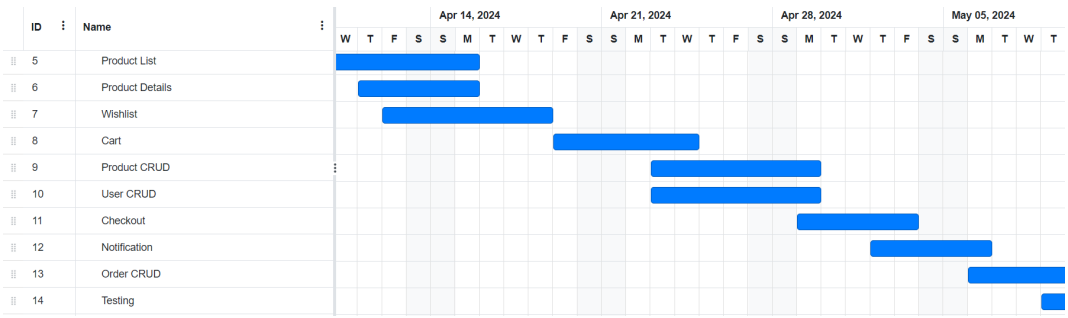



Figure 2: First Phase of Project Plan Gantt Chart

# 11 Appendices

## 11.1 Definitions, Acronyms, Abbreviations

**SRS** - Software Requirements Specification

**HTML** - Hypertext Markup Language

**CSS** - Cascading Style Sheets

**JS** - JavaScript

**SQL** - Structured Query Language

**EJS** - Embedded JavaScript

**CPU** - Central Processing Unit

**RAM** - Random Access Memory

**URL** - Uniform Resource Locator

**HTTPS** - Hypertext Transfer Protocol Secure

**API** - Application Programming Interface

**IoT** - Internet of Things

**UX** - User Experience

**EERD** - Enhanced Entity-Relationship Diagram

### 11.2 Supportive Documents

# References


[1] Bassam M. Alwon, Greg Solomon, Farrukh Hussain, et al. "A Detailed Analysis of Online Pharmacy Characteristics to Inform Safe Usage by Patients". In: *International Journal of Clinical Pharmacy* 37.1 (2015), pp. 148–158. DOI: 10.1007/s11096-014-0056-1.

[2] Grazia Orizio, Angela Merla, Peter Schulz, et al. "Quality of Online Pharmacies and Websites Selling Prescription Drugs: A Systematic Review". In: *Journal of Medical Internet Research* 13.3 (2011), e74. DOI: 10.2196/jmir.1795. URL: https://www.jmir.org/2011/3/e74.

[3] Roger Bate and Kimberly Hess. "Assessing Website Pharmacy Drug Quality: Safer Than You Think?" In: *PLOS ONE* 5.8 (2010), e12199. DOI: 10.1371/journal.pone.0012199. URL: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0012199.

[4] *Misr Pharmacies Misr Online*. Accessed: Insert Access Date. URL: https://misr-online.com/.