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Practical No. 4 – Use Case Diagram for Pharmacy Management System

Aim:

To design and analyze a Use Case Diagram for the Pharmacy Management System that demonstrates interactions between users and system components for managing pharmacy operations efficiently.

Introduction:

A Pharmacy Management System (PMS) is an integrated platform that automates the day-to-day operations of a pharmacy. It helps in managing medicine inventory, sales, purchases, billing, and customer details effectively. The Use Case Diagram of this system serves as a high-level visualization tool that illustrates how various actors interact with the system to accomplish their tasks. By understanding the system from a user's perspective, developers can ensure that all essential functionalities are included in the design.

Objectives:

1. To identify the main actors in the Pharmacy Management System.
2. To determine and describe all possible interactions between the actors and the system.
3. To design a Use Case Diagram representing all functional requirements.
4. To understand how use cases contribute to requirement analysis and system design.

Theory:

A Use Case Diagram is a behavioral diagram defined in the Unified Modeling Language (UML) that represents the functional aspects of a system. It shows the system boundary, the external users (actors), and the interactions (use cases) between them. Each use case represents a specific functionality that the system performs in response to an actor's action. In the Pharmacy Management System, typical actors include the Pharmacist, Customer, and Administrator, while use cases include managing medicines, generating bills, updating stock, and producing reports.

Use Case Diagrams are essential during the requirement analysis phase as they help stakeholders and developers reach a common understanding of what the system should do. They focus on 'what' the system will perform rather than 'how' it

will be implemented.

Case Study / Description:

In the Pharmacy Management System, multiple user roles interact with the system to perform different operations. The Pharmacist can add, delete, or update medicine details in the inventory. The Customer purchases medicines, and the system generates a bill automatically based on quantity and price. The Administrator oversees all operations, maintains records, and generates periodic reports. Each of these interactions is modeled as a distinct use case connected to the respective actor. The relationships may include generalization, association, and dependency.

Some of the major use cases include:
• Manage Medicine Inventory
• Generate and Print Bills
• Update Stock and Expiry Details
• Maintain Customer Records
• Generate Sales and Purchase Reports
• Manage Employees and Suppliers

Advantages:

1. Helps in understanding system functionality clearly.
2. Provides a common communication platform for stakeholders and developers.
3. Identifies missing functionalities and system dependencies early.
4. Simplifies future design phases like sequence and class diagrams.
5. Enhances system maintainability and documentation.

Conclusion:

The Use Case Diagram for the Pharmacy Management System provides a clear functional overview of how different users interact with the system. It forms the foundation for understanding requirements and serves as a guide for subsequent stages of design and implementation. This diagram aids in ensuring completeness, consistency, and correctness of the system functionalities.

References:

1. Sommerville, Ian. 'Software Engineering' (10th Edition).
2. SEPM Laboratory Manual, RTMNU.
3. www.uml-diagrams.org
4. TutorialsPoint: UML Use Case Diagrams