Practical no: 5

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Aim: Design a sequence diagram for
      1. Hospital management system.
      2. A session with an online stock broker.

Theory: A sequence diagram in Unified Modeling Language (UML) is a type of interaction diagram that focuses on the chronological sequence of interactions between objects or components within a system. It illustrates how objects interact with each other and in what order, providing a dynamic view of the system's behavior over time. Here are the key elements and concepts related to sequence diagrams in UML:

1) Objects and Lifelines: Objects or participants in the system are represented as vertical lines called lifelines. Each lifeline corresponds to an instance of a class and shows the existence of the object over a period of time.

2) Messages: Interactions between objects are depicted using messages. Messages indicate communication between lifelines and can be synchronous (denoted by a solid arrow) or asynchronous (denoted by a dashed arrow). Synchronous messages represent method calls where the sender waits for a response, while asynchronous messages represent events that do not require an immediate response.

3) Activation Bars: Activation bars represent the time during which an object is active and processing a message. They show the duration of method invocations and help visualize the sequence of operations.

4) Return Messages: Return messages depict the flow of control and data back to the sender after a method invocation. They show the response from the receiver to the sender after processing a message.

5) Loops and Conditions: Sequence diagrams can also include loops and conditional statements, allowing for the representation of repetitive interactions and decision-making processes.

6) Interaction Fragments: Interaction fragments such as alt (alternative), opt (optional), and loop can be used to model conditional and repetitive behavior within the sequence diagram, enhancing its expressive power.

Sequence diagrams are valuable tools for visualizing and understanding the dynamic aspects of a system. They are commonly used during the design and analysis phases of software development to depict the flow of messages and interactions among various components or objects, aiding in the identification of potential issues and optimizations in the system's behavior.

1) Hospital Management System
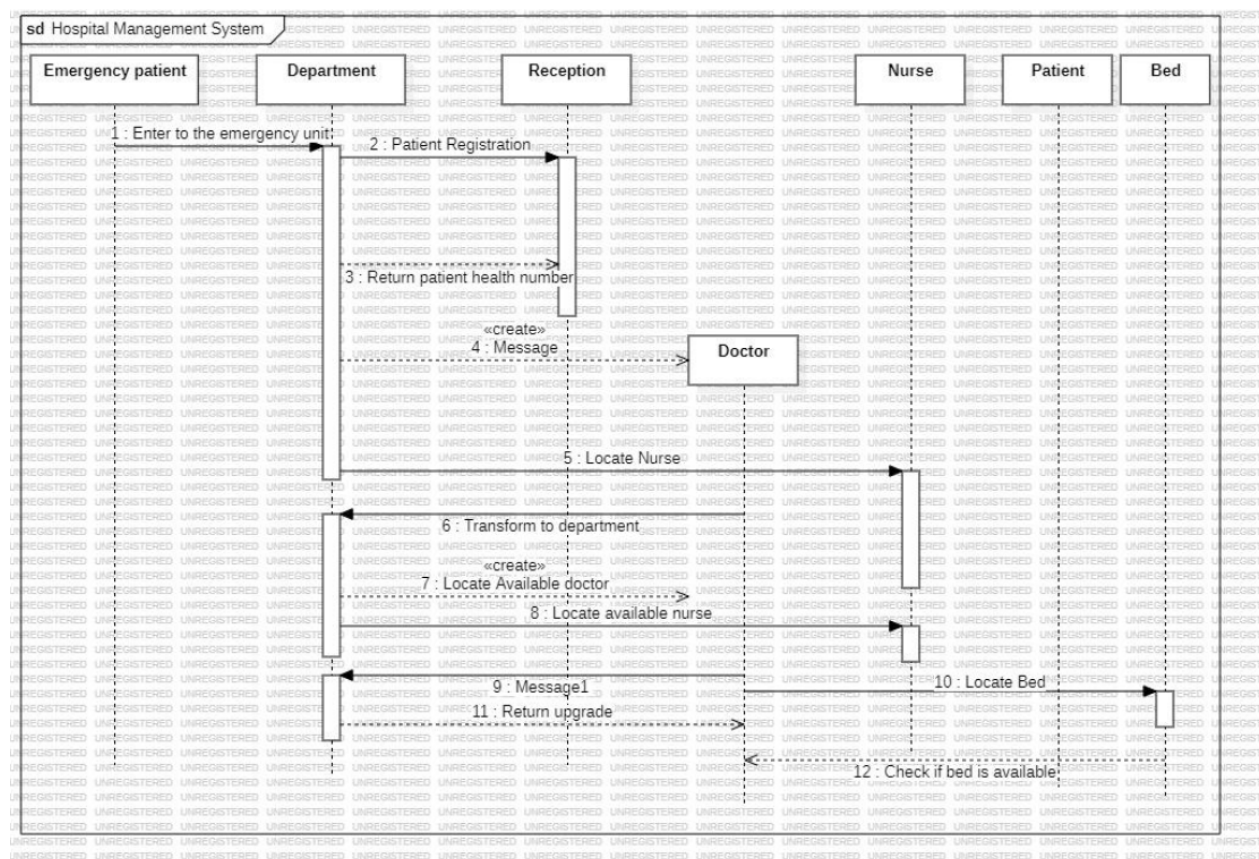
2) Online stock broker
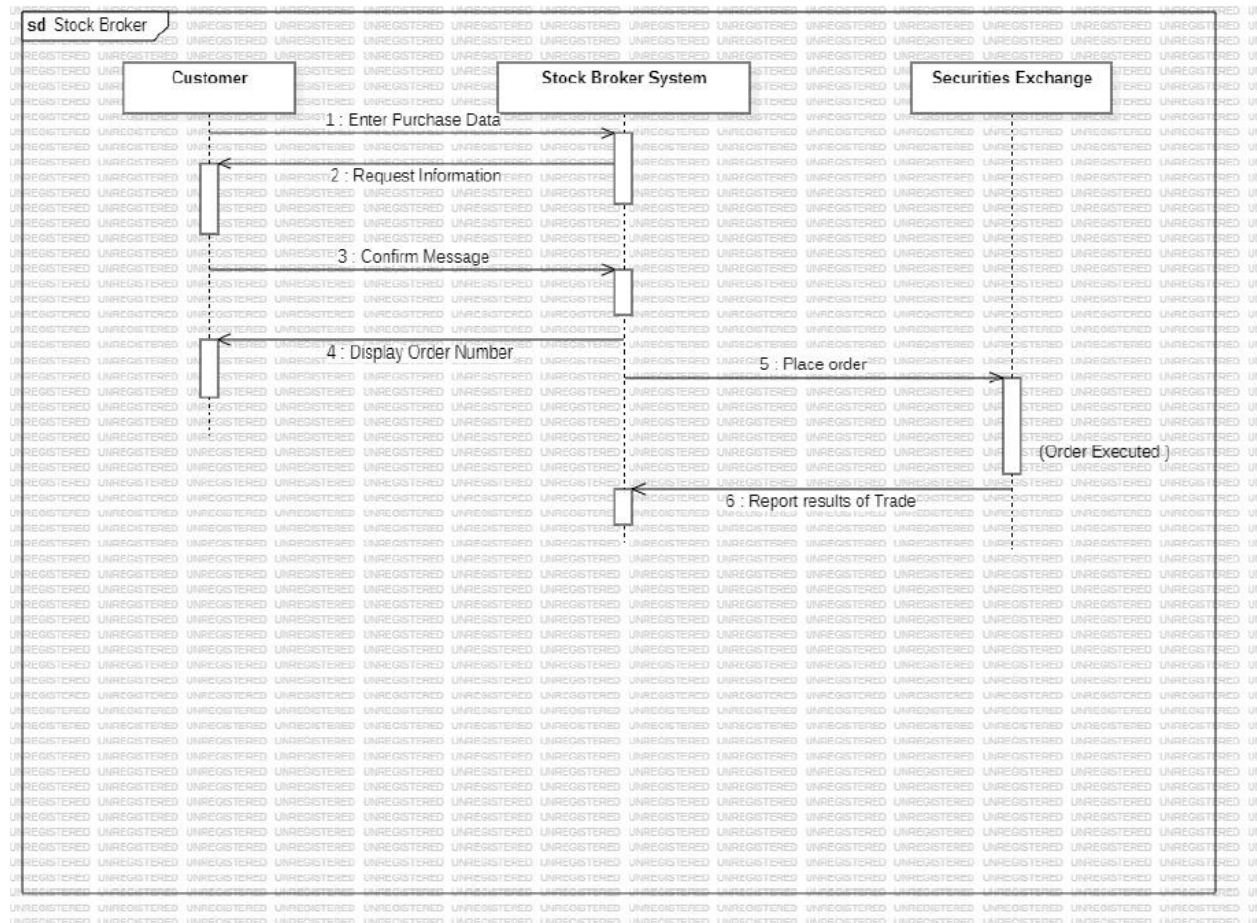
Conclusion: We have successfully studied and implemented the Sequence diagram which is a valuable tool for visualizing and understanding the dynamic aspects of a system.