Software analysis and design

Module 3: Use-Case and Activities Diagrams

Objectives

- Demonstrate how to read and interpret:
  - A use-case diagram
  - An activity diagram

Where Are We?

- Use-case diagrams
- Activity diagrams

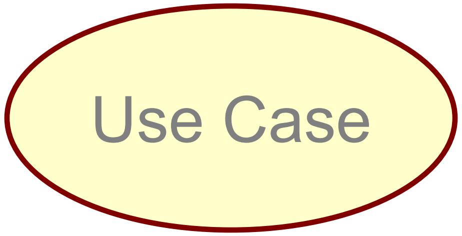
What Is an Actor?

- Actors represent roles a user of the system can play.
- They can represent a human, a machine, or another system.
- They can actively interchange information with the system.
- They can be a giver of information.
- They can be a passive recipient of information.
- Actors are not part of the system.
  - Actors are EXTERNAL.

Actor

What Is a Use Case?

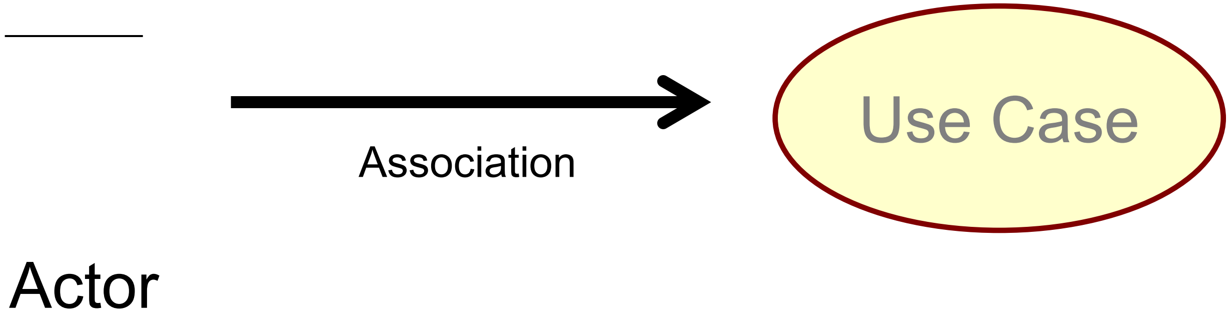
- Defines a set of use-case instances, where each instance is a sequence of actions a system performs that yields an observable result of value to a particular actor.
  - A use case models a dialogue between one or more actors and the system
  - A use case describes the actions the system takes to deliver something of value to the actor



Use Case

Use Cases and Actors

- A use case models a dialog between actors and the system.
- A use case is initiated by an actor to invoke a certain functionality in the system.

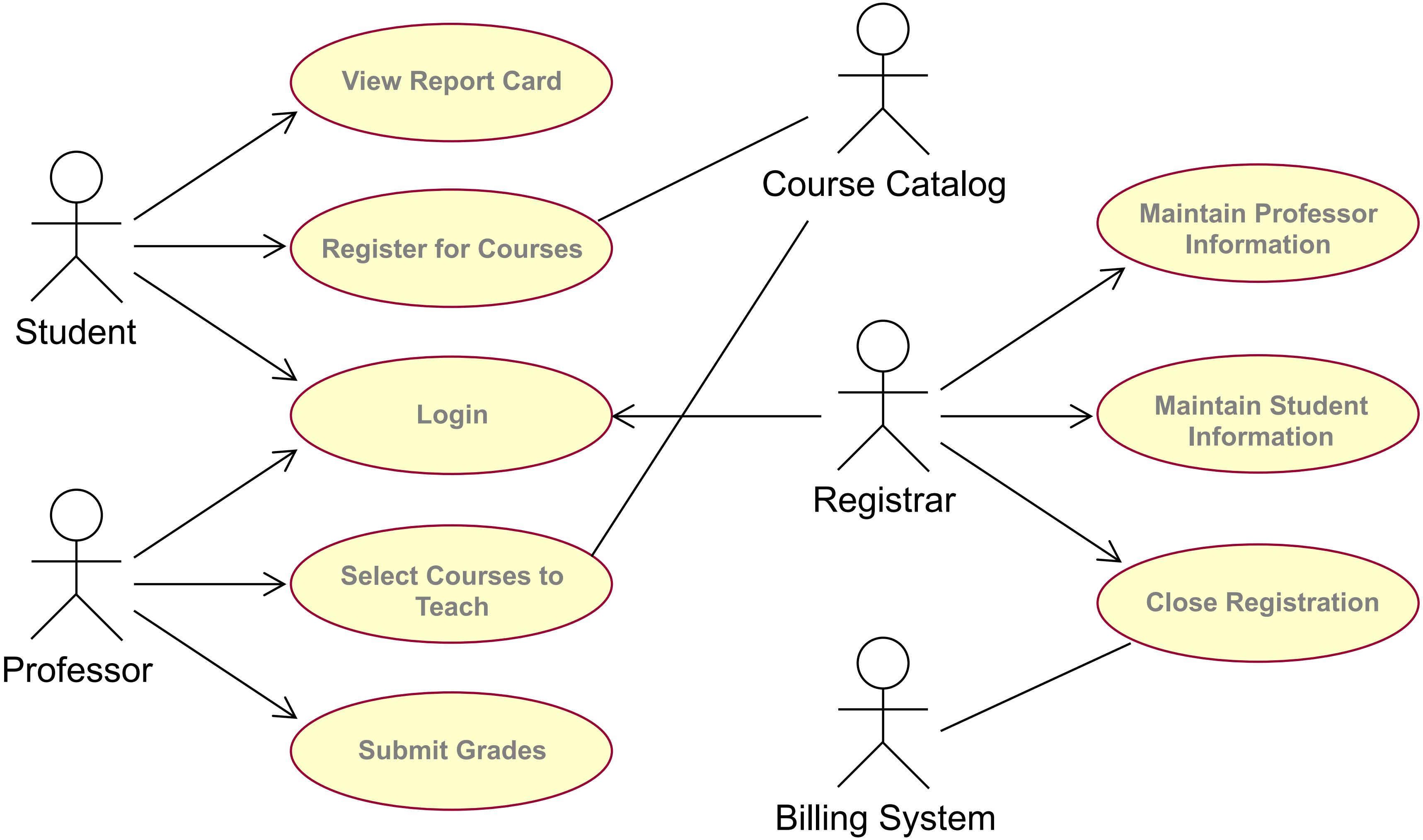


Association

Use Case

Actor

How Would You Read This Diagram?



Where Are We?

- Use-case diagrams
- Activity diagrams

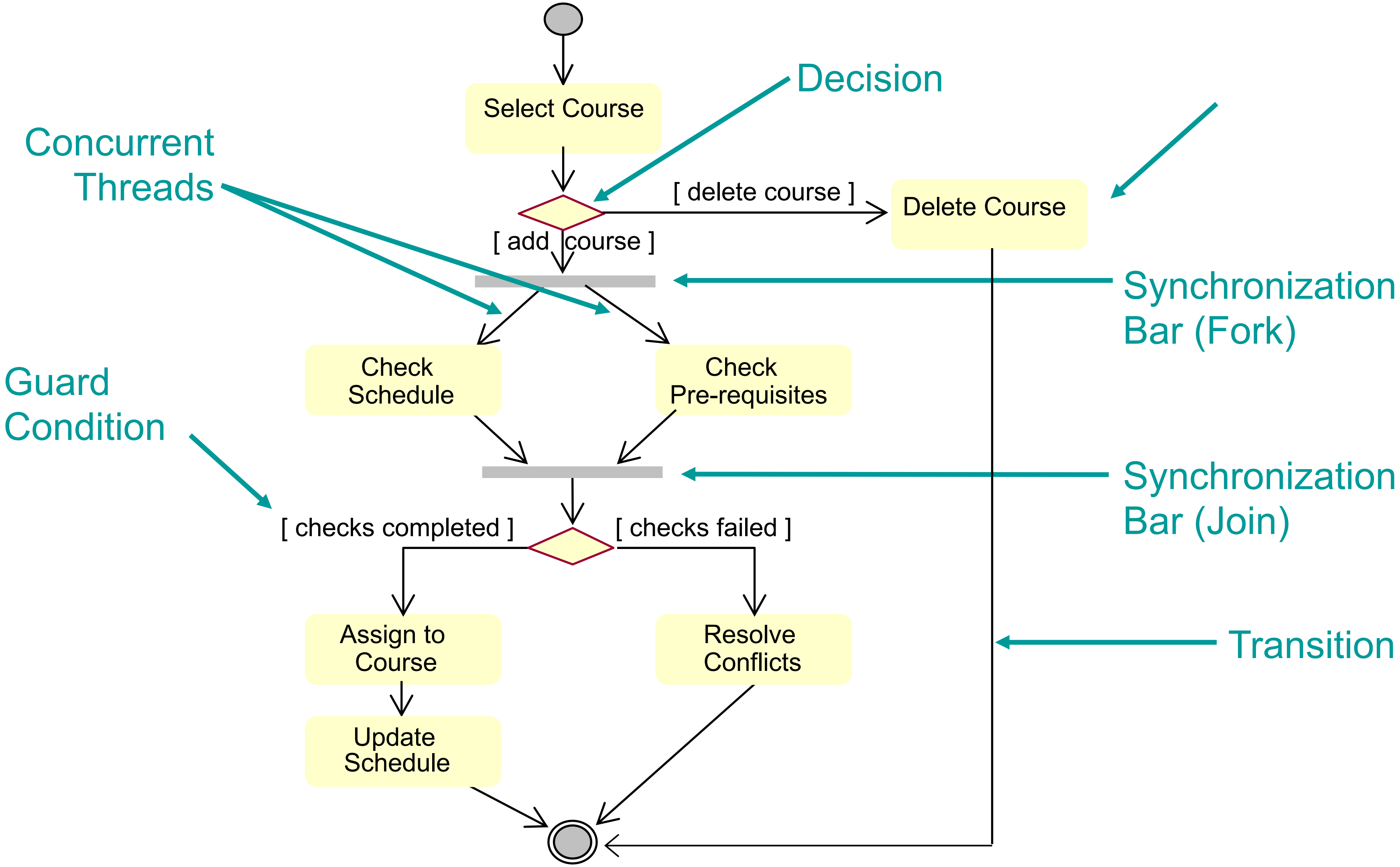
What Is an Activity Diagram?

- An activity diagram in the use-case model can be used to capture the activities and actions performed in a use case.
- It is essentially a flow chart, showing flow of control from one activity or action to another.

What Is an Activity?

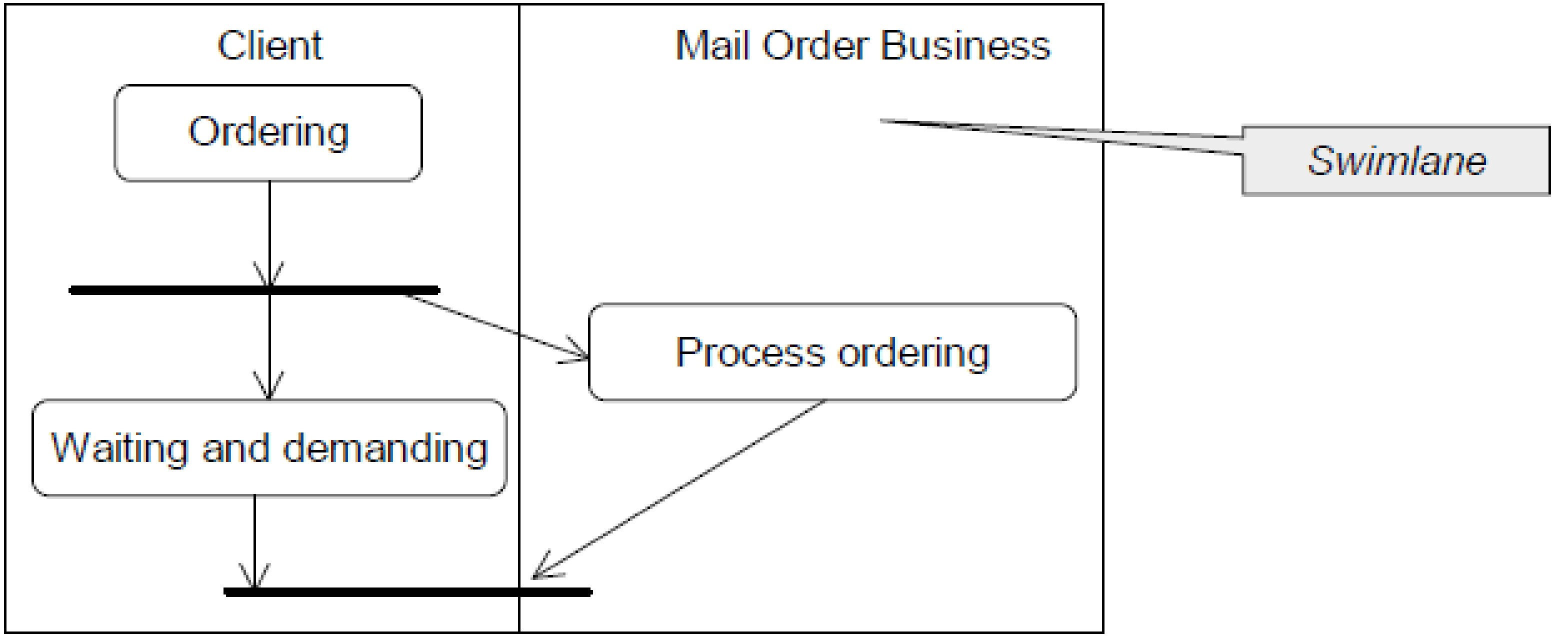
- A specification of behavior expressed as a flow of execution via sequencing of subordinate units.
  - Subordinate units include nested activities and ultimately individual actions.
- May contain boolean expression constraints when the activity is invoked or exited

Example: Activity Diagram



Swimlanes

- A **swimlane** shows the actions and activities being executed by a unit, an object or a class, mostly concurrent to other actions/activities.


Client
Mail Order Business
Swimlane
Ordering
Process ordering
Waiting and demanding