SCS1310 - Object Oriented Modelling and Programming

Activity Diagrams

P. V. G. S. Thamuditha
(sineththamuditha@gmail.com)

University of Colombo School of Computing

Activity Diagrams
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Introduction

What are Activity Diagrams?

- A type of behavioral diagram
- Used to model workflows from one activity to another activity
- It helps to model triggers of certain actions and parallel flows
- Useful for illustrating flow of tasks within a use case
- Activity diagram components,
  1. Initial & Final States
  2. Activity State
  3. Control (Action) Flow
  4. Decision Node (Branching)
  5. Merge
  6. Fork & Join
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Initial & Final States

- Initial state is the state where a particular state starts and final state is the state it ends
- There can only be one initial state

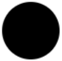

Figure: Initial State

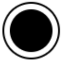

Figure: Final State

Activity State

- Represents the execution of an action by an object or by objects

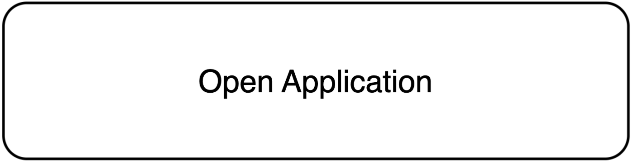

Figure: Activity State

Control (Action) Flow

- Also known as paths or edges
- Used to represent transition from one activity state to another activity state
- An activity state can have multiple incoming or outgoing edges

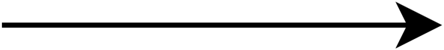

Figure: Control Flow

Decision Node (Branching)

- Represents the decision of deciding a flow of control
- There is a guard defining the condition
- There can be 2 or more outputs of a decisions

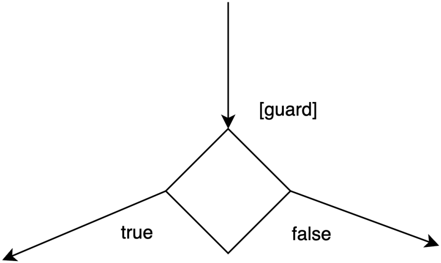

Figure: Decision Node

Merge

- Used to merge paths irrespective of the decisions taken
- We can merge 2 or more paths with merge node

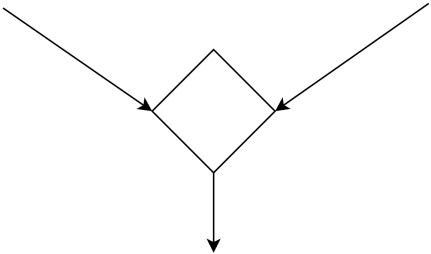

Figure: Merge

Fork & Join

- Used to represent concurrent workflows
- Here no decisions are taken in the split, because both paths are executed simultaneously
- Fork represents splitting into concurrent flows while join represent synchronizing concurrent flows

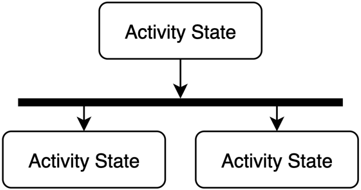

Figure: Fork

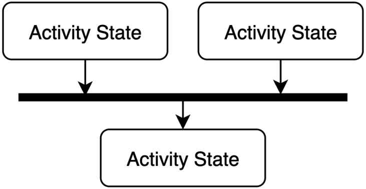

Figure: Join

Swimlanes

- Used to group and label related activities
- They are not mandatory but it makes easier to distinguish activity flows
- They can be either horizontal or vertical

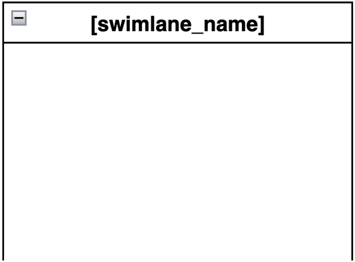

Figure: Swimlane

Summary

- Activity diagrams are used to model flow between activities
- Widely used to flows within use cases
- They have the capability represent decisions and concurrent flows