Course Code: CSL601	Course Name:
Class :	Batch :
Roll no :	Name :

Experiment : 08

Aim : Develop Sequence / Collaboration diagram for the project.

Theory :

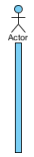
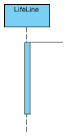
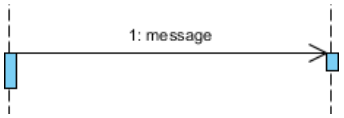
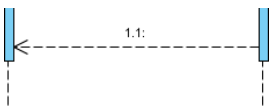
Explain the use of Sequence Diagram?

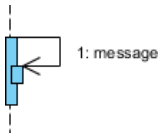
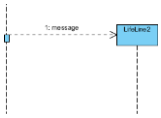
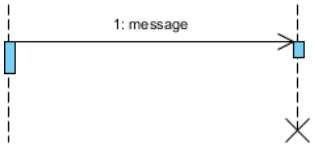
UML Sequence Diagrams are interaction diagrams that detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and they show the order of the interaction visually by using the vertical axis of the diagram to represent time what messages are sent and when.

Purpose of Sequence Diagram

- Model high-level interaction between active objects in a system
- Model the interaction between object instances within a collaboration that realizes a use case
- Model the interaction between objects within a collaboration that realizes an operation
- Either model generic interactions (showing all possible paths through the interaction) or specific instances of a interaction (showing just one path through the interaction)

Explain the components of Sequence Diagram?

Notation Description	Visual Representation
Actor A type of role played by an entity that interacts with the subject (e.g., by exchanging signals and data)external to the subject (i.e., in the sense that an instance of an actor is not a part of the instance of its corresponding subject). represent roles played by human users, external hardware, or other subjects.	
Lifeline A lifeline represents an individual participant in the Interaction.	
Activations A thin rectangle on a lifeline) represents the period during which an element is performing an operation.The top and the bottom of the of the rectangle are aligned with the initiation and the completion time respective	
Call Message A message defines a particular communication between Lifelines of an Interaction.Call message is a kind of message that represents an invocation of operation of target lifeline.	
Return Message A message defines a particular communication between Lifelines of an Interaction.Return message is a kind of	

message that represents the pass of information back to the caller of a corresponded former message.	
Self Message A message defines a particular communication between Lifelines of an Interaction.Self message is a kind of message that represents the invocation of message of the same lifeline.	
Recursive Message A message defines a particular communication between Lifelines of an Interaction.Recursive message is a kind of message that represents the invocation of message of the same lifeline. It's target points to an activation on top of the activation where the message was invoked from.	
Create Message A message defines a particular communication between Lifelines of an Interaction.Create message is a kind of message that represents the instantiation of (target) lifeline.	
Destroy Message A message defines a particular communication between Lifelines of an Interaction.Destroy message is a kind of message that represents the request of destroying the lifecycle of target lifeline.	
Duration Message A message defines a particular communication between Lifelines of an Interaction.Duration message shows the distance between two time instants for a message invocation.	
Note A note (comment) gives the ability to attach various remarks to elements. A comment carries no semantic force, but may contain information that is useful to a modeler.	

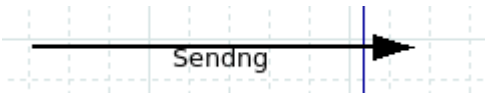
Explain the use of Collaboration Diagram?

Unlike a sequence diagram, a collaboration diagram shows the relationships among the objects. Sequence diagrams and collaboration diagrams express similar information, but show it in different ways.

Because of the format of the collaboration diagram, they tend to better suited for analysis activities (see Activity: Use-Case Analysis). Specifically, they tend to be better suited to depicting simpler interactions of smaller numbers of objects. However, if the number of objects and messages grows, the diagram becomes increasingly hard to read. In addition, it is difficult to show additional descriptive information such as timing, decision points, or other unstructured information that can be easily added to the notes in a sequence diagram. So, here are some use cases that we want to create a collaboration diagram for:

- Model collaborations between objects or roles that deliver the functionalities of use cases and operations
- Model mechanisms within the architectural design of the system
- Capture interactions that show the messages passing between objects and roles within the collaboration
- Model alternative scenarios within use cases or operations that involve the collaboration of different objects and interactions
- Support the identification of objects (hence classes) that participate in use cases
- Each message in a collaboration diagram has a sequence number.
- The top-level message is numbered 1. Messages sent

Explain the components of Collaboration Diagram?

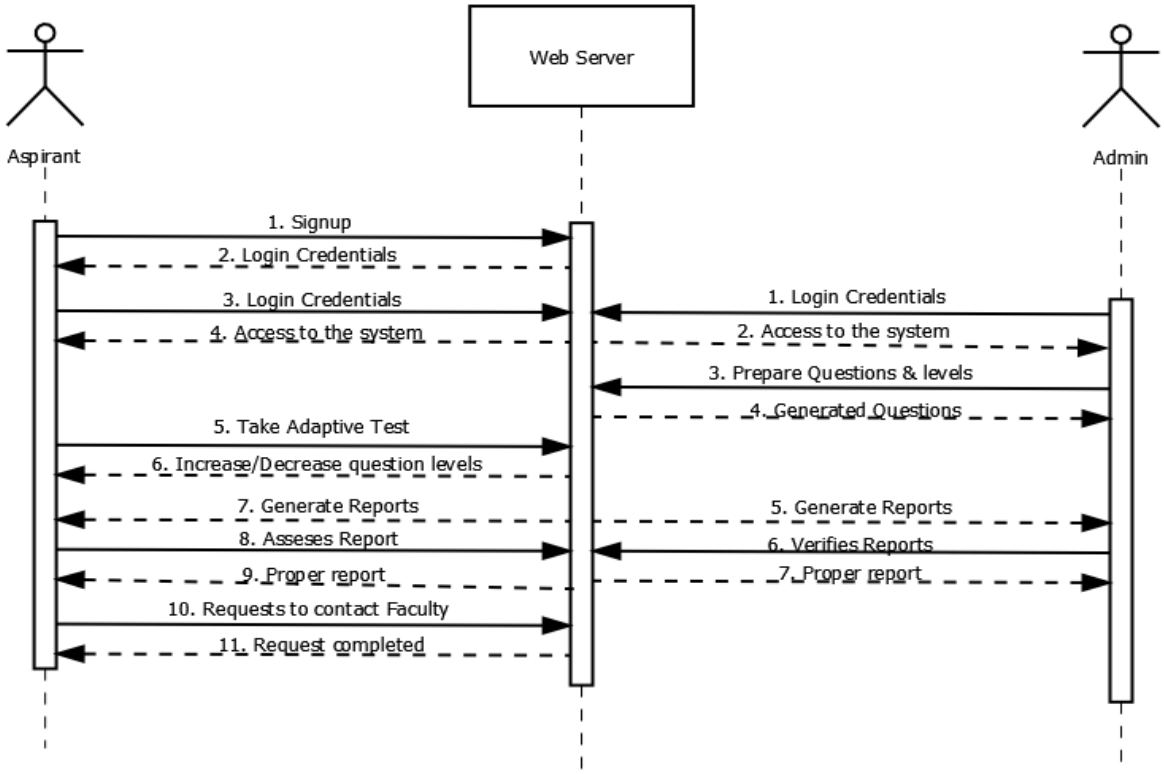
Notation Description	Visual Representation
Objects Objects participating in a collaboration come in two flavors?supplier and client. Supplier objects are the objects that supply the method that is being called, and therefore receive the message. Client objects call methods on supplier objects, and therefore send messages.	
Links The connecting lines drawn between objects in a collaboration diagram are links. These links are what set collaboration diagrams apart from sequence diagrams. They enable you to see the relationships between objects. Each link represents a relationship between objects and symbolizes the ability of objects to send messages to each other. A single link can support one or more messages sent between objects. This is different from sequence diagrams, where the lines drawn between objects represent messages sent from one object to another.	
Messages Messages in collaboration diagrams are shown as arrows pointing from the Client object to the Supplier object. Typically, messages represent a client invoking an operation on a supplier object.	

Differentiate between Sequence and Collaboration Diagram?

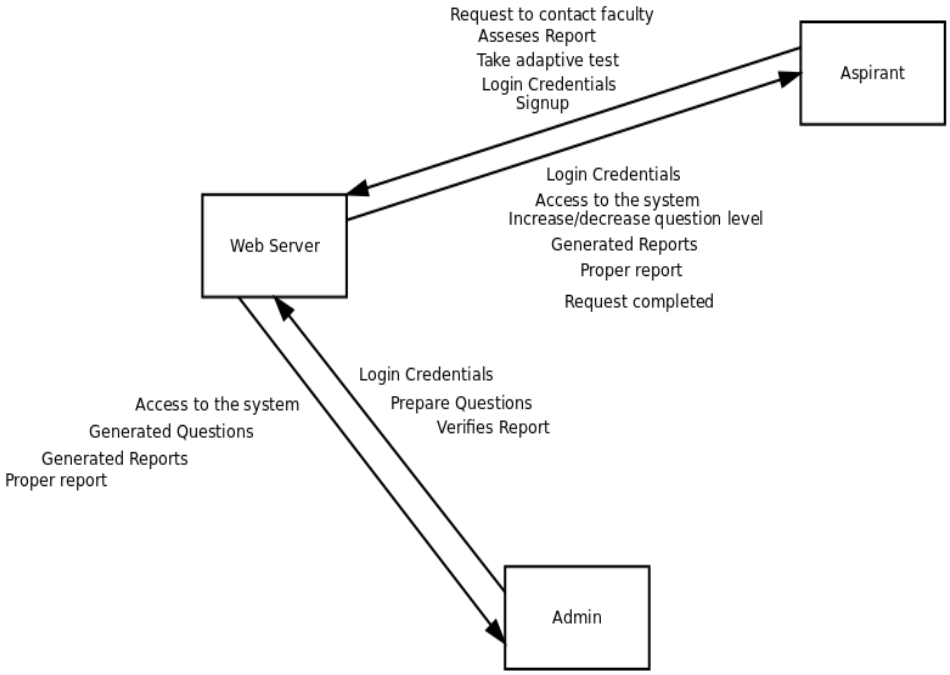
Sequence Diagrams	Collaboration Diagrams
The sequence diagram represents the UML, which is used to visualize the sequence of calls in a system that is used to perform a specific functionality.	The collaboration diagram also comes under the UML representation which is used to visualize the organization of the objects and their interaction.
The sequence diagram are used to represent the sequence of messages that are flowing from one object to another.	The collaboration diagram are used to represent the structural organization of the system and the messages that are sent and received.
The sequence diagram is used when time sequence is main focus.	The collaboration dagram is used when object organization is main focus.
The sequence diagrams are better suited of analysis activities.	The collaboration diagrams are better suited for depicting simpler interactions of the smaller number of objects.

Output :

Sequence diagram for online adaptive assessment platform



Collaboration diagram for Online adaptive assessment platform



Reference:

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https://creately.com/

Conclusion:
