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

Experiment No.07

Aim : Develop Activity Diagram / State Diagram for the project.

Theory :

1) Explain the use of Activity Diagram?

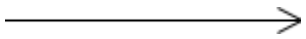
Activity Diagrams describe how activities are coordinated to provide a service which can be at different levels of abstraction. Typically, an event needs to be achieved by some operations, particularly where the operation is intended to achieve a number of different things that require coordination, or how the events in a single use case relate to one another, in particular, use cases where activities may overlap and require coordination. It is also suitable for modeling how a collection of use cases coordinate to represent business workflows

1) Identify candidate use cases, through the examination of business workflows
2) Identify pre- and post-conditions (the context) for use cases
3) Model workflows between/within use cases
4) Model complex workflows in operations on objects
5) Model in detail complex activities in a high level activity Diagram

2) Explain the components of Activity Diagram?

Activity: -
Is used to represent a set of actions

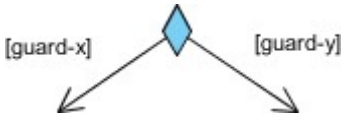
Control Flow: -
Shows the sequence of execution



Initial Node: -
Portrays the beginning of a set of actions or activities

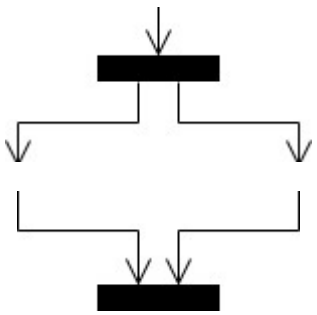
Activity Final Node: -
Stop all control flows and object flows in an activity (or action)

Decision Node: -
Represent a test condition to ensure that the control flow or object flow only goes down one path



Merge Node: -
Bring back together different decision paths that were created u sing a decision-node.

Fork Node: -
Split behavior into a set of parallel or concurrent flows of activities (or actions)



Join Node: -
Bring back together a set of parallel or concurrent flows of activities (or actions).

Explain the use of State Diagram?
State machine diagram typically are used to describe state-dependent behavior for an object. An object responds differently to the same event depending on what state it is in. State machine diagrams are usually applied to objects but can be applied to any element that has behavior to other entities such as: actors, use cases, methods, subsystems systems and etc. and they are typically used in conjunction with interaction diagrams (usually sequence diagrams).

Characteristics of State

1) State represent the conditions of objects at certain points in time.
2) Objects (or Systems) can be viewed as moving from state to state
3) A point in the lifecycle of a model element that satisfies some condition, where some particular action is being performed or where some event is waited

Explain the components of State Diagram?

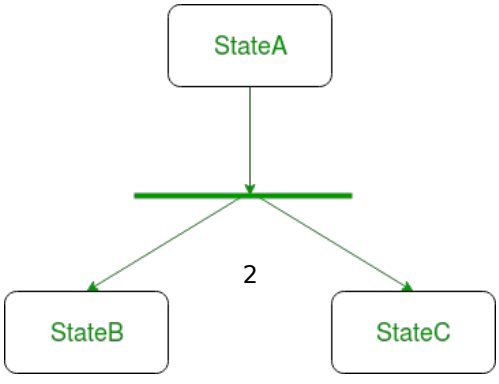
- Basic components of a state diagram: -

Initial state – We use a black filled circle represent the initial state of a System or a class.

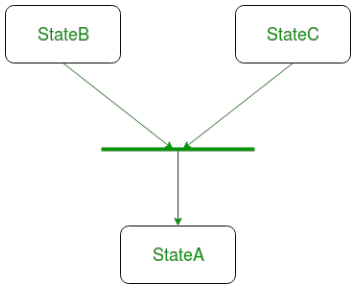
Transition – We use a solid arrow to represent the transition or change of control from one state to another. The arrow is labeled with the event which causes the change in state.

State – We use a rounded rectangle to represent a state. A state represents the conditions or circumstances of an object of a class at an instant of time.

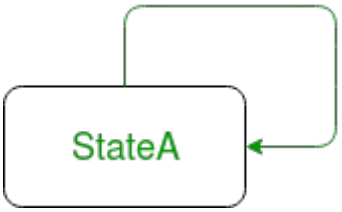
Fork – We use a rounded solid rectangular bar to represent a Fork notation with incomig arrow from the parent state and outgoing arrows towards the newly created states. We use the fork notation to represent a state splitting into two or more concurrent states.



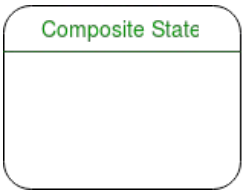
Join – We use a rounded solid rectangular bar to represent a Join notation with incoming arrows from the joining states and outgoing arrow towards the common goal state. We use the join notation when two or more states concurrently converge into one on the occurrence of an event or events.



Self transition – We use a solid arrow pointing back to the state itself to represent a self transition. There might be scenarios when the state of the object does not change upon the occurrence of an event. We use self transitions to represent such cases.



Composite state – We use a rounded rectangle to represent a composite state also.We represent a state with internal activities using a composite state.



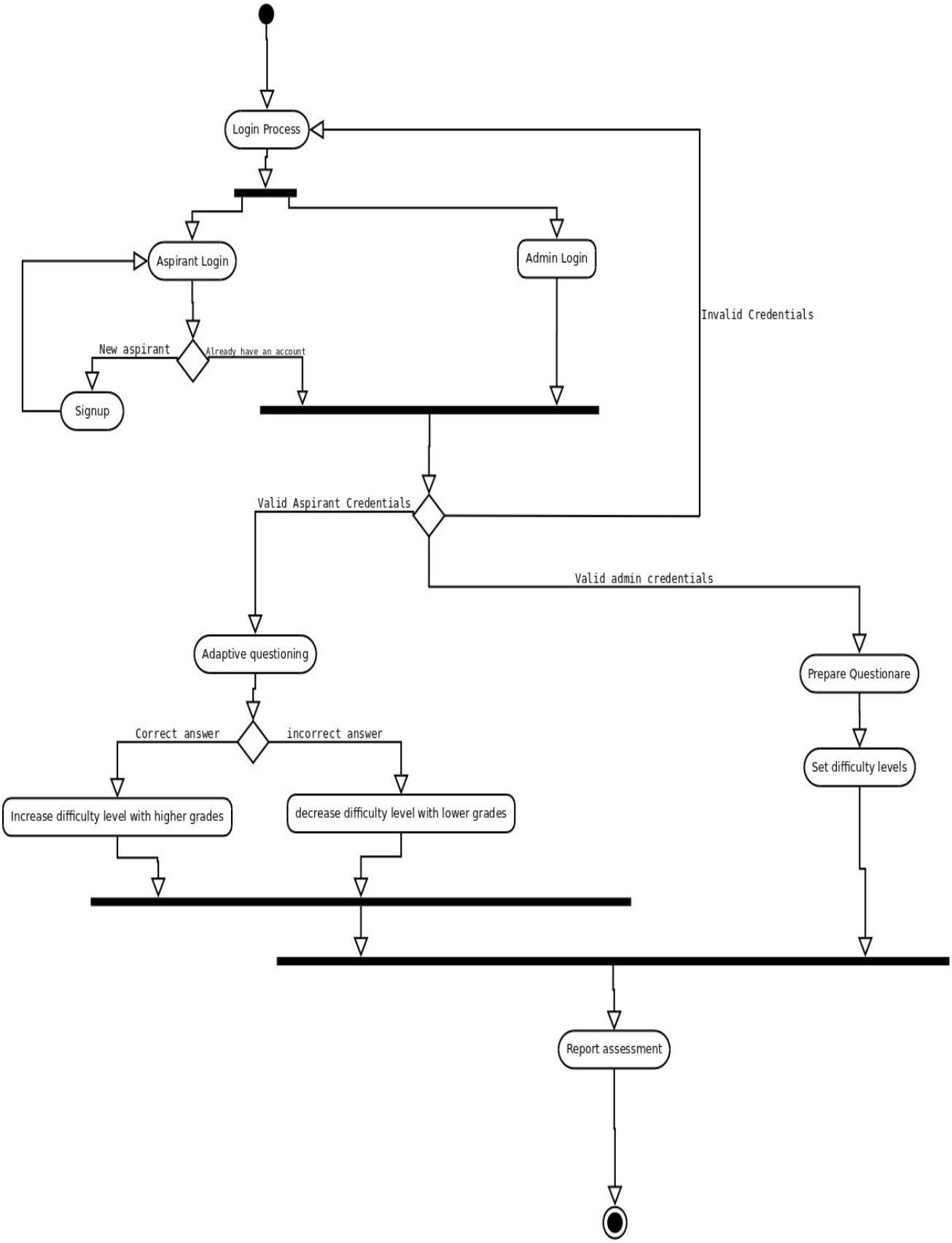
Final state – We use a filled circle within a circle notation to represent the final state in a state machine diagram.

Differentiate between Activity and State Diagram?

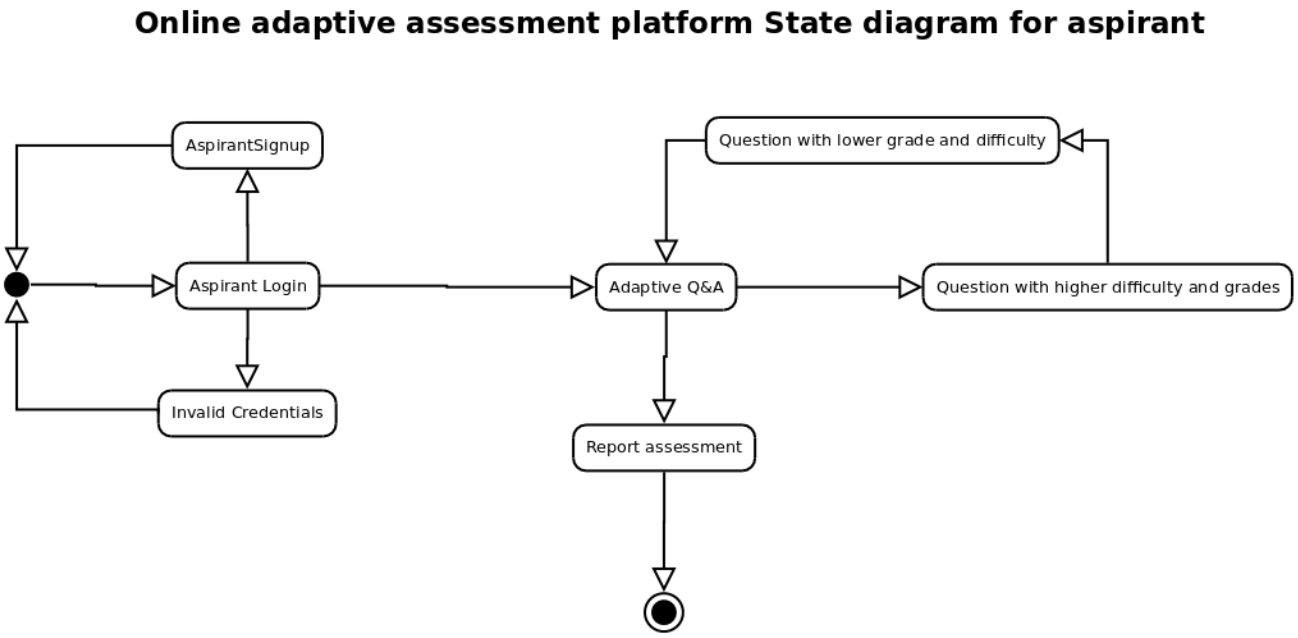
Activity Diagram	State Diagram
Activity Diagrams are reducible to State Machines with some additional notations that the vertices represent the carrying out of an activity.	n State Machines the vertices represent states of an object in a class
edges represent the transition on the completion of one collection of activities to the commencement of a new collection of activities	edges represent the transition on the completion of one collection of activities to the commencement of a new collection of activities
Activity Diagrams capture high level activities aspects	Objects have behaviors and states. The state of an object depends on its current activity or condition
A State Machine Diagrams shows the possible states of the object and the transitions that cause a change in state.	State Diagram represent concurrency and coordination in Activity Diagrams.

Output :
Activity diagram

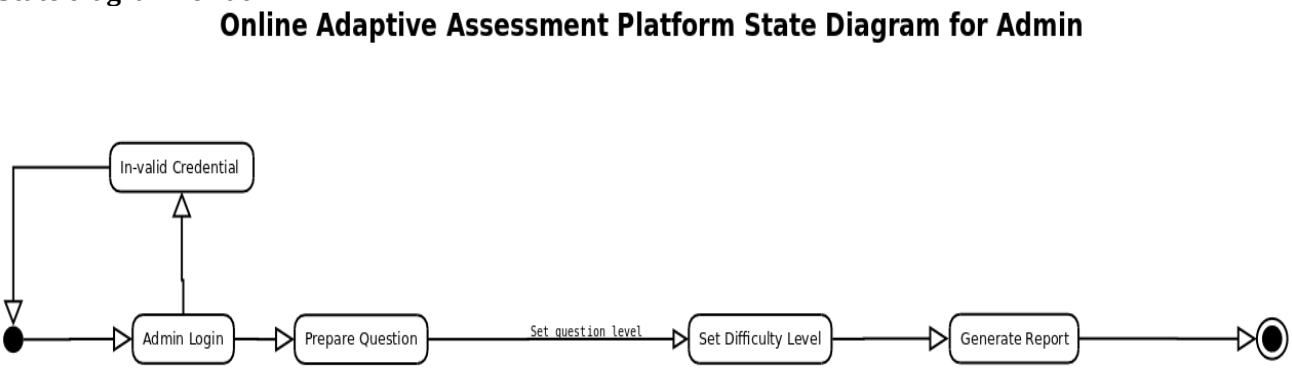
Online adaptive assessment platform activity diagram



State diagram for aspirant



State diagram for admin



Reference:

https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-activity-diagram/
https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-state-machine-diagram/
https://www.draw.io/
https://creately.com/

Conclusion:
