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Practical No. 7 – Sequence Diagram for Pharmacy Management System

Aim:

To study and design the Sequence Diagram for the Pharmacy Management System that represents the interaction and communication among objects over time.

Introduction:

A Sequence Diagram is one of the most important interaction diagrams in UML, representing how objects communicate with each other through messages in a specific order. It focuses on the time sequence of messages and the roles of different system entities during a process execution. In the Pharmacy Management System, it helps in understanding the flow of control between users, system components, and databases during various operations.

Objectives:

1. To depict the sequence of interactions between system entities.
2. To understand the message flow between user and system objects.
3. To visualize the order of operations in processes like purchasing or billing.
4. To help in defining the behavioral logic of system components.

Theory:

A Sequence Diagram is a behavioral UML diagram that demonstrates how processes operate with one another and in what order. It includes lifelines that represent entities or objects, activation bars that denote the duration of execution, and arrows that indicate message passing between entities. In the Pharmacy Management System, such diagrams model the order in which messages are exchanged between the user, system interface, and database. They describe the steps of key operations like customer purchase, stock update, or supplier transaction, making it easier to analyze and design the system workflow.

Case Study:

The Sequence Diagram of the Pharmacy Management System shows the interaction between the Customer, Pharmacist, and System for activities such as purchasing medicines. The process begins when the customer provides a request to buy medicines. The system validates the request and checks inventory details. If

the medicine is available, the pharmacist proceeds with billing and payment confirmation. Finally, the database updates the stock levels, and a confirmation is provided to the customer. If the stock is unavailable, the system generates a notification or backorder request. This flow ensures transparency, logical execution, and efficient communication among all involved system components.

Advantages:

1. Helps visualize the message flow and time order of system interactions.
2. Provides a clear understanding of how components collaborate during execution.
3. Improves system design accuracy by defining logical communication paths.
4. Assists in verifying use-case implementation during analysis and design stages.
5. Enhances communication between developers and analysts by simplifying behavioral modeling.

Conclusion:

The Sequence Diagram for the Pharmacy Management System illustrates the sequence of communication among the entities involved in various processes. It provides a clear understanding of how information flows within the system, improving coordination and structural design. This diagram serves as a foundation for building efficient, well-organized, and reliable software architecture.

References:

1. Sommerville, Ian. "Software Engineering." Pearson Education.
2. Pressman, Roger S. "Software Engineering: A Practitioner's Approach." McGraw-Hill.
3. UML Documentation – Object Management Group (OMG).