Requirement Modelling

Domain Modelling

UML Software

1. MS Visio
   a. **Huge library images**
   b. Not Free
2. Draw.io https://www.draw.io/
   a. **Syncs** with Google drive or Dropbox
   b. Lots of **options**
3. Creately https://creately.com
   a. **No Registration** Required

Design Documentations omitted

Domain Modelling

Explaining a problem using Pictures

Domain Modeling

Domain Modeling is a way to model (**explain**) a problem in the real world using diagrams

A Domain Model **is not a** class Diagram

Domain Modeling Questions

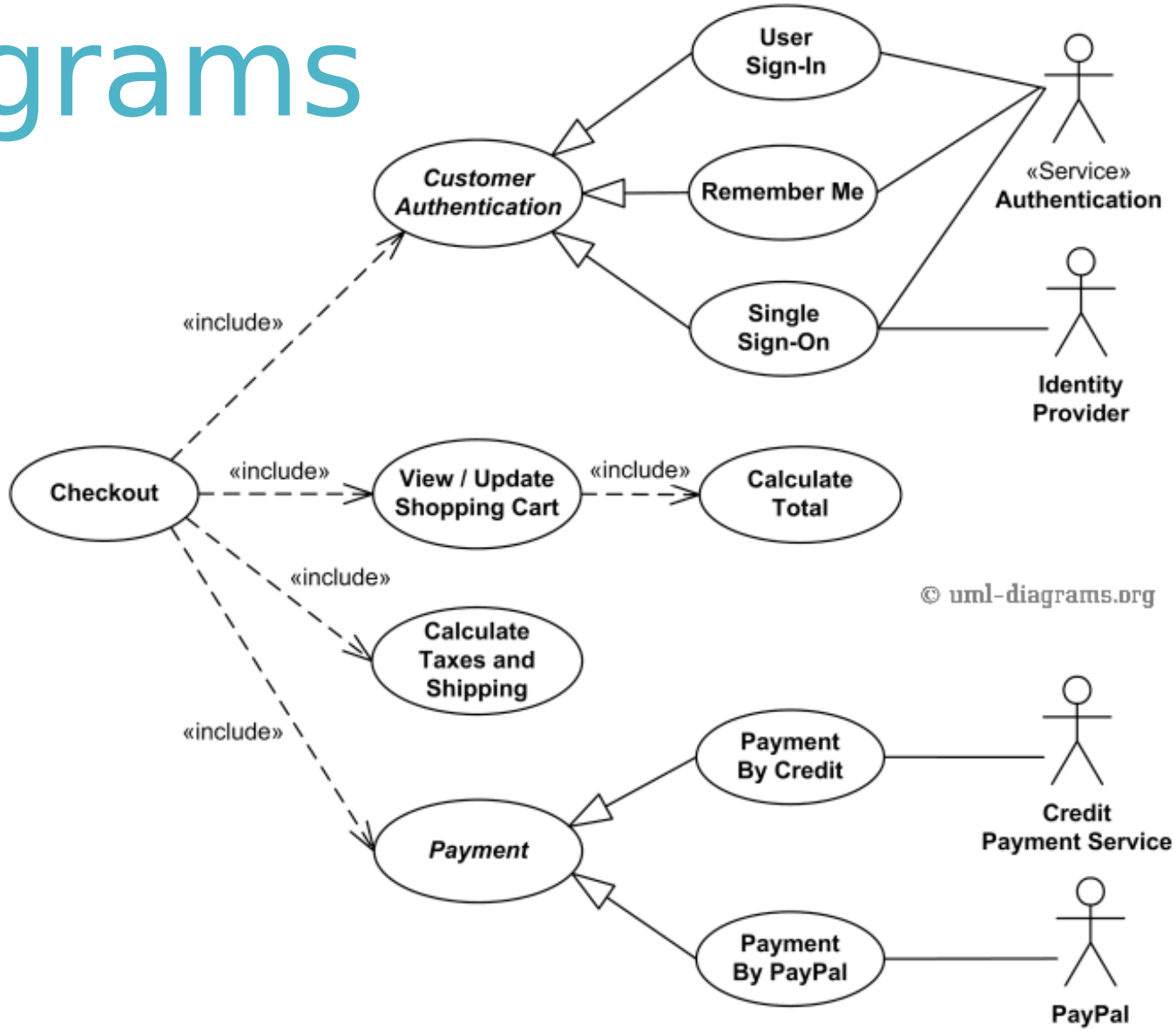
Can a domain object have another **domain object** as an attribute?
Can a domain object have zero attributes?
Is a **domain model** a description of my **Java classes**?

Use Cases

Describing user actions

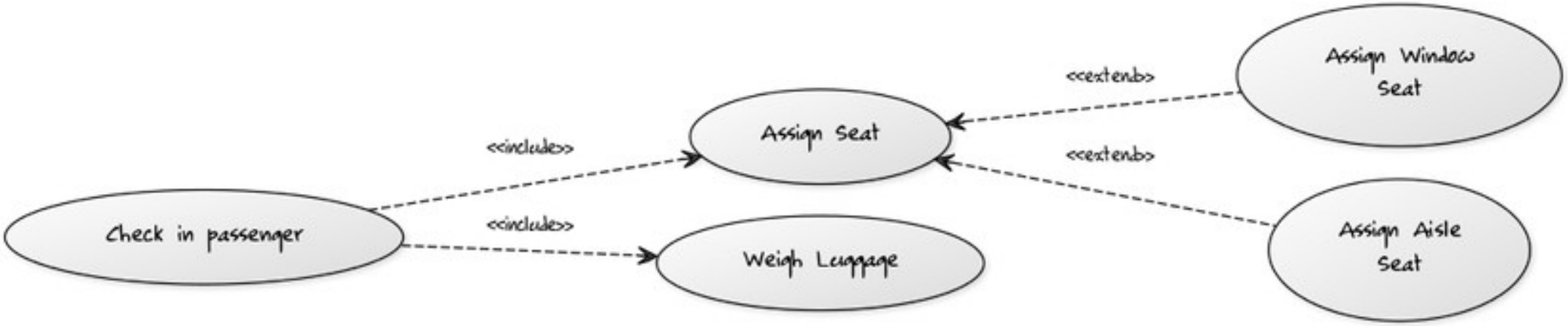
Use case Diagrams

- **Actors**
- **Use Cases**
- **Relationships**
- **Descriptions**



Include vs extend

Include: When one action requires another. Reuse an action
Extend: When one action can be replaced by another (inheritance)



Exercise

The VP Communication of ECSESS needs a new way to send the livewire newsletter to the students in EE, SE and CE. Currently students send him emails and subsequently he sends an email blast to many people including those who do not wish to receive the live wire.
What he would like is system where ECSE students can **login** to their MyMcGill account and **post** their **announcements** or **campus events**, these news items can be **edited or removed**. Those news events would come up on a **news feed** that students can view in their MyMcGill page. Of course, he would like to have administrative rights in order to **prevent abuse**. This would allow him to **edit and remove** abusive posts.

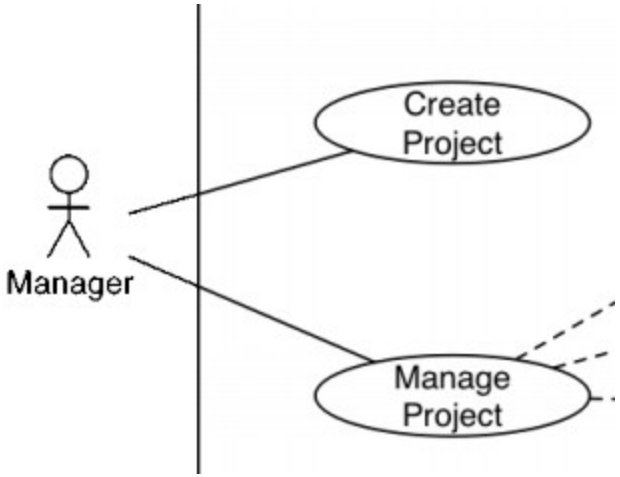
Draw a **use case Diagram** to represent the user interface for this scenario. Be sure to have more than one actor and the correct relations between the actions and the actors.

Use Case Description

Describes a use case in the following manner:

1. **Goals**
2. **Entry conditions**
3. **Flow of events**
4. **Exit condition**

Use Case Description



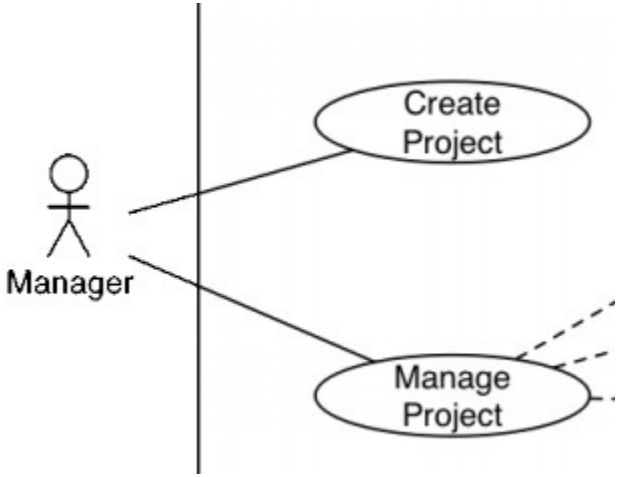
Use Cases:

Use Case: Create Project <<includes>> Initialize Project Details

Successful Outcomes: Primary Actor creates a new Project.

Use Case Package	General Management
ID	UC-GM-01
Use Case Goal	Primary actor successfully creates a new Project.
Actor(s)	Primary Actor: Manager
Level	User-Goal
Precondition	Manager has successfully logged in as per {UC-GF-01}
Domain Entities	Project, Manager

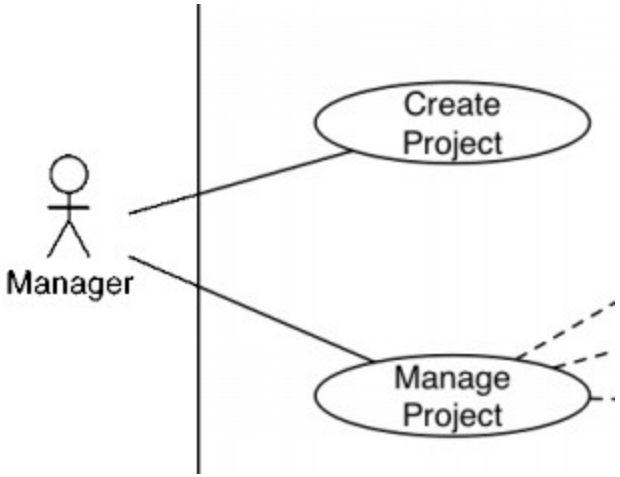
Use Case Description



Main Success Scenario:

Step	Action	Notes
1	Primary Actor indicates intention to create a Project.	
2	System prompts Primary Actor to enter new Project in-	
	formation.	
3	Primary Actor performs Initialize Project Details. {UC-PM-01}	
4	System generates a unique Project ID and creates a new Activity with the information gathered in*Main Success Scenario step 3*. Saves the new Project.	
5	*Use case ends successfully.*	

Use Case Description



Alternative Flows:

3a. Initialize Project Details ends unsuccessfully.

Step	Action	Notes
3a.1	Primary Actor enters information that causes Initialize Project Details {UC-PM-01} to fail.	
3a.2	*System returns control to Main Success Scenario Step 2.*	

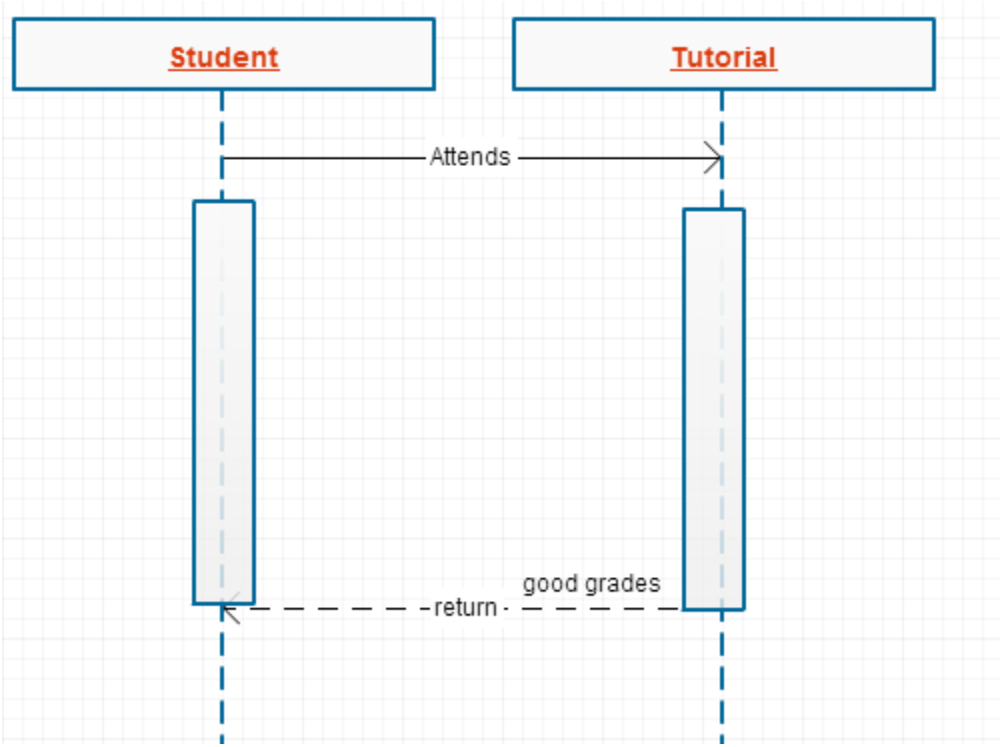
3b. Initialize Project Details ends unsuccessfully.

Step	Action	Notes
3b.1	Primary Actor enters information that causes Initialize Project Details {UC-PM-01} to fail.	
3b.2	User aborts.	
3b.2	*Use case ends unsuccessfully.*	

Use Case Concept Questions

Can a **software component** be an **Actor**?

Do Use Case Diagrams describe **High Level** concepts or **Low Level** Concepts?



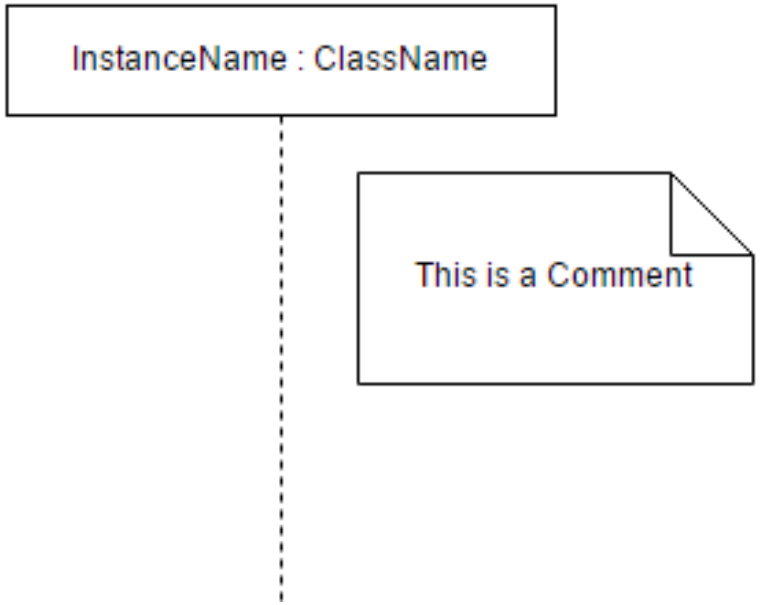
Sequence Diagrams

It can describe sequences of events

UML Sequence Diagrams

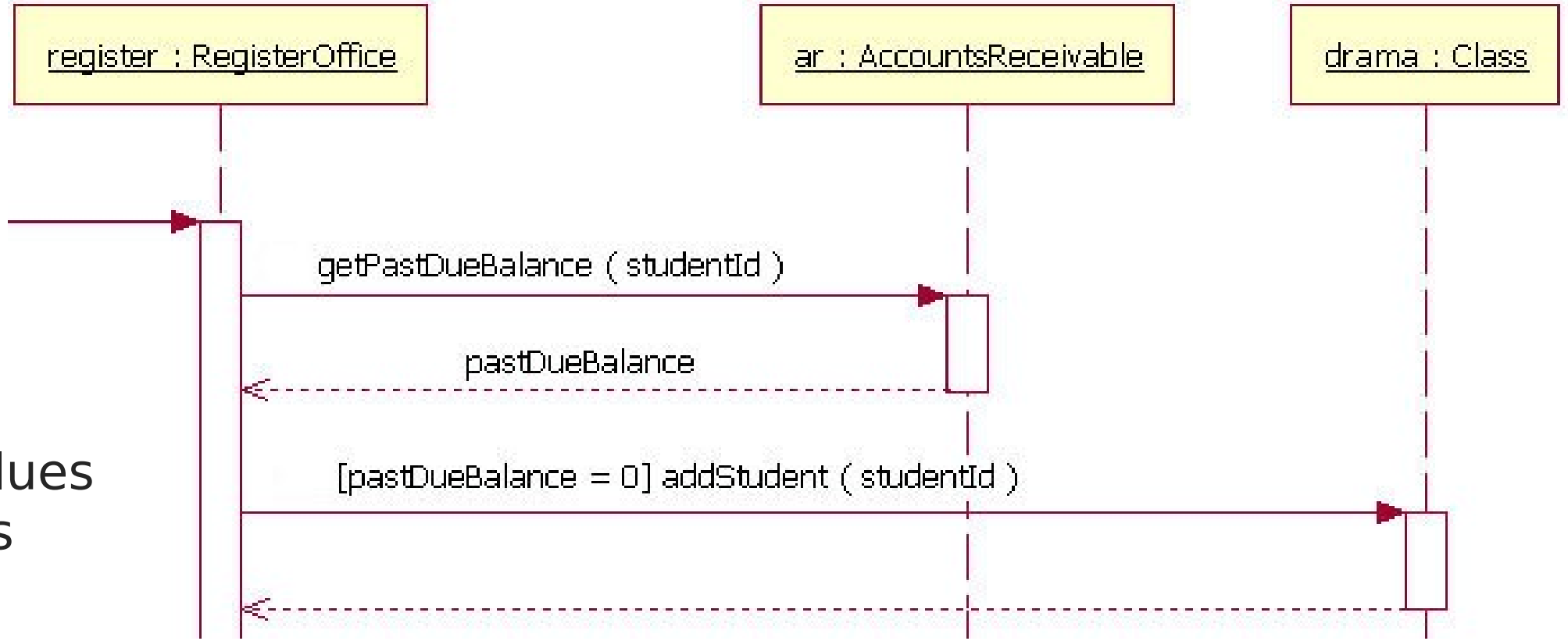
Describes **interaction** between objects
Also indicates **timing** and **order** between those interactions

UML Sequence Diagrams (Basics)



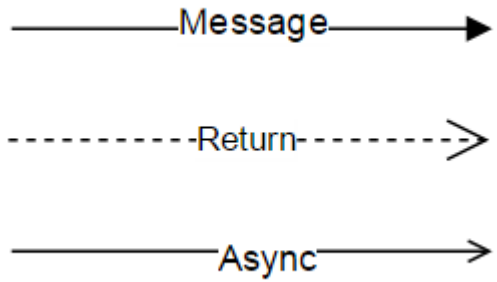
UML Sequence Diagrams (Parts)

- Life Lines
- Messages
- Return Values
- Conditions



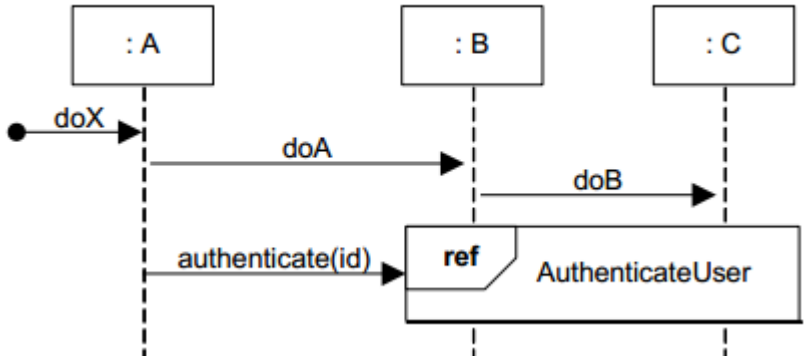
UML Sequence Diagrams (Arrows)

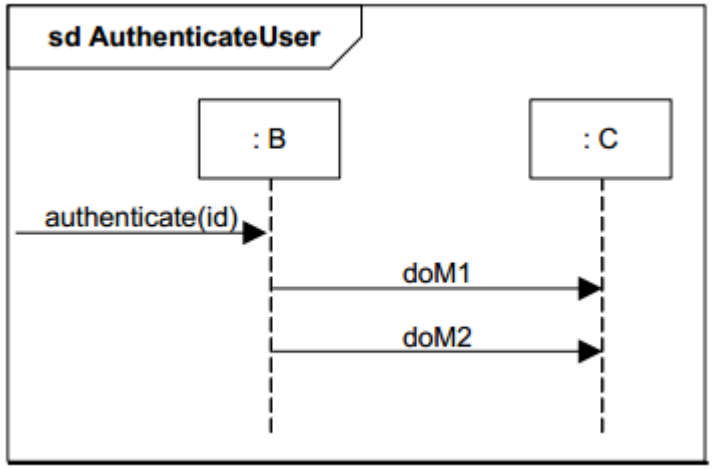
- **Message**
- **Return** value
- **Asynchronous** messa



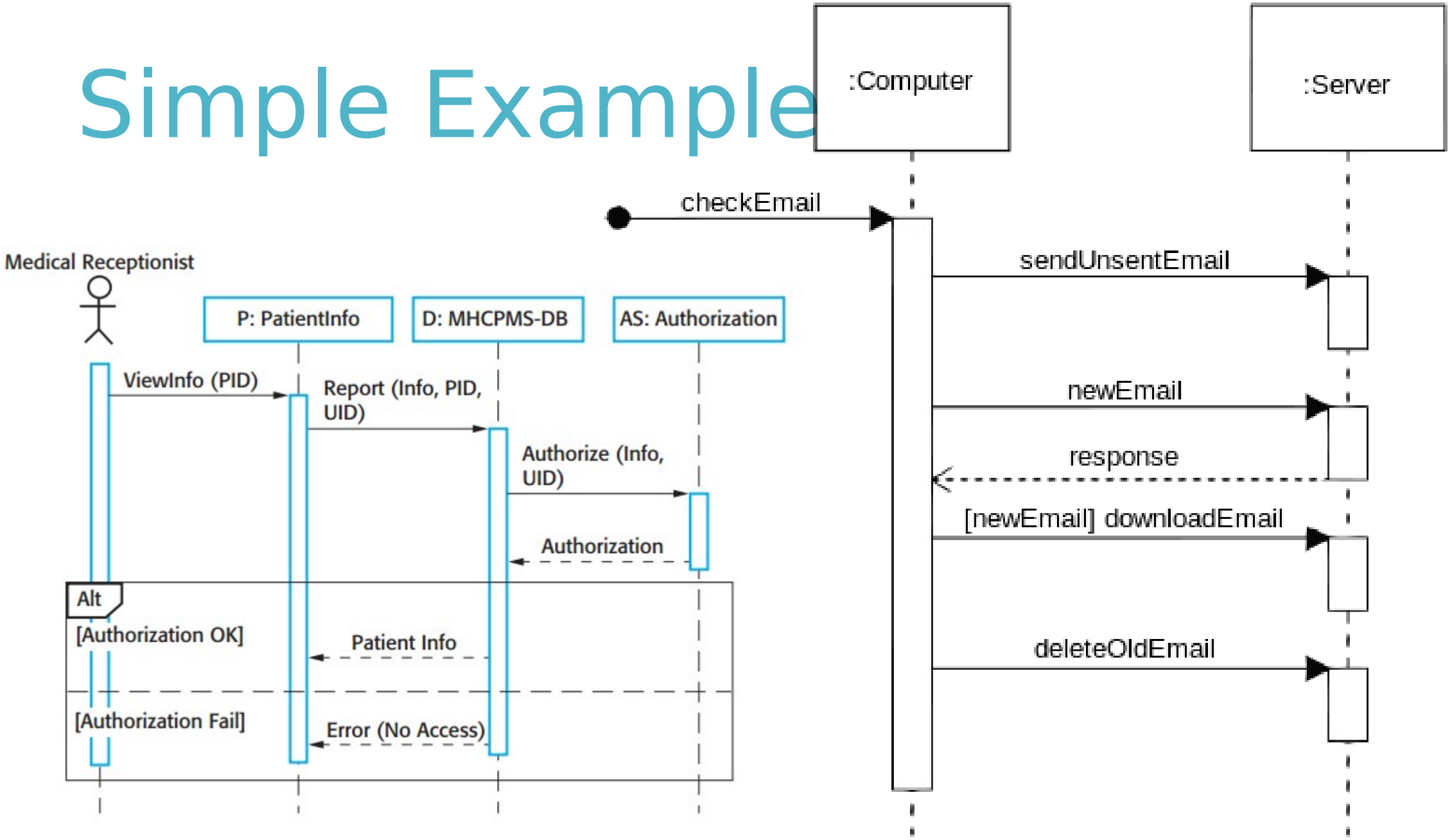
UML Sequence Diagrams (Abstraction)

- **Abstract away** complicated interactions
- Use frames to **reference** to other interactions





Simple Example



Pop Quiz

In a racing game, are sequence diagrams useful for describing car **components** and its various **attributes**?

You are designing the **user interface** for a tablet PC used in the construction industry, under what scenario would you use a **sequence** diagram?

Exercise

McGill University is “upgrading” its room booking services for students. Students can now use an online portal to book all rooms at anytime for a “small” fee.

To request a room the student will input the **time** at which to make the booking and the **amount of students** the room needs to hold. This information will be sent the booking system which will find a room that fits **all the students at the requested time**, **if** it such a room exists. The booking system will hold the **room in pending** for 5 business days for inconvenience's sake. Then, the booking system will also **send an invoice** to the requester’s student account charging them for the booking along with a **confirmation email** to the student’s mail.mcgill.ca email.

Draw a sequence diagram using software mentioned above to represent the events described above. Be sure to have at least 2 classes, the relevant arrows and conditions. Make any assumptions necessary for a plausible scenario.

References

1. http://www.ibm.com/developerworks/rational/library/3101.html
2. http://www.objectmentor.com/resources/articles/umlClassDiagrams.pdf
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2. http://aviadezra.blogspot.ca/2009/05/uml-association-aggregation-composition.html