Date :

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Practical No :- 05.

Aim :- To draw the behavioral view diagram : Sequence diagram , Collaboration diagram.

Theory :-

* **Sequence diagram :-**

It represents the behavioral aspects of a system . Sequence diagram shows the interactions between the objects by means of passing messages from one object to another with respect to time in a System.

Elements in Sequence diagram :-

Sequence diagram contains the objects of a system to their life-line bar to the messages passing between them.

Object :-

Object appear at the top postion of sequence diagram. object is shown in a rectangle box. name of object precedes a colon ':' to the class name, from which the object is instantiated . the whole string is underlined to appears in a rectangle box. Also we may use only class name or only instance name.

Life-line bar :

A down-ward vertical line from object-box is shown as the life-line of the object. A rectangle bar on life-line indicates that it is active at that point of time.

Messages :-

messages are shown as an arrow from the life-line of sender object to the life-line of receiver object & labeled with the message name. Chronological order of the messages passing throughout the objects' life-line show the sequence in which they occur. there may exist some different types of messages :

- Synchronous messages :- Receiver start processing the message after receiving it & sender needs to wait until it is made. A straight arrow with close & fill arrow-head from sender life-line bar to receiver end, represent a synchronous message.

- Asynchronous message :- For synchronous message sender needs not to wait for the receiver to process the message. A function call that creates thread can be represented as an asynchronous message in sequence diagram.

2.

- Return message :- for a function call when we need to return a value to the object, from which it was called then we use return message.

- Response message :- One object can send a message to self. we use this message when we need to show the interaction between the same object.

message type	Notation.
Synchronous message	——▶
Asynchronous message	——→
Response message	◀- - - - - -

* Collaboration diagram :-

The collaboration diagram is used to show the relationship between the objects in a system. Both the sequence & the collaboration diagrams represent the same information but differently. Instead of showing the flow of messages, it depicts the architecture of the object residing in the system as it is based on object-oriented programming. An object present in the system are connected, which to each other.

* Components :

1) Objects :- The object is represented by specifying their name & class. It is not mandatory for every class to appear. A class may constitute more than one object.

2) Actor :- In the collaboration diagram, the actor plays the main role as it invokes the interaction. each actor has its respective role & name.

3) links :- The link is an instance of association, which associates the object & actors. It portrays a relationship between the objects through which the message are sent. represented by solid line.

4) Messages :- It is a communication between objects which carries information & includes a sequence number, so that the activity may take place.
- It is represented by a labeled ~~arrow~~ arrow, which is placed near a link.