

Assignment - 3

Title : Prepare Activity diagram for NBA Attainment system

Problem Statement :

Prepare Activity Model, Identify Activity states and Action states. Draw Activity diagram with Swimlanes using UML2.0 Notations for major Use Cases of NBA Attainment system.

Objective :

- To Identify activities involved within the proposed software system
- Design the Activity Diagram.

Theory :

In UML, an activity diagram provides a view of the behavior of a system by describing the sequence of actions in a process. Activity diagrams are similar to flowcharts because they show the flow between the actions in an activity; however, activity diagrams can also show parallel or concurrent flows and alternate flows. In activity diagrams, you use activity nodes and activity edges to model the flow of control and data between actions.

Activity diagrams are helpful in the following phases of a project:

- Before starting a project, you can create activity diagrams to model the most important workflows.
- During the requirements phase, you can create activity diagrams to illustrate the flow of events that the use cases describe.
- During the analysis and design phases, you can use activity diagrams to help define the behavior of operations.

Basic Activity Diagram Notations and Symbols

Initial State or Start Point

A small filled circle followed by an arrow represents the initial action state or the start point for any activity diagram. For an activity diagram using swimlanes, make sure the start point is placed in the top left corner of the first column.



Start Point/Initial State

Activity

It represents a behavior that is composed of individual elements (actions)



7 main Activities of NBA Attainment System are:

- Login
- Manage CO-PO
- Manage Target Attainment
- Manage Test
- Enter marks
- Generate Report

Action

It is a named element which represents the single atomic step within the activity.

- Login
Enter username, enter password, enter designation, enter course id
- Update CO
Select CO, Update CO
- Update CO-PO mapping
- Target Attainment
- Set Test
Enter test id, set number of questions , set number of sub questions, set question wise co, set question wise maximum marks.
- Enter marks
Select test id, enter marks, import marks
- Generate Report

Other actions includes

- View CO
- View PO
- View CO-PO Mapping
- View Marks
- View Test

Action Flow

Action flows, also called edges and paths, illustrate the transitions from one action state to another. They are usually drawn with an arrowed line.



Fork

A fork node is used to split a single incoming flow into multiple concurrent flows. It is represented as a straight, slightly thicker line in an activity diagram.

In the overall system we have used a fork for showing concurrent activities i.e updating Co, Updating Co-Po mapping, set target attainment, set test, enter marks and report generation.

Join

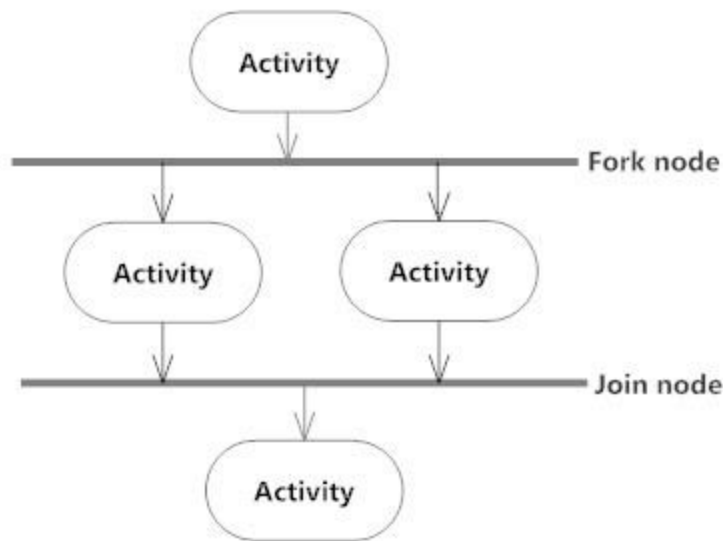
A join node joins multiple concurrent flows back into a single outgoing flow.

In the overall system all concurrent activities are joined before logging out.

Synchronization

A fork and join mode used together are often referred to as synchronization.

Synchronization



In enter marks activity there are two parallel ways to update marks: By entering it manually and by importing the marks, so fork node is used. And before validating the marks both the actions are joined. This is synchronization.

Guards

In UML, guards are a statement written next to a decision diamond that must be true before moving next to the next activity. These are not essential, but are useful when a specific answer, such as "Yes, three labels are printed," is needed before moving forward.

In every activity we have used guards for validation.



Swimlanes

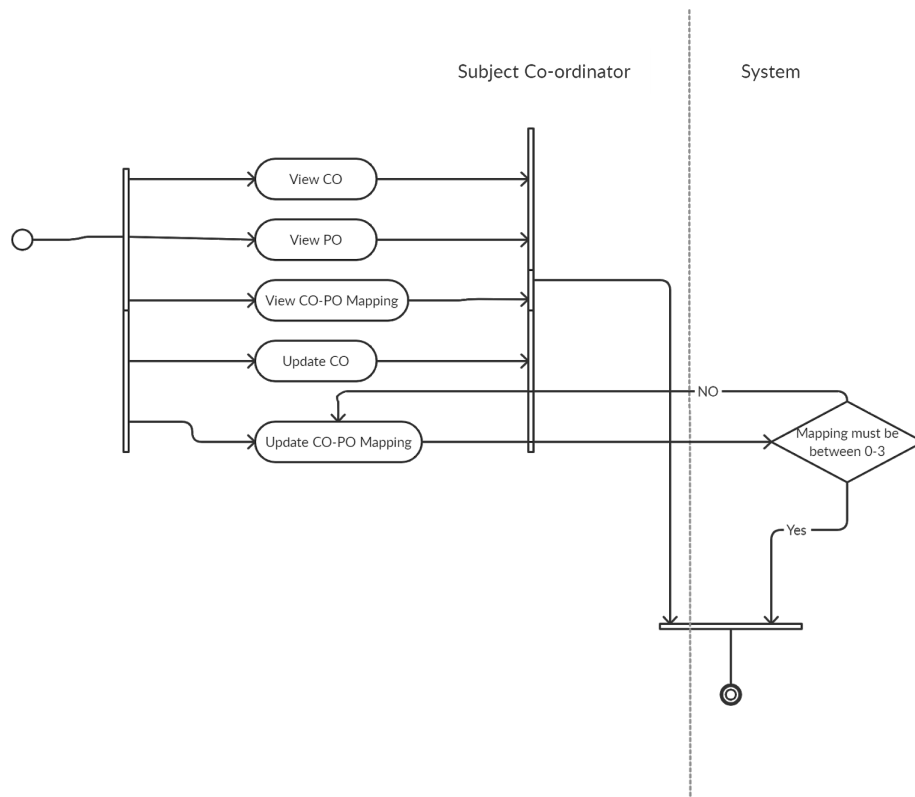
Swimlanes group related activities into one column.

Final State or End Point

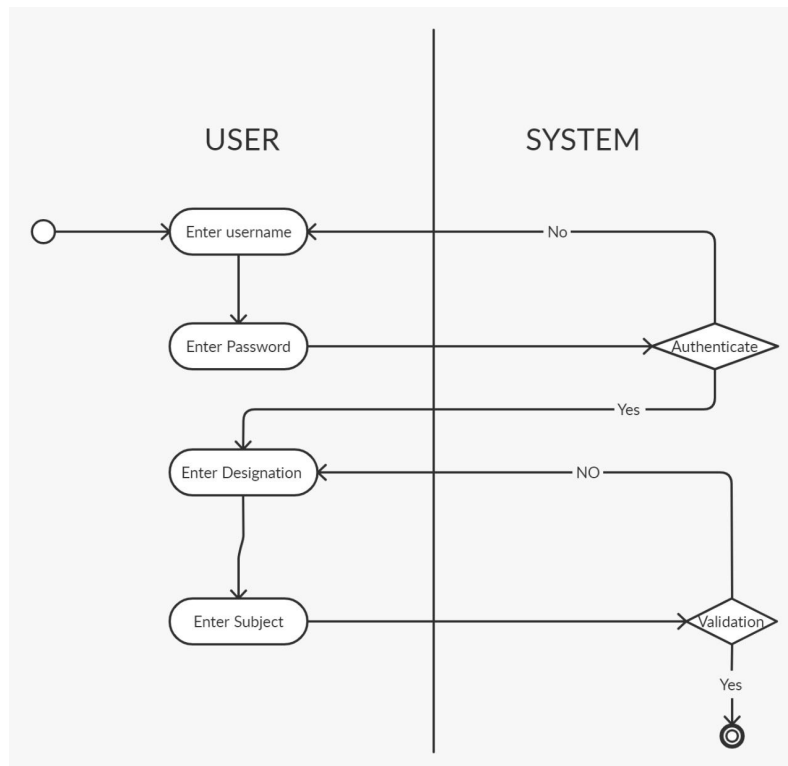
An arrow pointing to a filled circle nested inside another circle represents the final action state.



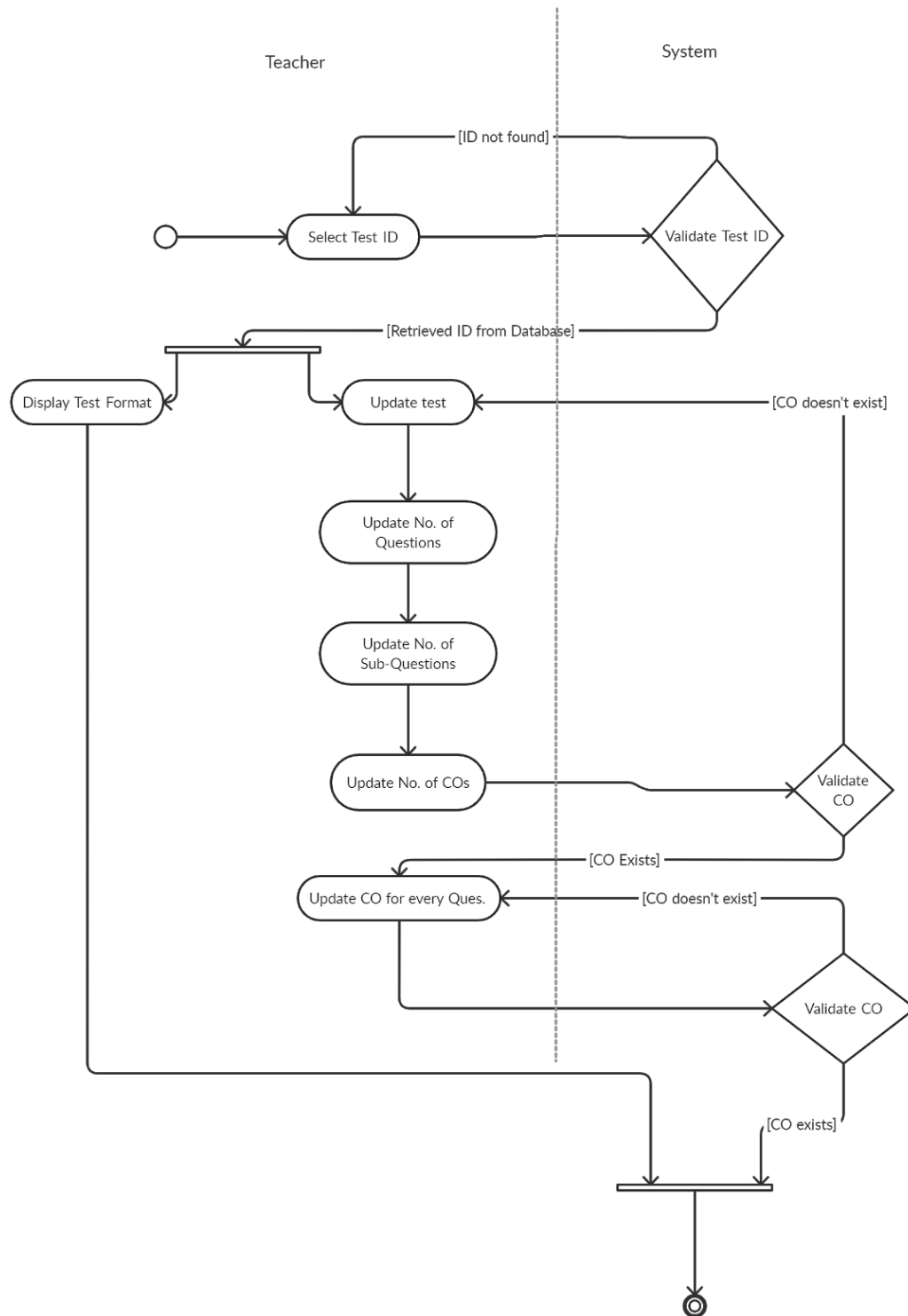
Activity 1 : Manage CO-PO



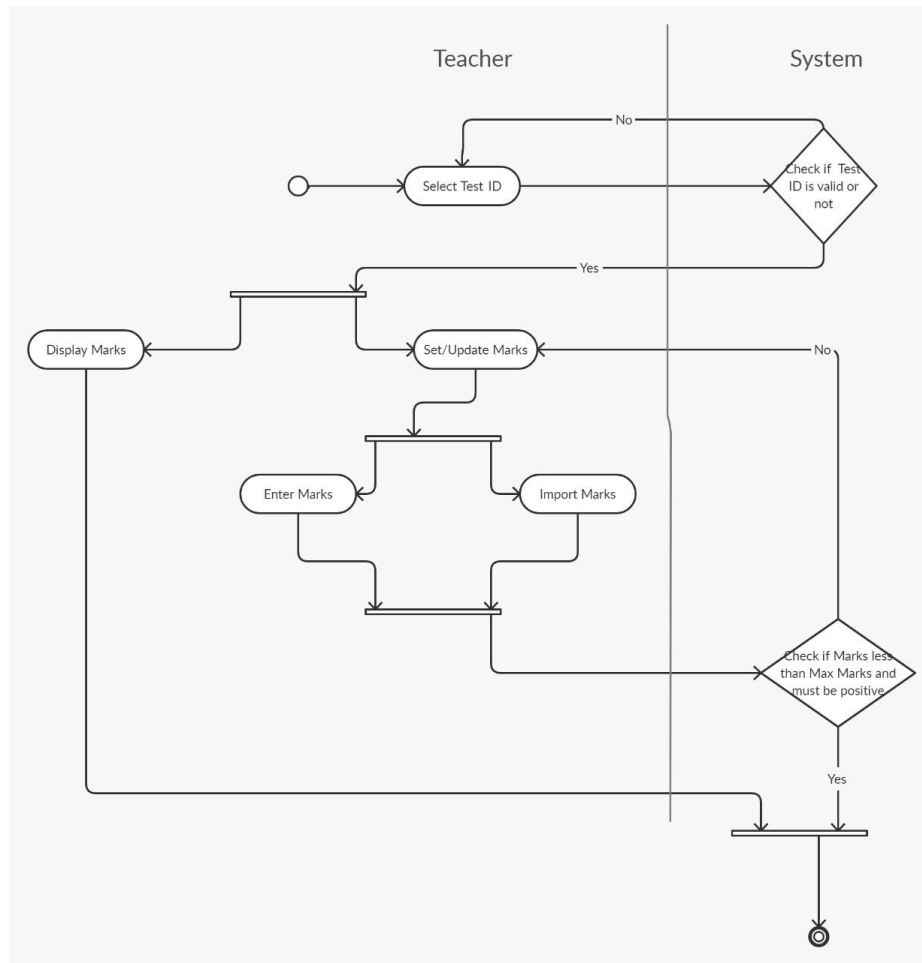
Activity 2 : Login



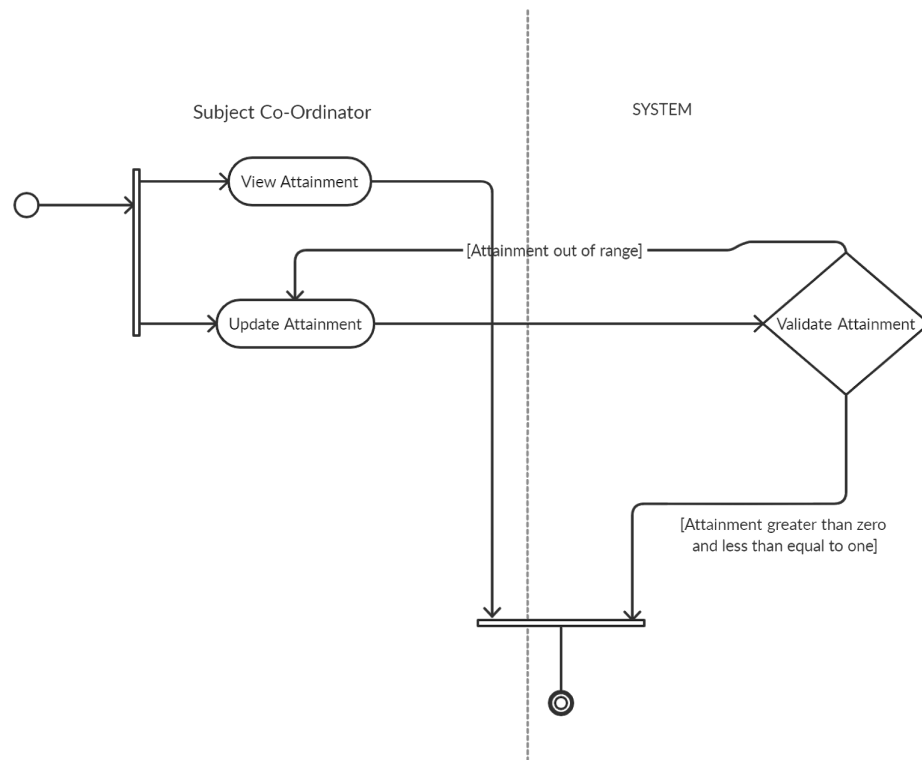
Activity 3 : Manage Test



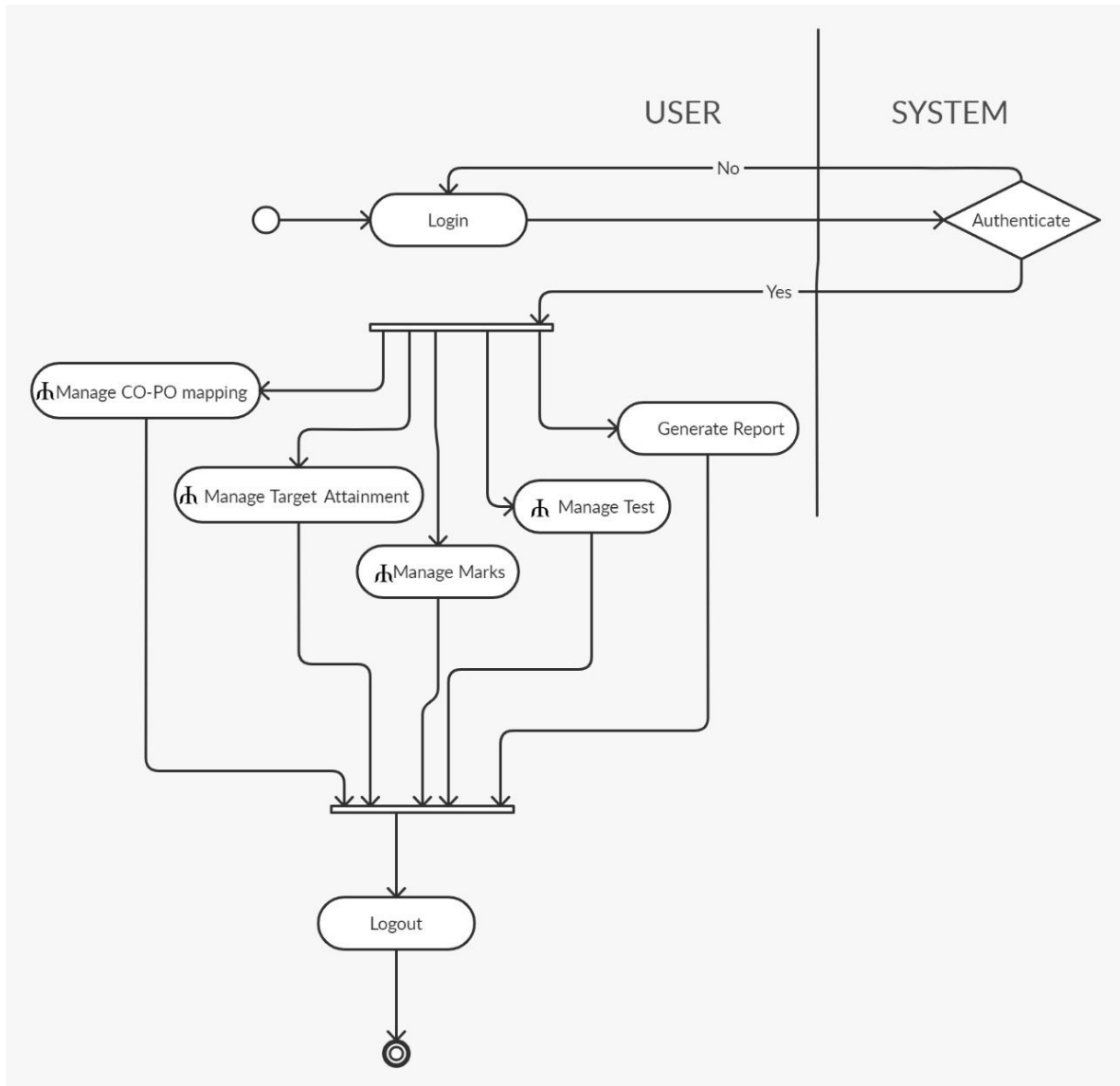
Activity 4 : Manage Marks



Activity 5 : Manage Target Attainment



Overall System



Conclusion : : Thus, identified the activity and action states and implemented an activity diagram with swimlanes for all the major use cases.