# Pharmaceutical Management System
# Software Engineering CSE (322)

Software Engineering Project

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# Chapter 1

# Introduction

## 1.1 Purpose

The purpose of the project is to develop a desktop application as a management system for pharmacies. It generates monthly reports on sales and inventory. The system creates a database for stocks, automates the workflow, and provide a better experience for users in workplace.

## 1.2 Scope

The system is to be accessible for pharmacies in Egypt and over the continents for other countries. It stores the data for medications concentrations and its availability in stock. Users can create accounts to record selling in each shift and ease access to the owner. The system prints receipt for the medications purchased along with the dose's details provided by the doctor.

## 1.3 Actors

The actors in the system includes the pharmacy owner, the drug distributors, the customers, and the people working in the pharmacy.

# Chapter 2

# Overall Descriptions

## 2.1 Product Perspective

The pharmaceutical management system will be easy to access with a user-friendly interface.

## 2.2 Product Functions

A pharmaceutical management system typically includes the following functions:

- Automated Workflow: Automating tasks such as inventory management, billing, and receipts.
- Billing Management: Recording billing information, tracking payments, and generating invoices.
- User Management: Managing user access and permissions, ensuring data security and privacy as each user has a separate log-in information for each shift.
- Reporting and Analytics: Generating monthly reports on sales, inventory, and other important data to help with decision-making.

## 2.3 User Characteristics

The system is designed only for users who work in pharmacies and the owner, so they will need to have some technical experience to handle and use the system. Drug distributors and customers won't need any technical knowledge as it's not necessary for them to access the system.

## 2.4 Constraints

- Regulatory compliance: The system must comply with various regulations and standards, such as FDA regulations, HIPAA, and other regional healthcare regulations.
- Security: The system must ensure that medication records are kept confidential and secure.
- Usability: The system should be easy to use and understand, with a user-friendly interface that allows pharmacists and staff to quickly perform tasks.
- Compatibility: The system will need to be compatible with different operations systems such as Windows, macOS, and Linux and can be accessed by laptops or desktop computers.

## 2.5 Assumptions and Dependencies

- The system will be used by trained pharmacy staff who understand how to operate the system and have the necessary technical skills.
- The system will be implemented with proper hardware and network infrastructure that can support the required software and data storage.
- The system will be maintained and updated regularly to ensure that it remains secure, reliable, and effective.

# Chapter 3

# System Requirement Specification

## 3.1 Functional Requirements

| **Function: Account and Shift Management** | |
|---|---|
| **Input** | - Staff member's personal information for creating an account.<br>- Staff member's login credentials.<br>- Staff member's work schedule.<br>- Staff member's preferred shift(s). |
| **Output** | - Confirmation message for account creation.<br>- Notification for successful login.<br>- Confirmation message for successful shift registration. |
| **Source** | Staff members. |
| **Action** | - Create account: Staff member provides personal information, the system verifies the information and creates a new account.<br>- Login: Staff member enters login credentials, the system verifies the credentials and grants access to the system.<br>- Register for shift: Staff member selects preferred shift(s), the system checks availability, and confirms registration. |
| **Requires** | - The system must validate staff member's information and login credentials.<br>- The system must check the availability of shifts before registration.<br>- The system must ensure that staff members do not overlap their shifts. |
| **Side effects** | None. |

| Function: Medication Inventory Management | |
|---|---|
| **Input** | - Medication information including name, quantity, and expiry date.<br>- Purchase order information including medication name, quantity, and supplier information. |
| **Output** | - Notification when medication stock is low.<br>- Purchase orders to replenish stock. |
| **Source** | Staff members. |
| **Action** | - Track medication inventory levels: Staff members input medication information including name, quantity, and expiry date. The system records the information and provides staff members with a view of current inventory levels.<br>- Notify staff members when stock is low: The system monitors inventory levels and alerts staff members when medication stock is low.<br>- Generate purchase orders: Staff members input purchase order information including medication name, quantity, and supplier information. The system generates purchase orders and sends them to suppliers to replenish stock. |
| **Requires** | - The system must keep accurate and up-to-date records of medication inventory levels.<br>- The system must monitor inventory levels and notify staff members when stock is low.<br>- The system must generate accurate purchase orders based on staff members' input. |
| **Side effects** | None. |

| Function: Prescription Information Printing | |
|---|---|
| **Input** | - Prescription information including medication name, dosage, and patient information. |
| **Output** | - Printed receipt with prescription information for customers. |
| **Source** | - Staff members. |
| **Action** | - Input prescription information: Staff members input prescription information including medication name, dosage, and patient information.<br>- Print receipt: The system generates a receipt with prescription information and prints it for the customer. |
| **Requires** | - The system must accurately record prescription information.<br>- The system must generate accurate and readable receipts. |
| **Side effects** | None. |

## 3.2 Non-Functional Requirements

| | |
|---|---|
| **Security** | - The system shall ensure that staff members' account information is stored securely.<br>-The system shall provide appropriate access control mechanisms to prevent unauthorized access. |

| | |
|---|---|
| **Usability** | - The system shall provide an easy-to-use interface for staff members to create accounts, register for shifts, track medication inventory, and input prescription information.<br>- The system shall ensure that staff members are notified promptly when medication stock is low. |
| **Reliability** | - The system shall be reliable and available at all times to ensure that staff members can access it when needed.<br>- The system shall maintain accurate and up-to-date medication inventory levels to prevent medication stockouts.<br>- The system should be able to handle a large number of transactions and data entries without experiencing any performance issues, such as delays or crashes.<br>- The system should be easy to use and intuitive, with clear instructions and minimal training required for users to navigate the system.<br>- The system should be easy to maintain and upgrade, with clear documentation and support available for users and developers. |

## 3.3 Domain and Other Requirements

- The system must comply with various regulations and standards, such security regulations of the Egyptian Ministry of Health.
- The system must ensure that medication records are kept confidential and secure.
- The system will need to be compatible with different operations systems such as Windows, macOS, and Linux and can be accessed by laptops or desktop computers.

# Chapter 4

# System Design

## 4.1 Sequence Diagram for Login

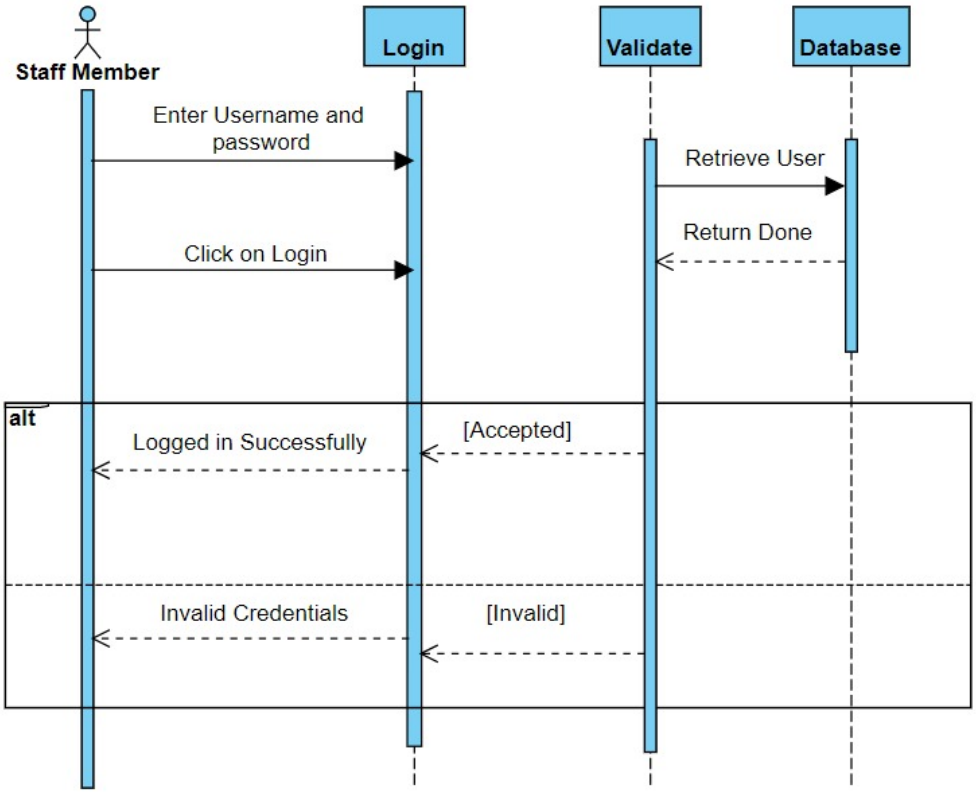


Figure 4.1: Login Sequence Diagram

## 4.2 Sequence Diagram for Logout

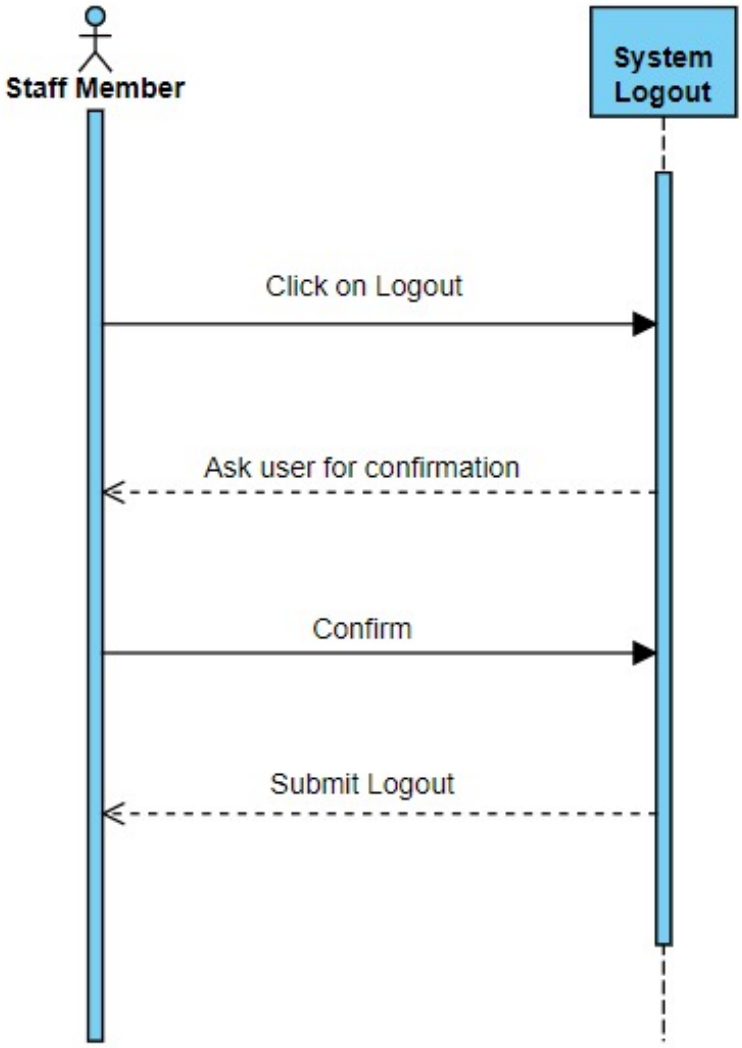


Figure 4.2: Logout Sequence Diagram

## 4.3 Sequence Diagram for Tracking Inventory

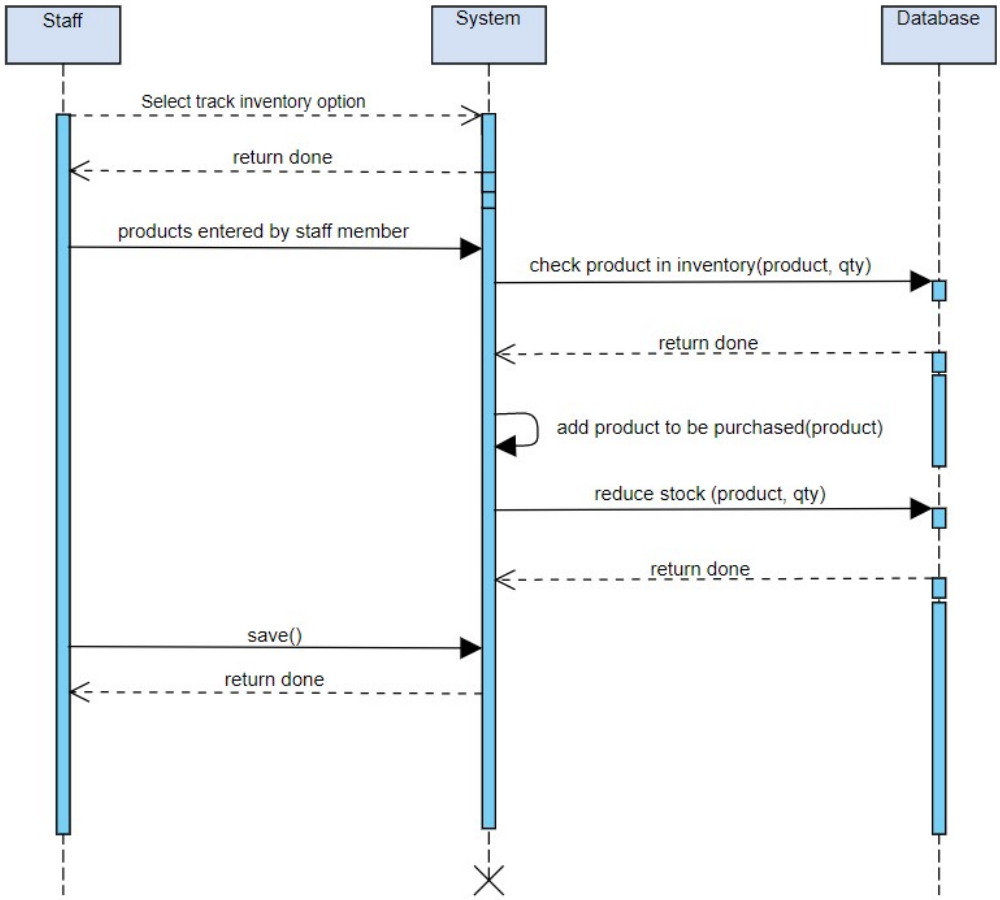


Figure 4.3: Track Inventory Sequence Diagram

## 4.4 Use Case Diagram for Input Data for Purchase

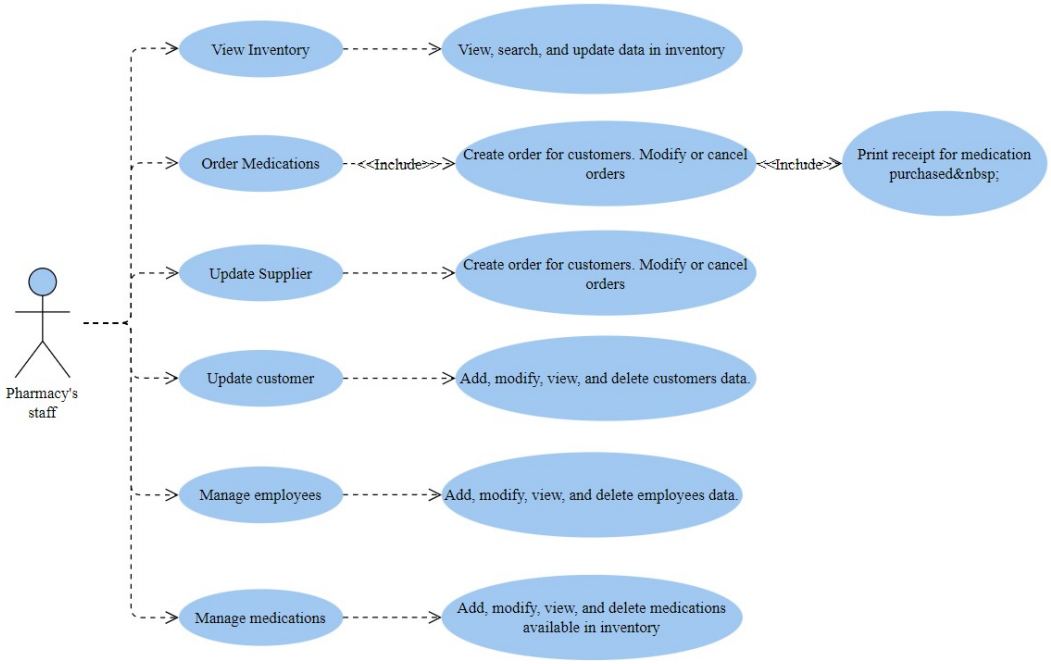


Figure 4.4: Use Case Diagram

## 4.5 Activity Diagram for Printing Reciept

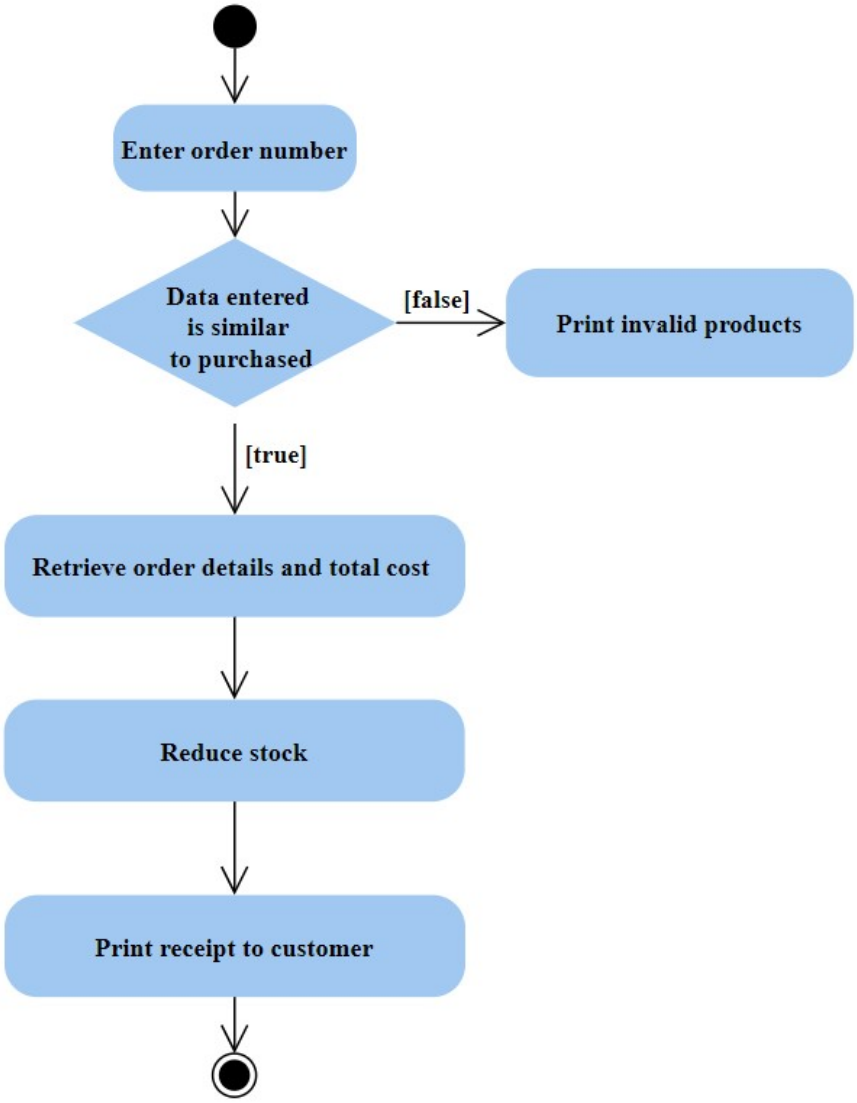


Figure 4.5: Activity Diagram for Printing Reciept