IS351-System Analysis

Lab3 Use Case Modeling - Event Decomposition Technique

Event Decomposition technique

- Event types:
  - External Event
  - Temporal Event
  - Internal/State Event

The Event Decomposition Technique

The Event Decomposition Technique steps

1. Consider the *external events* in the system environment that require a response from the system

2. For each external event, identify and name the *use case* that the system requires and the *external agent* who initiated it.

3. Consider the *temporal events* that require a response from the system

4. For each temporal event, *identify and name the use case* that the system requires and then establish the point of time that will trigger the use case.

5. Consider the *state events* that the system might respond to, particularly if it is a real-time system in which devices or internal state changes trigger use cases.

6. For each state event, *identify and name the use case* that the system requires and then define the state change.

Considerations for Use Case Diagrams

- Do not represent the flow of information or sequence of events.

- Do not represent communication between actors. Keep the focus on putting the system in context, not the actors. Actors may collaborate through a use case.

- Actors are not always roles played by a person. Actors may represent the role played by anything that acts on the system such as another system.

Example (FCI-Course Registration)

- In FCI each student enroll in any course through the ecom system. The student first needs to Login with a valid username and Password, then he/she chooses the course he wants to register in. To complete the course registration, The system checks if the student took the prerequisite courses of the selected course or not. If the student took all course prerequisites the course registration is done successfully, If not, then the student is informed by the pre-requisite courses that he/she needs to take before registering in this course.

- Instructors who teach courses are the ones responsible for recording attendance of the students in their lectures/labs.

Identifying Events

- In FCI each student enroll(External) in any course through the ecom system. The student first needs to Login(External) with a valid username and Password, then he/she chooses the course he wants to register in. To complete the course registration, The system checks (Internal/State) if the student took the prerequisite courses of the selected course or not. If the student took all course prerequisites the course registration is done successfully, If not, then the student is informed(Internal/State) by the pre-requisite courses that he/she needs to take before registering in this course.

- Instructors who teach courses are the ones responsible for recording attendance(External) of the students in their lectures/labs.
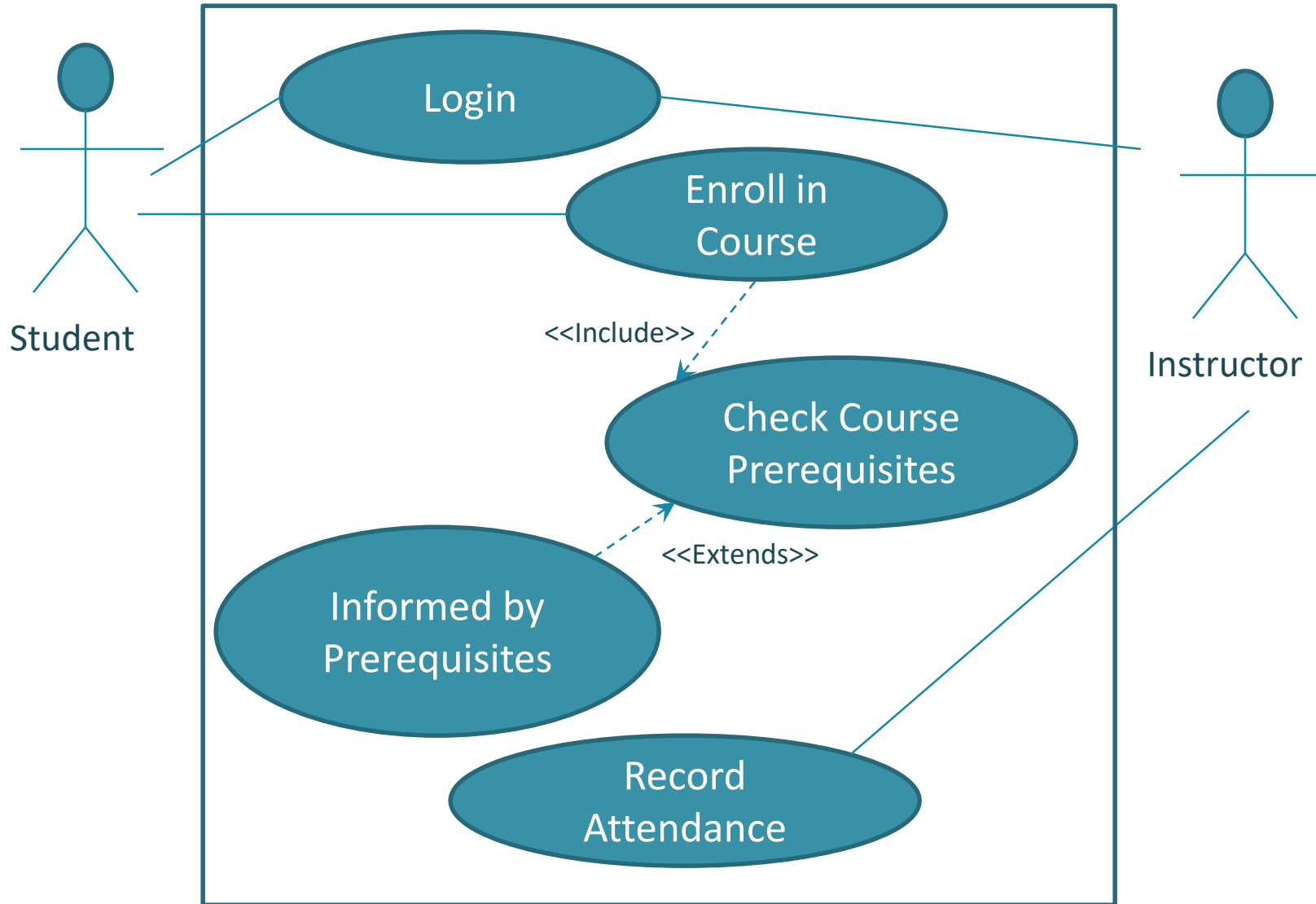
Identifying Use Cases

- In FCI each student <u>enroll</u> in any course through the ecom system. The student first needs to <u>Login</u> with a valid username and Password, then he/she <u>chooses</u> the course he wants to register in. To complete the course registration, The system <u>checks</u> if the student took the prerequisite courses of the selected course or not. If the student took all course prerequisites the course registration is done successfully, If not, then the student is <u>informed</u> by the pre-requisite courses that he/she needs to take before registering in this course.

- Instructors who teach courses are the ones responsible for <u>recording attendance</u> of the students in their lectures/labs.

Identifying Actors

- In FCI each **student** enroll in any course through the ecom system. The student first needs to Login with a valid username and Password, then he/she chooses the course he wants to register in. To complete the course registration, The system checks if the student took the prerequisite courses of the selected course or not. If the student took all course prerequisites the course registration is done successfully, If not, then the student is informed by the pre-requisite courses that he/she needs to take before registering in this course.

- **Instructors** who teach courses are the ones responsible for recording attendance of the students in their lectures/labs.

12

Use Case Diagram

Login

Enroll in Course

<<Include>>

Check Course Prerequisites

<<Extends>>

Informed by Prerequisites

Record Attendance

Student

Instructor

Exercise: Multi-Clinic System

- In a multi-clinic system a patient makes a call for an appointment reservation. Once the call is done, the system has to record all patient information such as patient name, address, and telephone number.

- During the notification with a patient, he/she should know all possible appointments in order to choose his/her desired appointment.

- The patient may cancel or change his/her appointment before 24 hours from his actual appointment.

- Two daily reports have to be prepared to each doctor, one of them is about patient report and the other is an appointment report.

- When a patient comes for examination, the doctor writes a prescription which includes all drugs the patient have to take, number of times and dose he has to take for each medicine. In the end, the doctor Prints the prescription to the patient before he leaves

Exercise: Multi-Clinic System

External Events	External Agents	Use case
1- Receiving Patient Information	Patient	Save patient data
2- Make an appointment	Patient	Make an appointment
3- Change an appointment	Patient	Change an appointment
4- Generate patient s report	Doctor	Produce patient s report
5- Generate appointments report	Doctor	Produce appointments report
6- Write prescription	Doctor	Write prescription
State Events		**Use case**
7- Check Availability	Triggered by make appointment external use case	Check available appointments
8- Record an appointment	Triggered by make appointment external use case	Reserve appointment data
9- Cancel appointment	Triggered by change appointment	Cancel appointment
10 - Print prescription	Triggered by writing the prescription external use case	Print prescription

Multi Clinic System Use Case Diagram

17