



THE COPPERBELT UNIVERSITY

SCHOOL OF INFORMATION COMMUNICATION AND TECHNOLOGY

COMPUTER SCIENCE DEPARTMENT

CS235: DATABASE SYSTEMS GROUP ASSIGNMENT 1

PRESCRIPTIONS R-X DATABASE DOCUMENTATION

GROUP 7

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- ✚ Natasha Wamulungwe and Joseph Zulu: Leading the documentation team
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1.0 Introduction

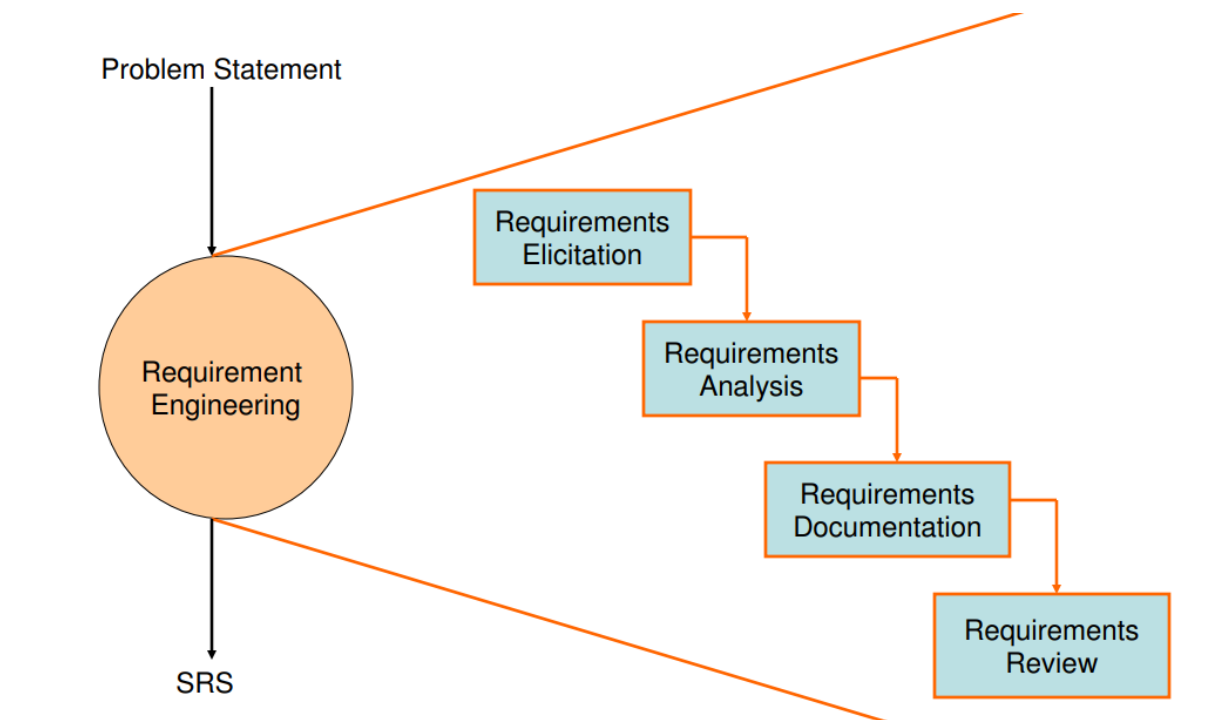
This document outlines the design and implementation of the Prescriptions-R-X database, a comprehensive system for managing patient information, prescriptions and contracts for the Prescriptions R-X chain of pharmacies.

The Prescription R-X chain of pharmacies is an advancing healthcare company with a mission to provide high-quality patient care and efficient prescription management. To achieve the mission, the company requires a robust reliable database.

The current system used by Prescription R-X is a manual system that is time consuming, prone to errors and lacks data analytics capabilities. The company recognizes the need for a modern, digital solution that can streamline processes, improve data accuracy and provide valuable insights.

2.0 Problem Statement

The system is a crucial application that manages the end-to-end process of prescription management for a network of pharmacies. The system caters to various stakeholders.



3.0 Methodology

The methodology used to implement the system includes; requirements gathering and analysis, system design, development and testing, development and maintenance and documentntation.

4.0 Database design

The database consists of eight entities: Patients, Doctors, Pharmaceutical Companies, Drugs, Pharmacies, Prescriptions, Contracts and Contract supervisors. The relationship between these entities are outlined in the database design document.

5.0 User interface design

The user interface is designed to be user friendly and very intuitive, with clear navigation search functionality. Secure login and authentication mechanisms ensure that only authorized personnel have access to sensitive data.

6.0 Data integrity and security

The database implements encryption to protect sensitive data, access control mechanisms to restrict access to authorized personnel and regular backups to ensure data integrity. The following measures are implemented:

- ✚ **Encryption:** The system encrypts sensitive data, i.e., patient SSNs and medical records.
- ✚ **Access controls:** The system implements role-based access control to ensure that authorized users can access and modify specific data.
- ✚ **Backup and Recovery:** Backup and recovery strategies to ensure data can be restored in case of system failure or data loss.
- ✚ **Logging:** Maintains detailed logs of all data modifications and user actions to ensure accountability.

7.0 Reporting and analytics

The database includes reporting and analytics tools to analyze the following:

- ✚ **Prescription trends:** System generates reports and visualizations to analyze prescription patterns, i.e., the most frequently prescribed drugs, most top prescribed doctors and commonly drug combinations.
- ✚ **Drug sales:** The system also generates reports to track drug sales thus including top selling drugs, best performing pharmacies, and trends in drug pricing.
- ✚ **Doctor performance:** The system goes further into developing reports to evaluate doctor performance, i.e., the number of patients, average prescription quantities and patient satisfaction metrics.
- ✚ **Contract Management:** It also generates reports to monitor the status of contracts between pharmaceutical companies and pharmacies, i.e., expiring dates and contract terms.

Data visualization techniques present complex data in easy-to-understand format and data mining techniques identify patterns and trends in the data.

8.0 User guide

The user guide outlines the steps for entering and retrieving data, including;

- ✚ Adding new patients, doctors, pharmaceutical companies, drugs and pharmacies.
- ✚ Creating and managing prescriptions and contracts.
- ✚ Searching and retrieving patient information and prescriptions history.
- ✚ Generating reports and analytics.

9.0 Technical requirements

The database requires a relational database management system (RDBMS) such as PostgreSQL and the programming languages such as HTML, JavaScript and CSS for frontend and Node.js, Express and Supabase client for the API.

References

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