Advanced Software Engineering

CSE608

Use Cases

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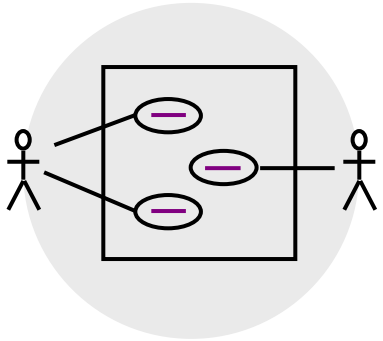
Objectives

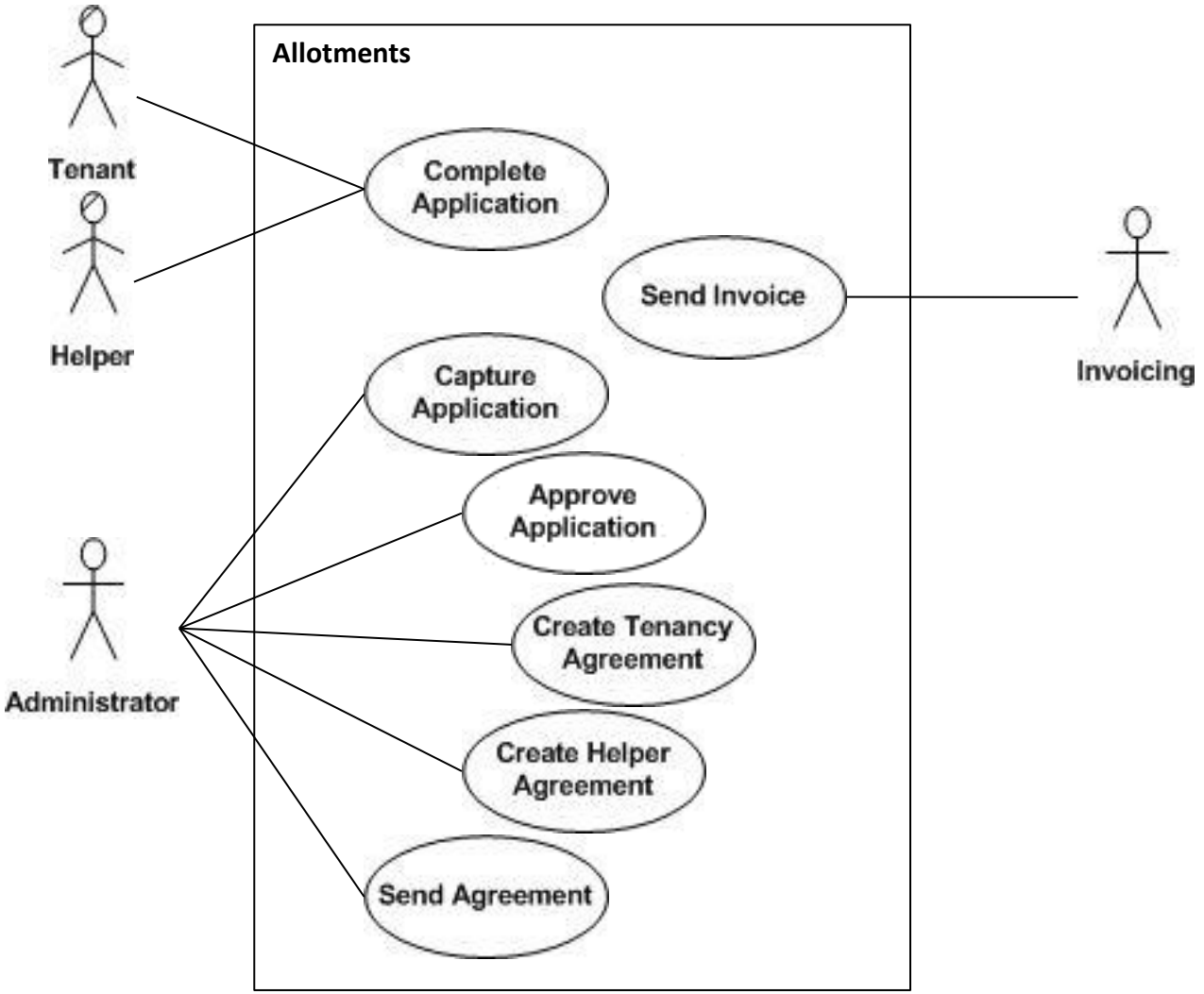
- Understand what a Use Case is
- Know how to model Use Case diagrams
- Know how to write a Use Case Description
- Recognise an Object Sequence Diagram
- Know what Robustness Analysis is



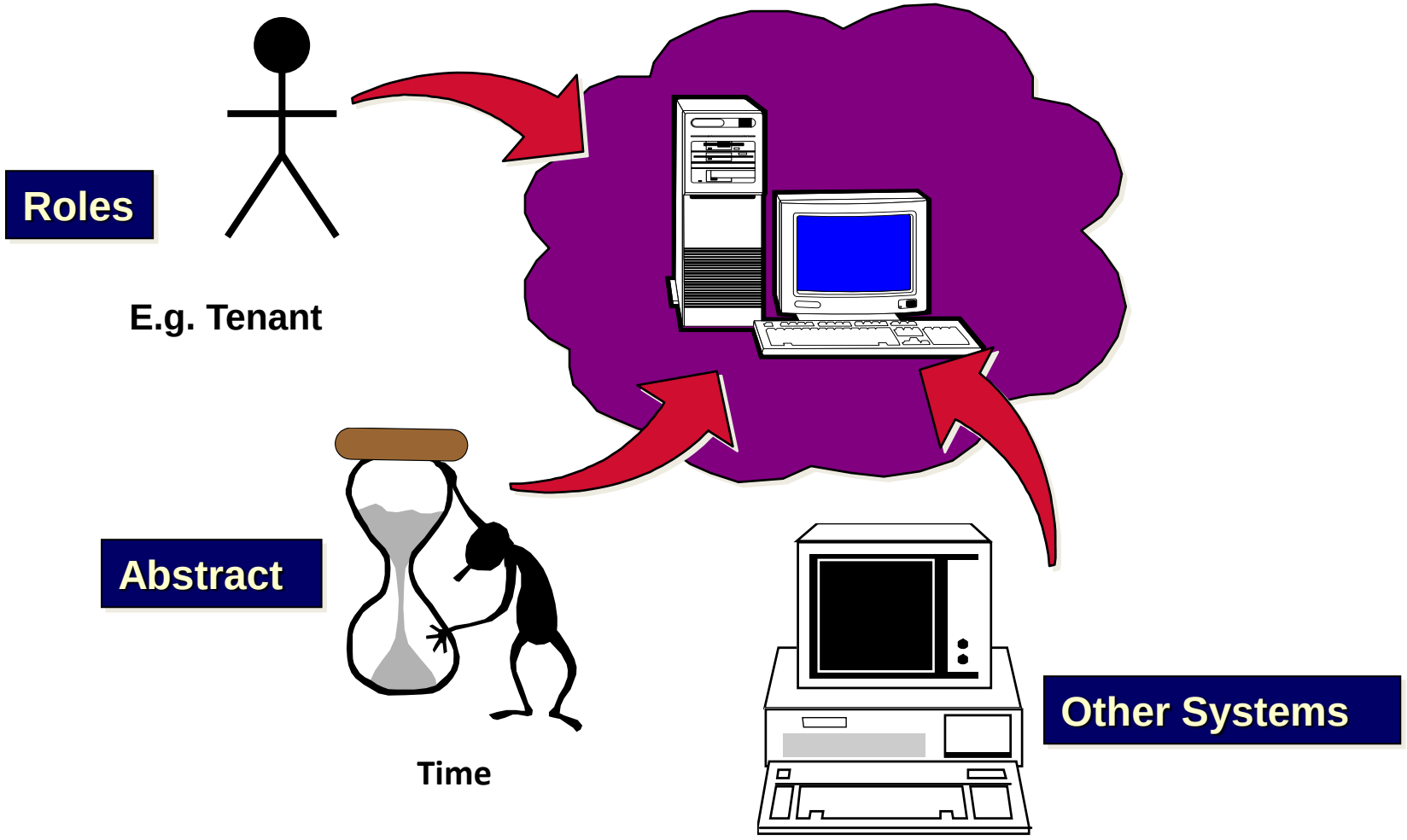
Use Cases

- A natural unit of work
- Each “bubble” typically one person, one place, one time
- Overview diagram of many Use Cases give Scope
- Incorporate requirements
- Useful for testing too

UML Use Case Diagram

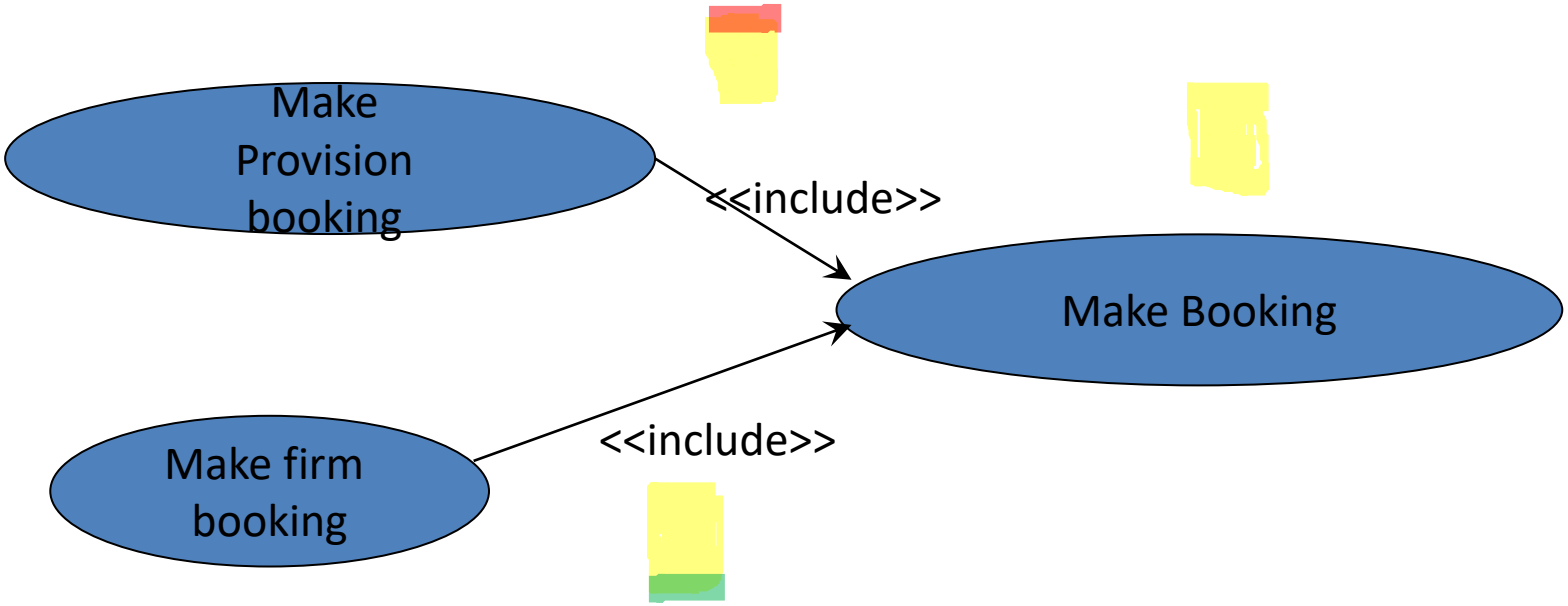


What is an Actor?

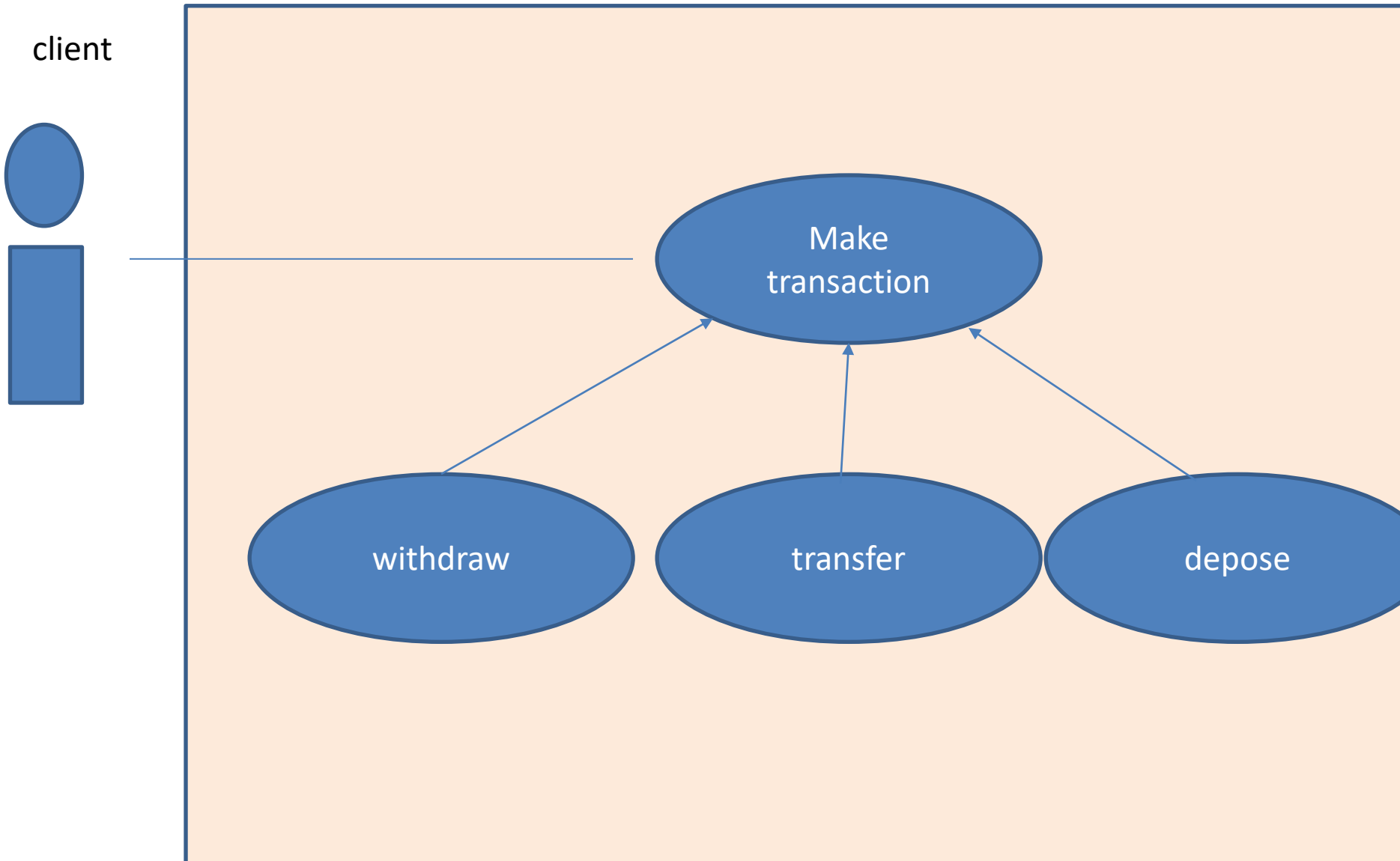


Relationship between use cases

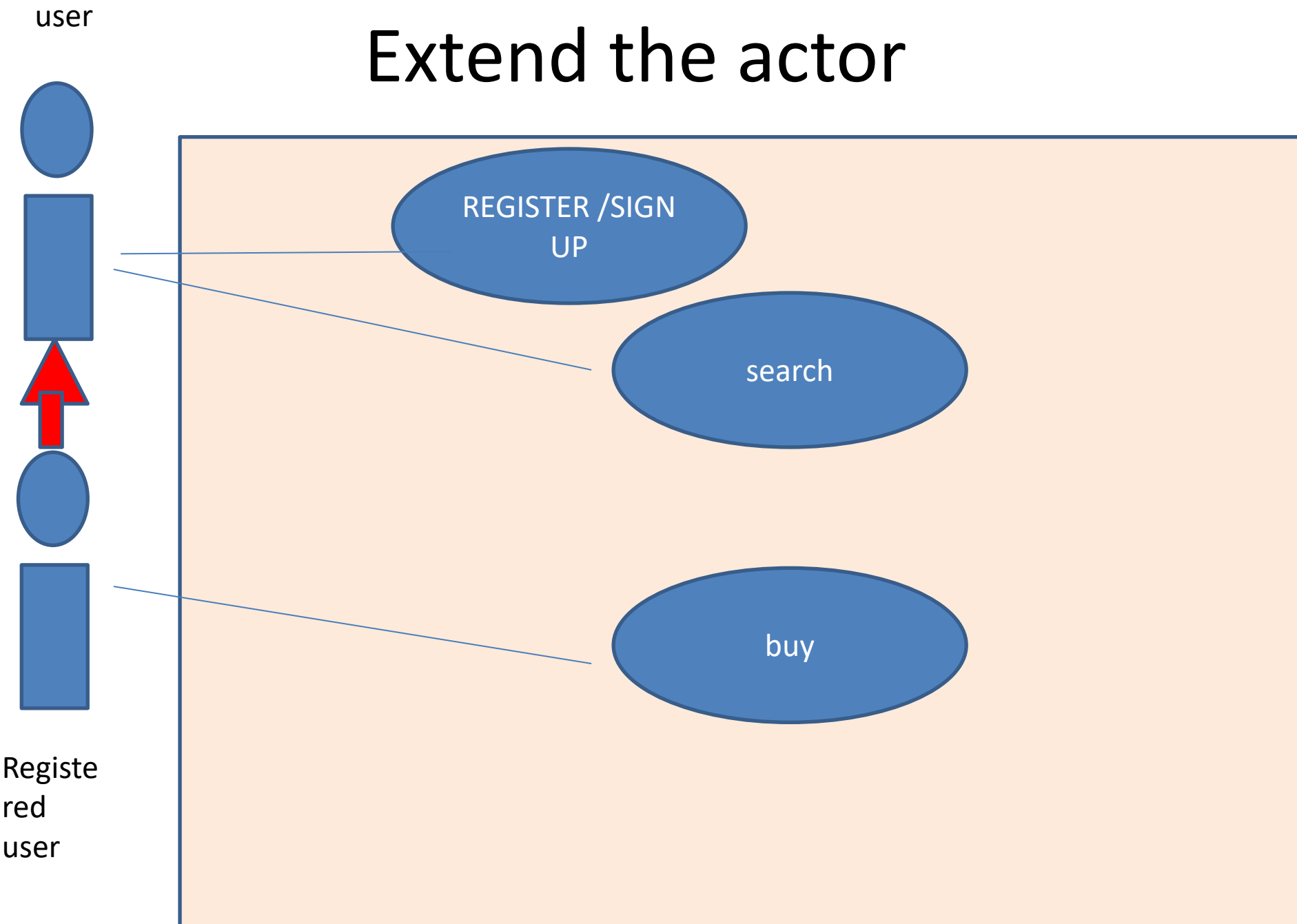
- Use cases can hold some relationships between each other, like include, extend



Extend

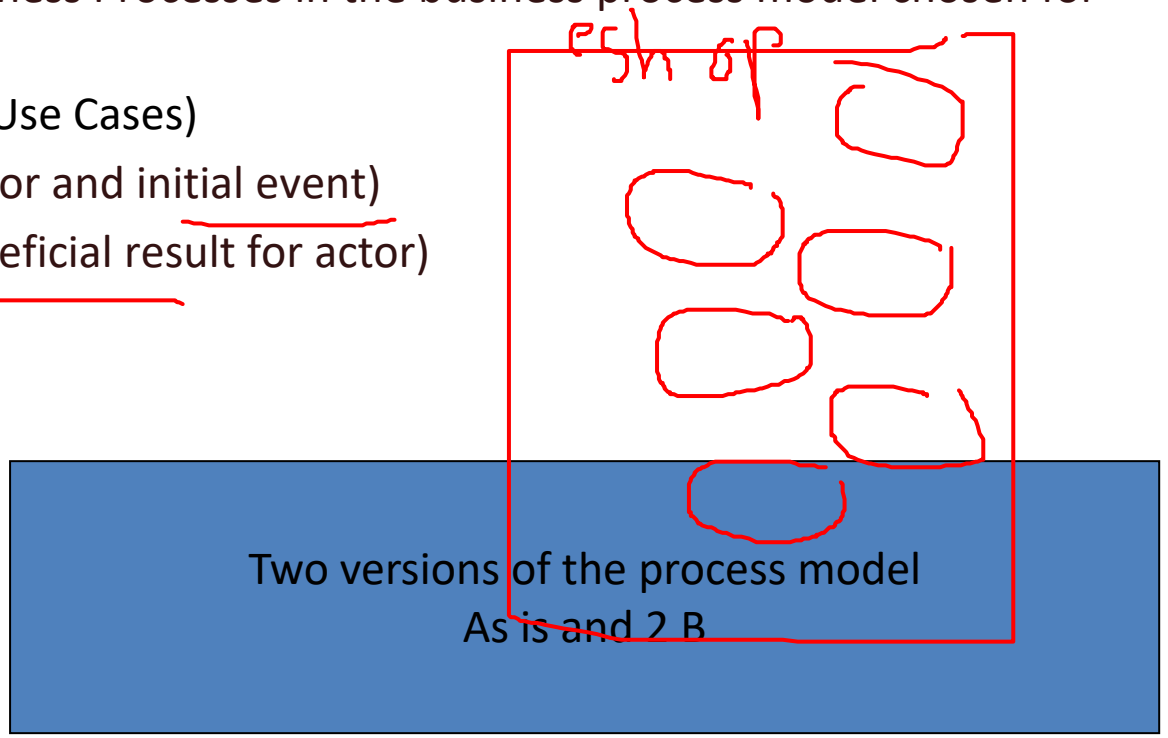


Extend the actor



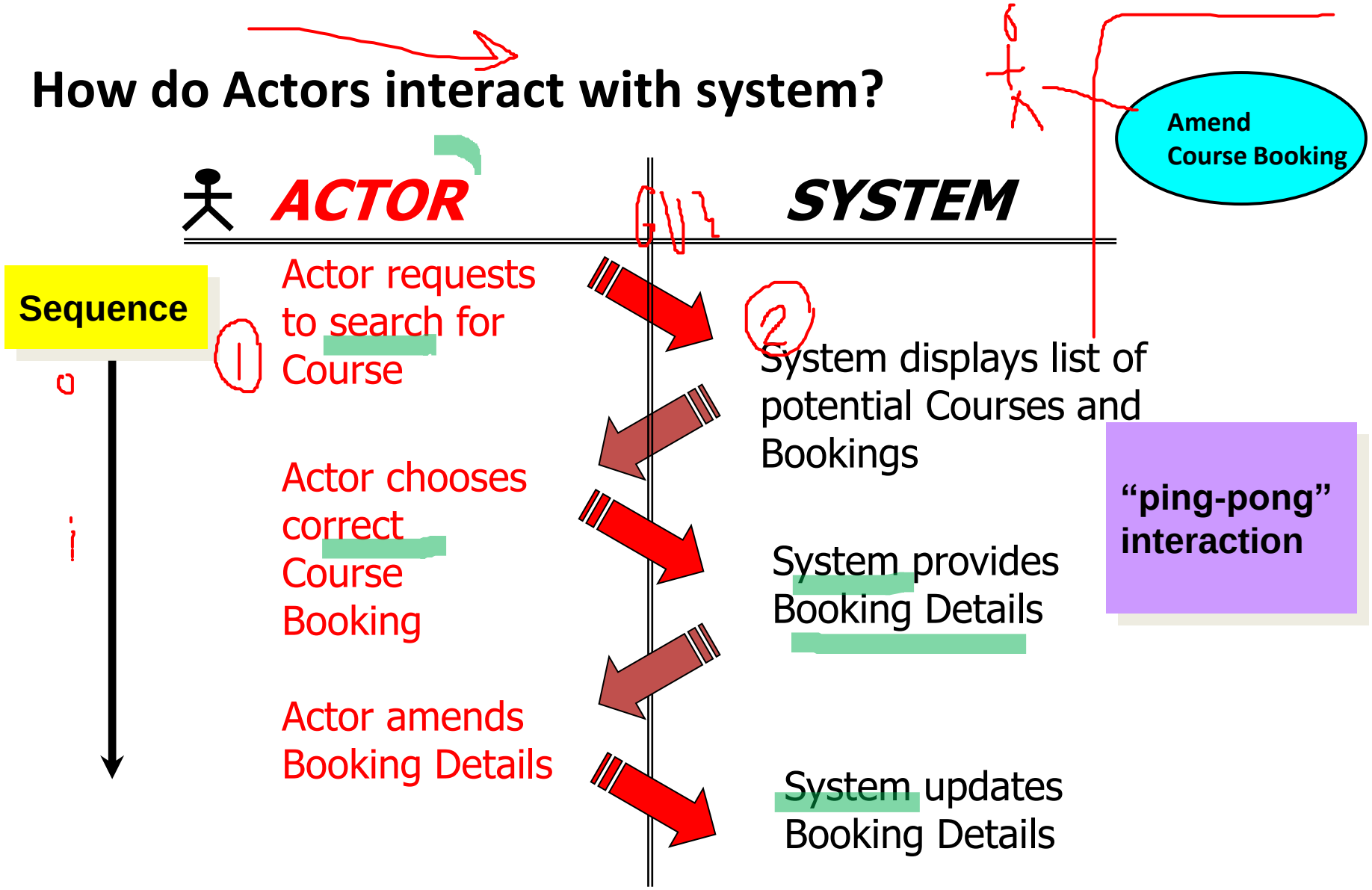
How to Identify Use Cases?

- Identify candidate system actors
- Identify candidates Use Cases
  - probably from the Business Processes in the business process model chosen for system automation
- Scope units of interaction (Use Cases)
  - start point (look for actor and initial event)
  - end point (look for beneficial result for actor)



Use Case Specification

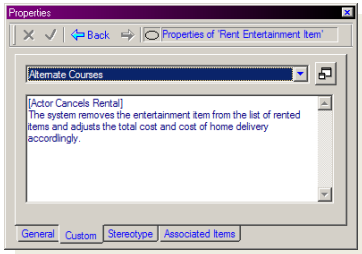
How do Actors interact with system?



Writing the Use Case Description

- Try to use ‘structured text’ ie
  - Simple statement:
    - ‘Actor does something’
    - ‘System does something’
  - Selection:
    - IF a condition is met
      *{simple statements or the name of an Alternate Course}
      Else
      *…
    - Select from following:
      Case: condition 1
      *…
      Case: Condition 2
      *…
      etc
  - Iteration:
    - While some condition is met ...
      *…

Use Case Specification



Prototype

Name UC

Brief Description

Triggers

Pre Condition(s)

Post Condition(s)

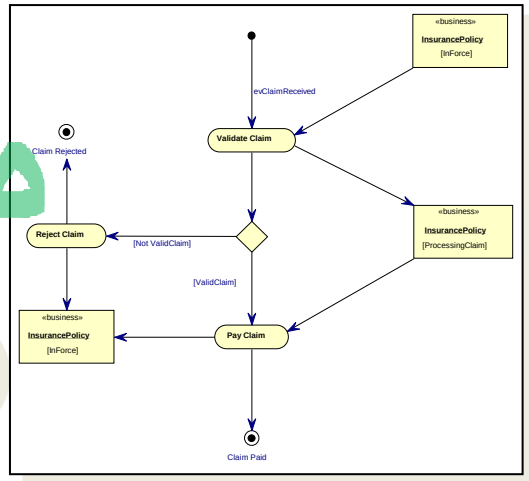
Inputs

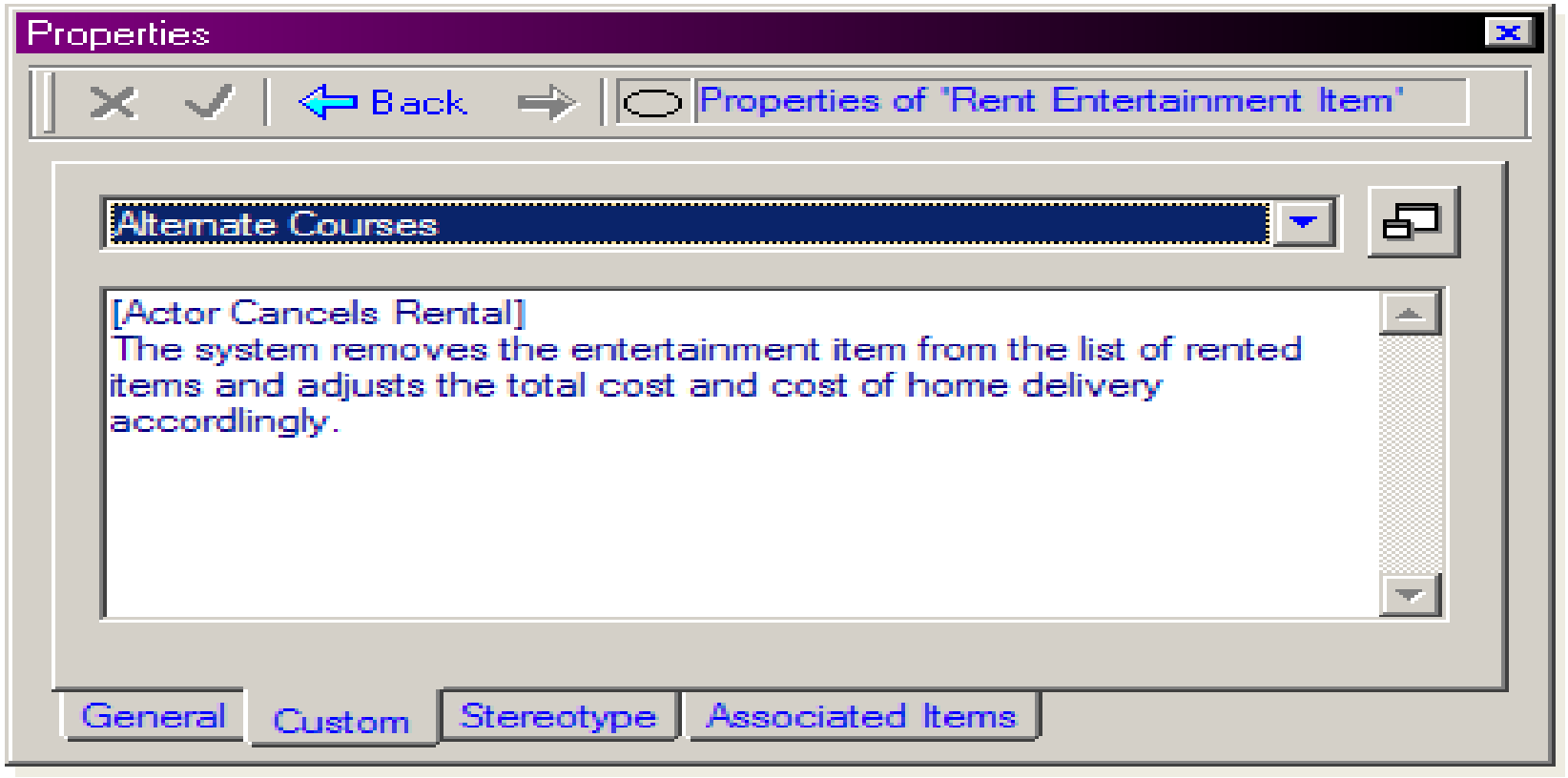
Outputs

Alternate Courses

Use Case Description

Activity Diagram
(Optional)




Properties
Back
Properties of "Rent Entertainment Item"
Alternate Courses
[Actor Cancels Rental]
The system removes the entertainment item from the list of rented items and adjusts the total cost and cost of home delivery accordlingly.
General
Custom
Stereotype
Associated Items

Prototype

A Use Case Description

Use Case	Book Course Place
Actor	Admin Clerk
Trigger	Request received from customer
Pre -condition	Admin Clerk is logged into Course Admin System
Main Success Scenario	1. Admin clerk (AC)calls Book Place function 2. System requests authorisation 3. AC supplies authorisation 4. System prompts for course 5. AC enters course Id and date 6. System confirms course 7. AC enters number of places to book 8. System requests names and affiliation 9. Clerk enters names and affiliations 10. System confirms bookings completed 11. Transaction ended
Postcondition	Reservations are now on the system, and the numbers of free places reduced ac cordingly
Extensions	3aThe authorisation is not accepted 3a1 AC re -submits authorisation 3a2 continue to 4 OR 3a2 Transaction ended 5a Course not recognised 5a1 AC re - enters course Id and date 5a2 continue to 6 8a Insufficient places available 8a1 Transaction ended

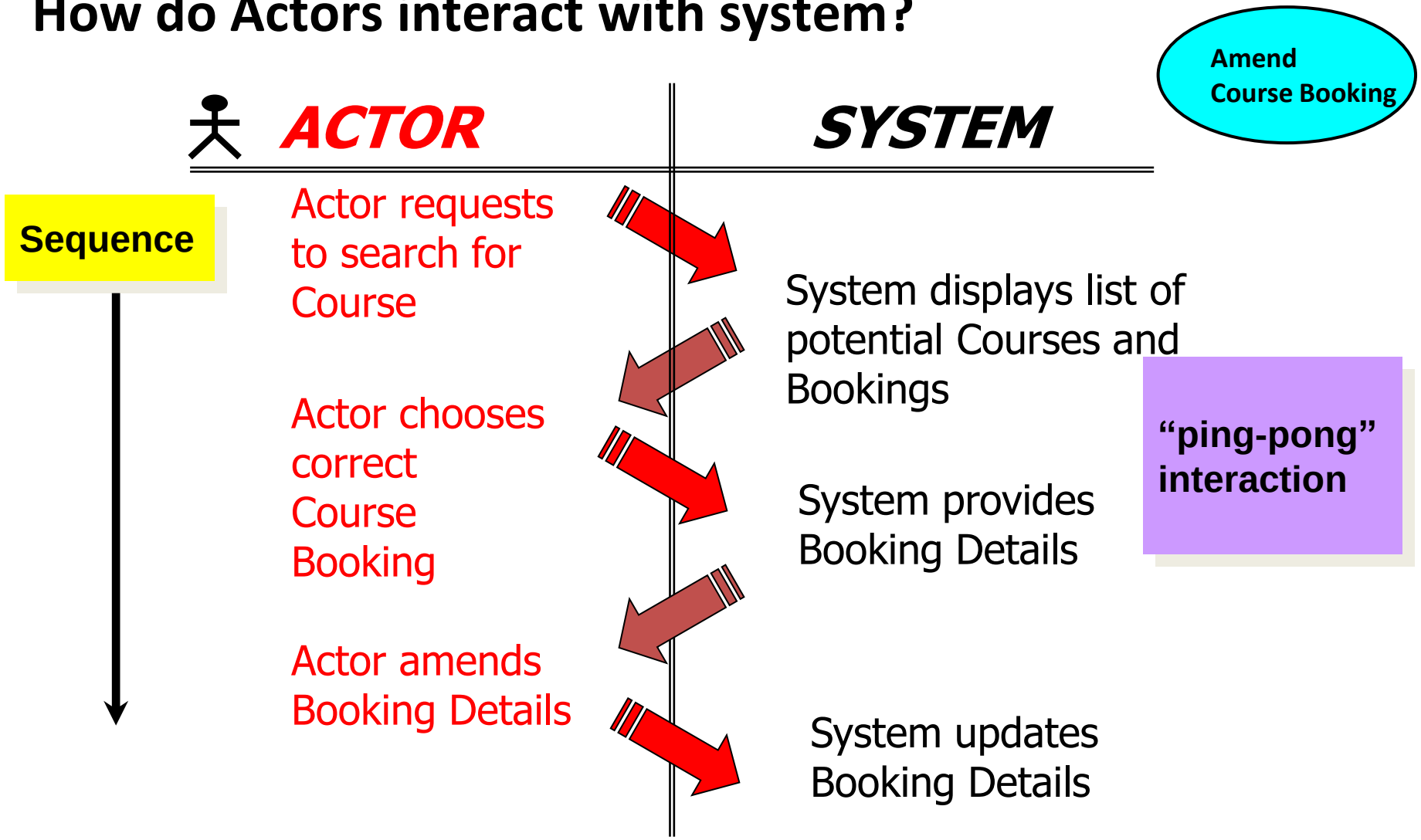
Exercise

Create a usecase for the training company example studied before,

Write down a use case description for one of the use cases “enroll in a training course run by the user ”

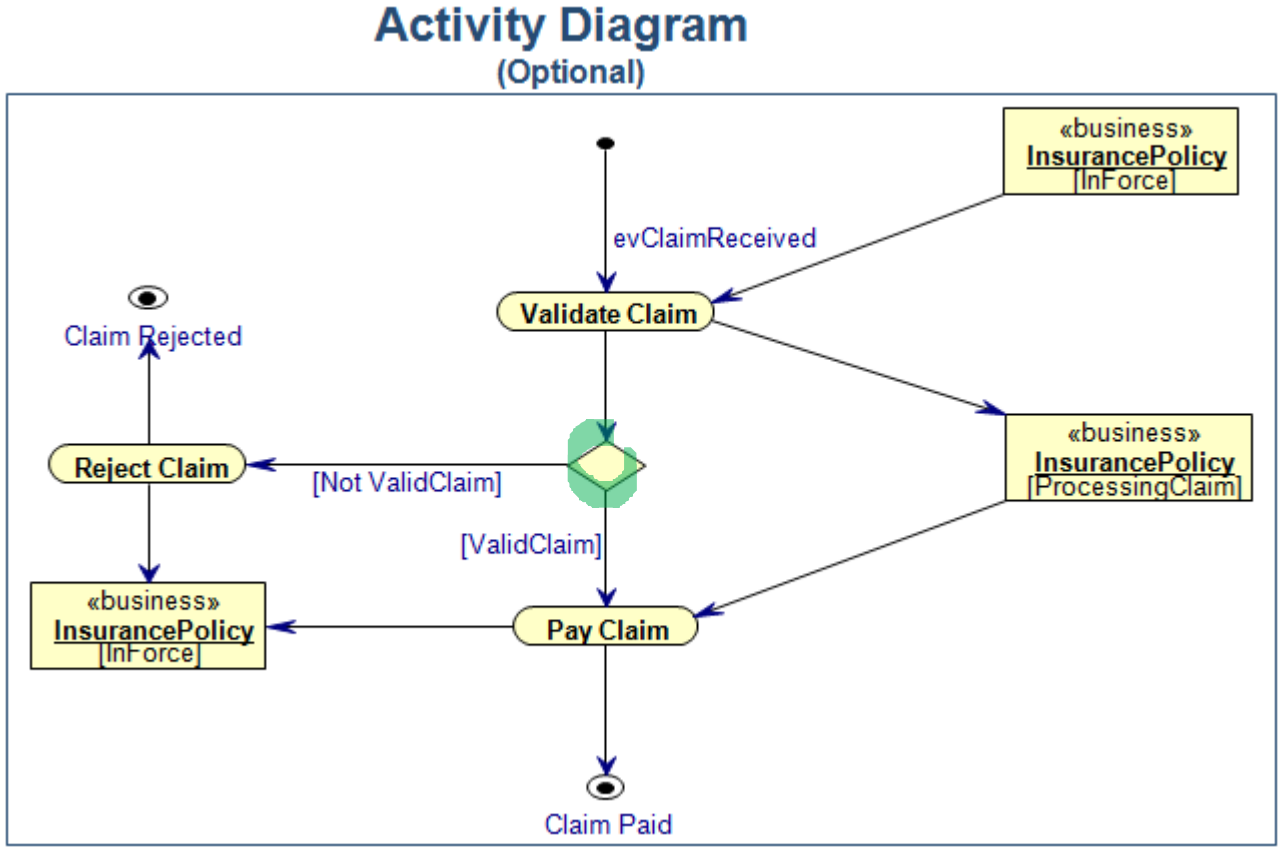
Use Case Specification

How do Actors interact with system?

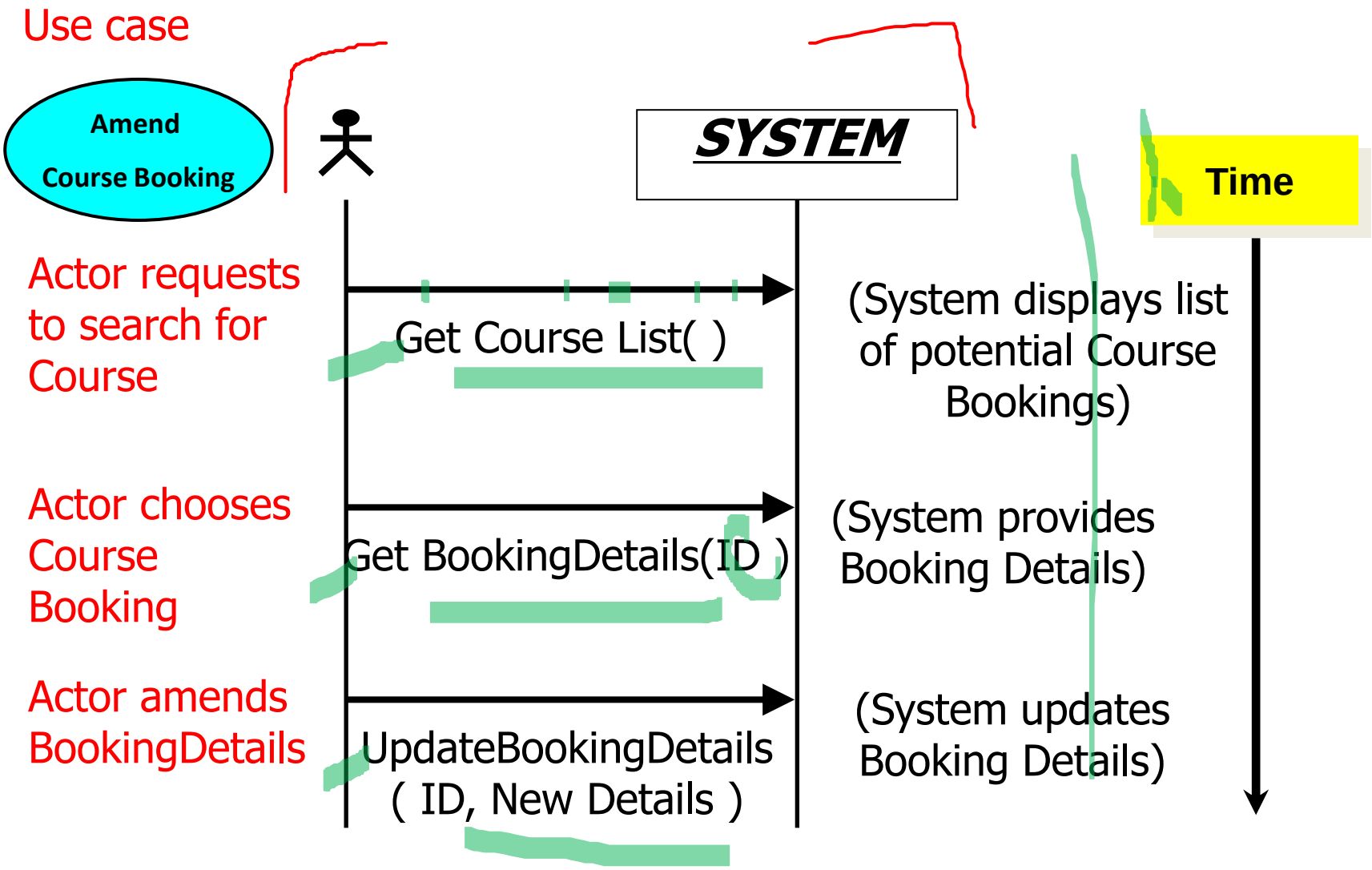


Use Case Description with Activity Diagram

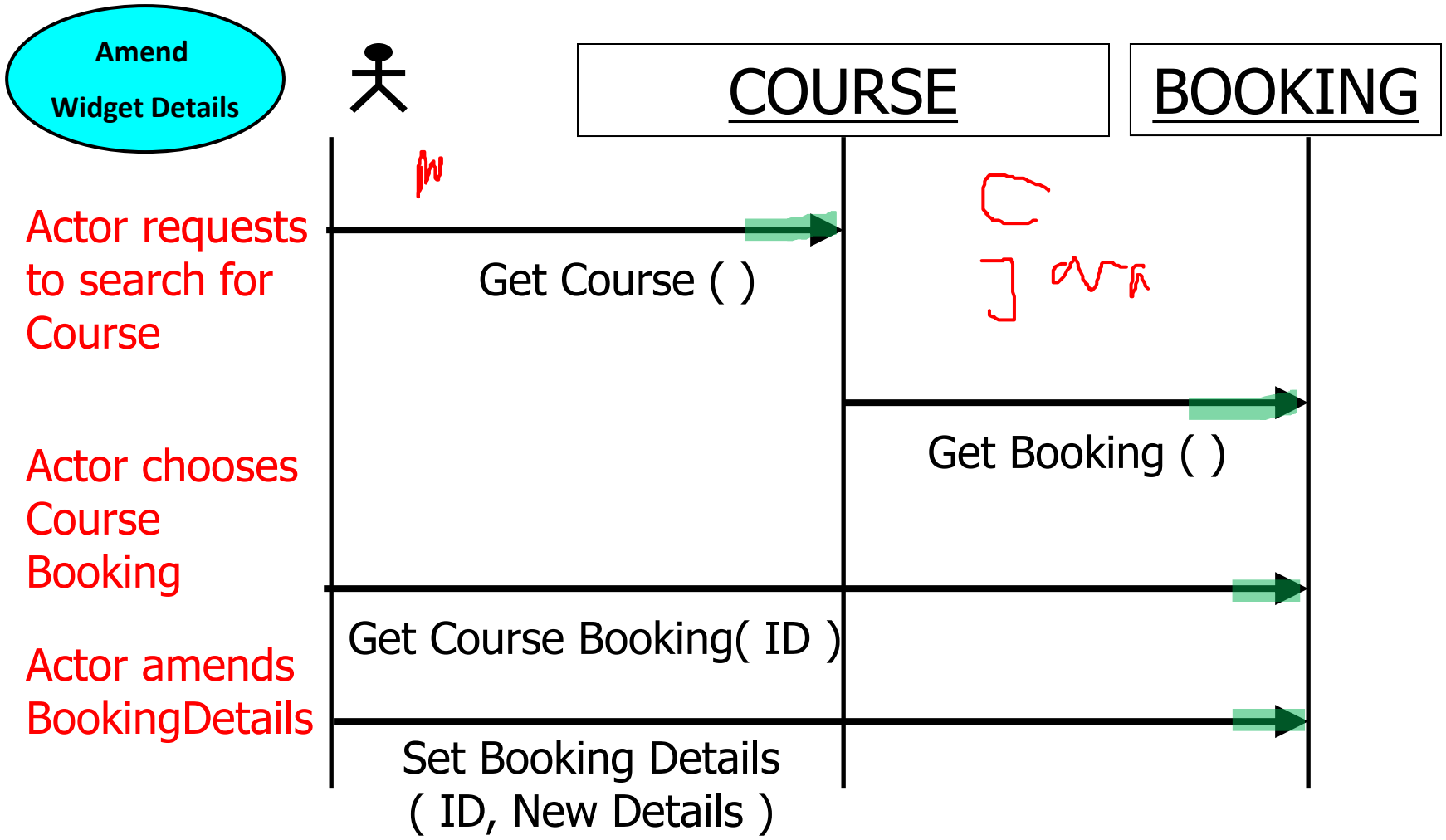
- Where there are many options/paths through the Use Case, an Activity Diagram can aid understanding



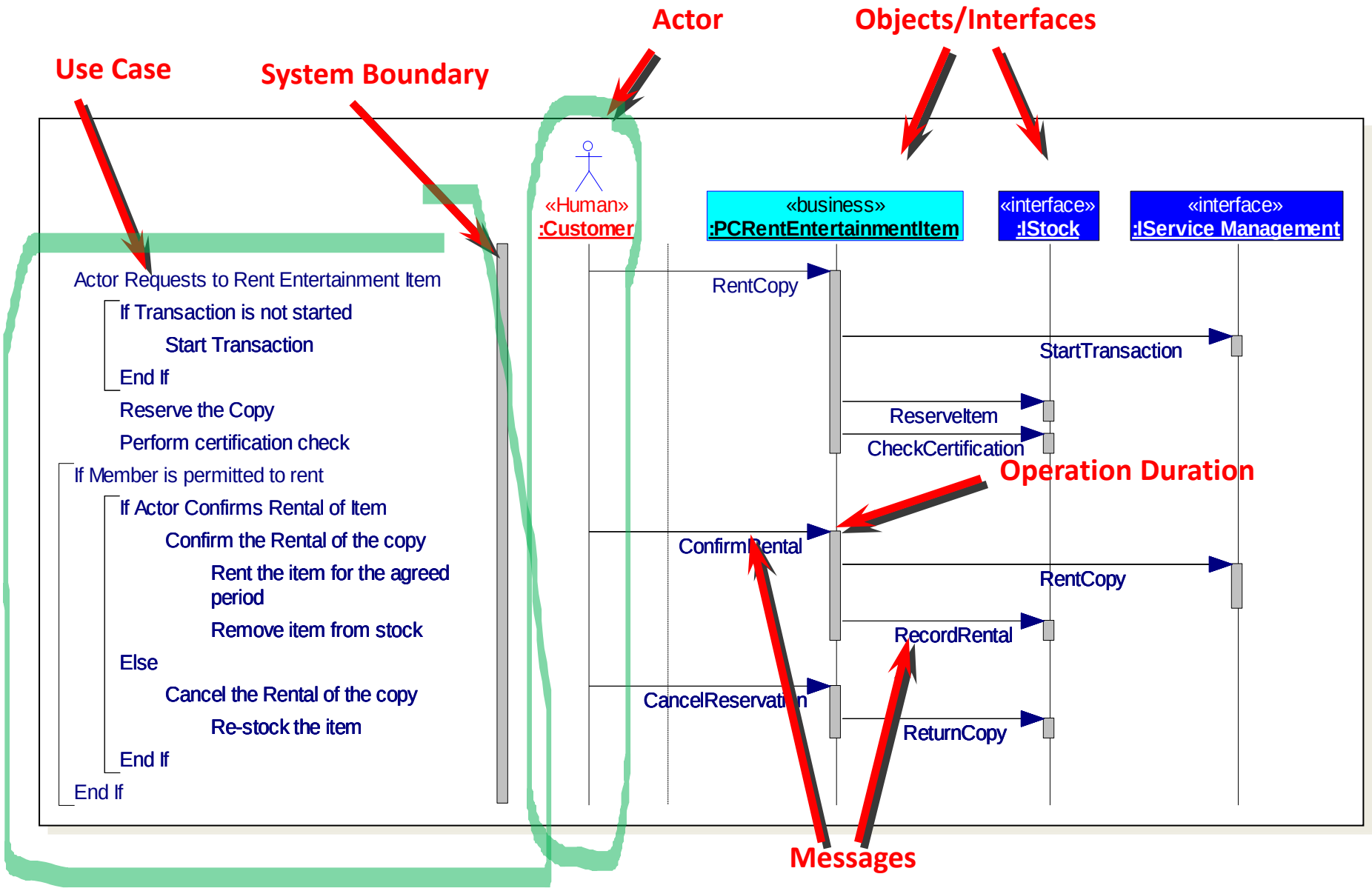
Interactions Become Messages



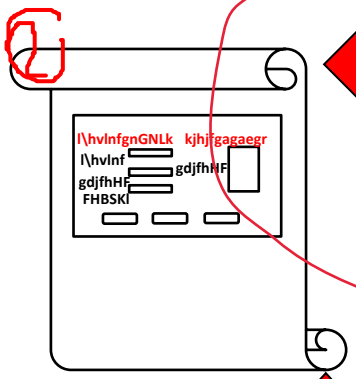
Object Interactions



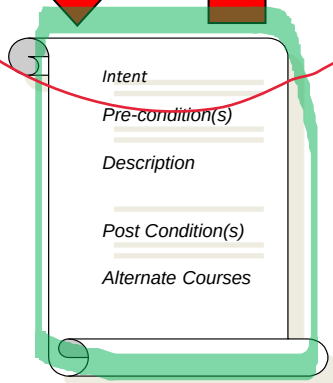
Object Sequence Diagram



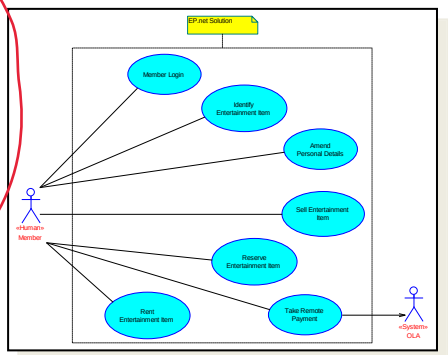
The Modelling Micro-iterations



Prototype

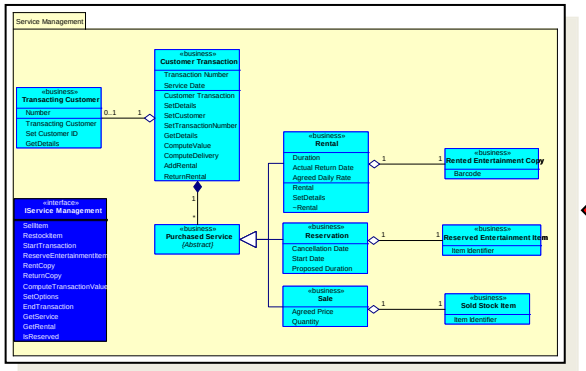


Use Case Description

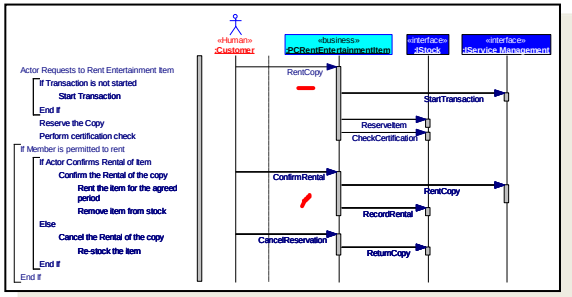


Use Case Diagram

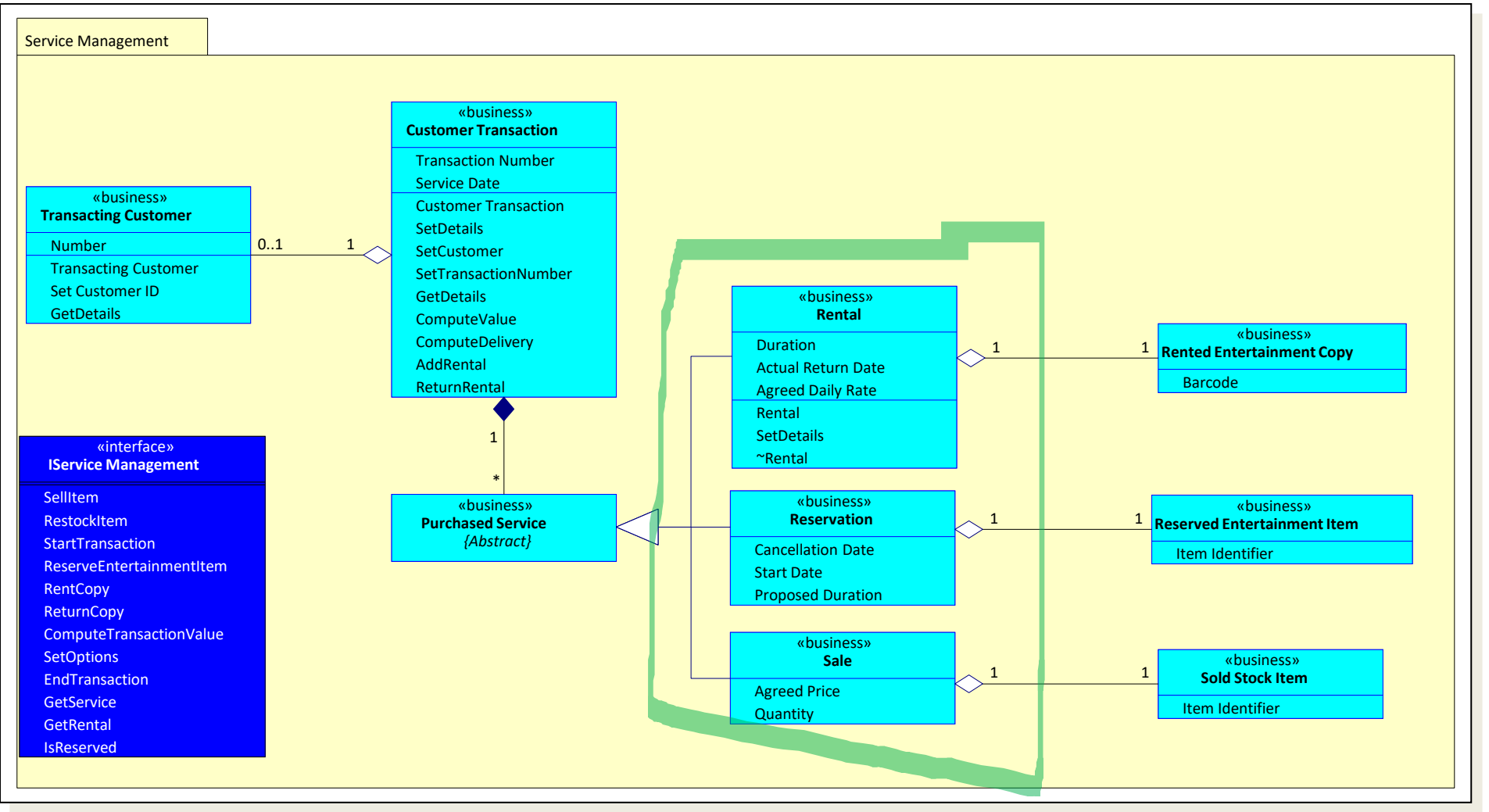
Class Model



Object Sequence Diagram



Class model


Service Management
«business»
Customer Transaction
Transaction Number
Service Date
Customer Transaction
SetDetails
SetCustomer
SetTransactionNumber
GetDetails
ComputeValue
ComputeDelivery
AddRental
ReturnRental
«business»
Transacting Customer
Number
Transacting Customer
Set Customer ID
GetDetails
0..1
1
1
*
«interface»
IService Management
SellItem
RestockItem
StartTransaction
ReserveEntertainmentItem
RentCopy
ReturnCopy
ComputeTransactionValue
SetOptions
EndTransaction
GetService
GetRental
IsReserved
«business»
Purchased Service
{Abstract}
«business»
Rental
Duration
Actual Return Date
Agreed Daily Rate
Rental
SetDetails
~Rental
«business»
Reservation
Cancellation Date
Start Date
Proposed Duration
«business»
Sale
Agreed Price
Quantity
1
1
1
1
1
1
«business»
Rented Entertainment Copy
Barcode
«business»
Reserved Entertainment Item
Item Identifier
«business»
Sold Stock Item
Item Identifier

Questions