Tutorial Week 3: UML Modelling

Learning Outcomes

1) Understand the need for modelling.
2) Practice creating models with UML diagramming software.
3) Familiarisation with the models needed for CW1.

UML Modeling

In the tutorials (and for the coursework) you have a choice of Astah or Diagrams.net for creating UML diagrams:

Astah

Astah Pro is available in AppsAnywhere. Alternatively, you can download Astah for both Windows and Mac (as well as Linux). A link to downloads page: https://astah.net/downloads/. You can get a free license if you register as a student. This is a powerful piece of software which you are welcome to use.

Diagrams.net / draw.io

Diagrams.net (formerly draw.io) is an online (and desktop) diagramming tool. It is free to use. It comes with several UML templates and shapes for building class diagrams, domain models, sequence diagrams and much more. For the purposes of this tutorial, you may find this option is the simplest choice.

Practice creating your own diagrams.

The following diagrams are examples of the types of diagram that will be expected for your coursework. Try to understand what each of them is documenting. Then try to duplicate the diagrams (the examples below are created in Astah but you may use Diagrams.net instead) so that you become familiar with the techniques of diagramming.

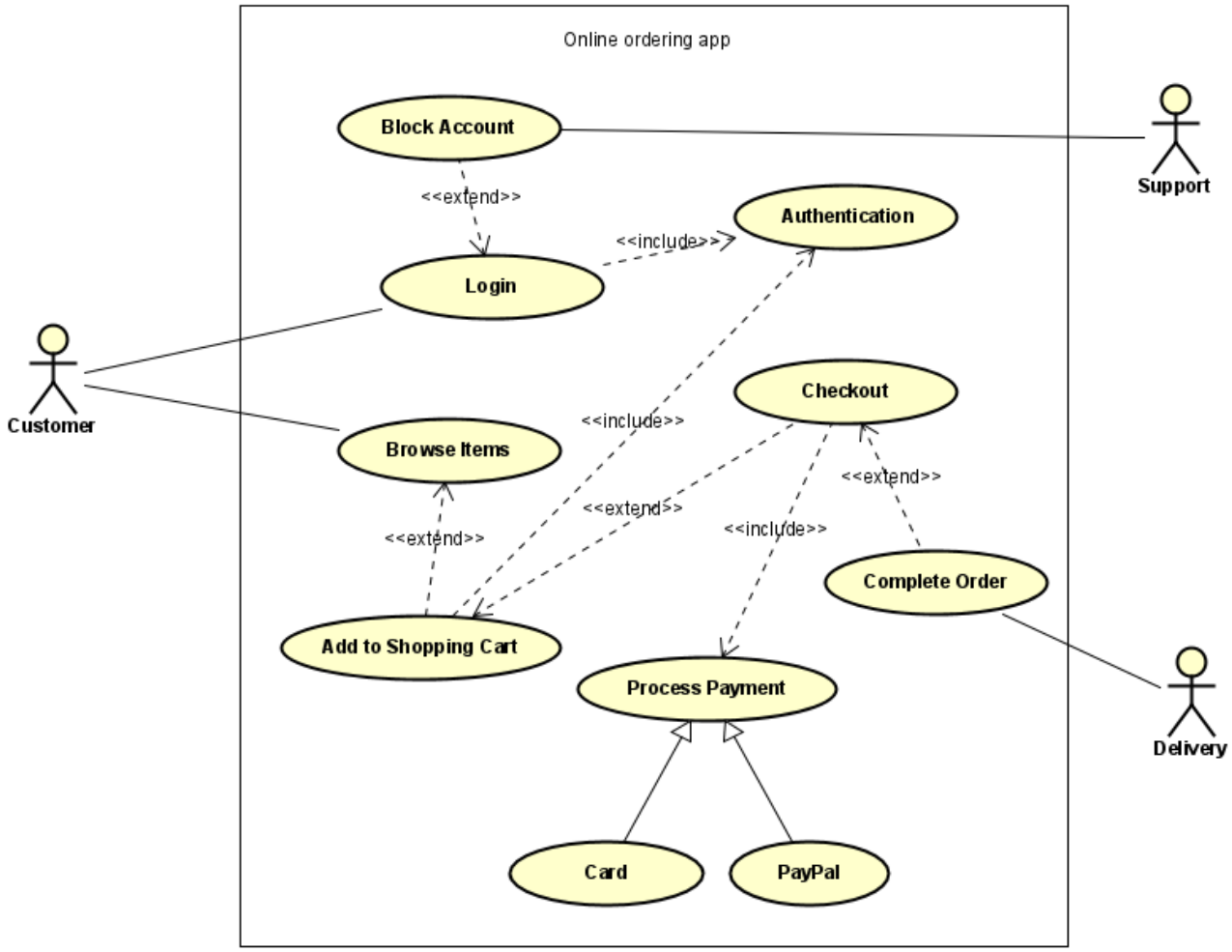
Diagrams

- Use case
- Class
- Sequence
- Activity

Use Case Diagram

Shapes

- Rectangles - Systems
- Stick figures - Actors (Left side - Primary, Right side - Secondary)
- Ovals - Use cases (Represent an action)
- Lines - Relationships (Include, Extend)



Class Diagram

Visibility

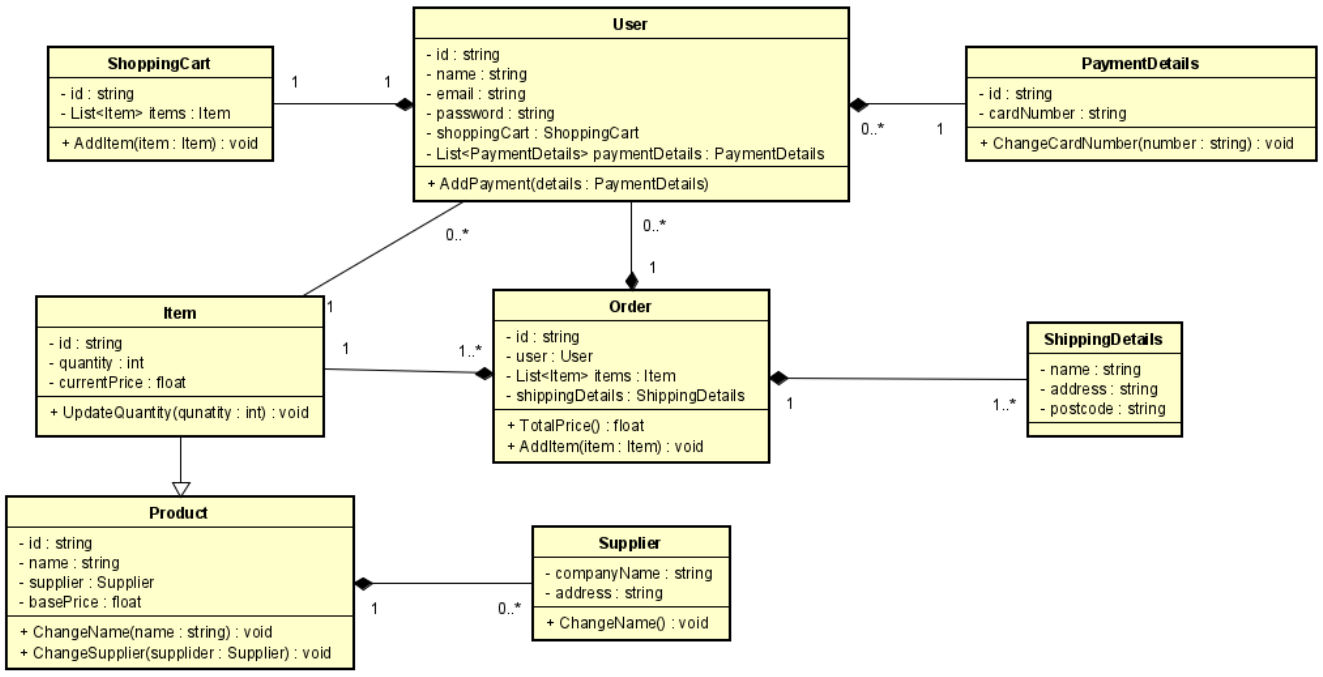
- Private (-)
- Public (+)
- Protected (#)

Relationships

- Inheritance
- Composition
- Aggregation
- Association

Multiplicity

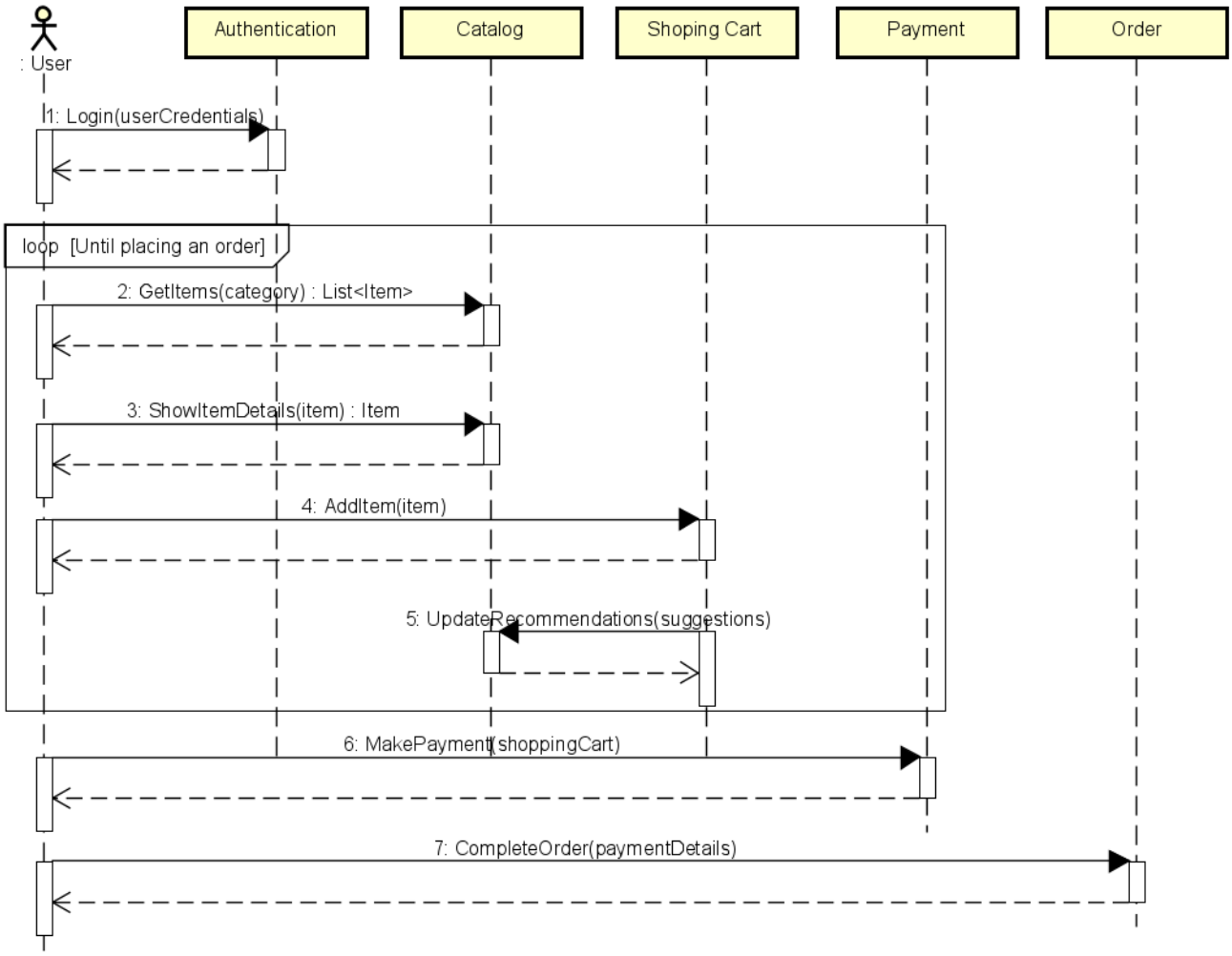
- 0..1 zero to one (optional)
- n specific number
- 0..* zero to many
- 1..* one to many
- n…n



Sequence Diagram

Shapes

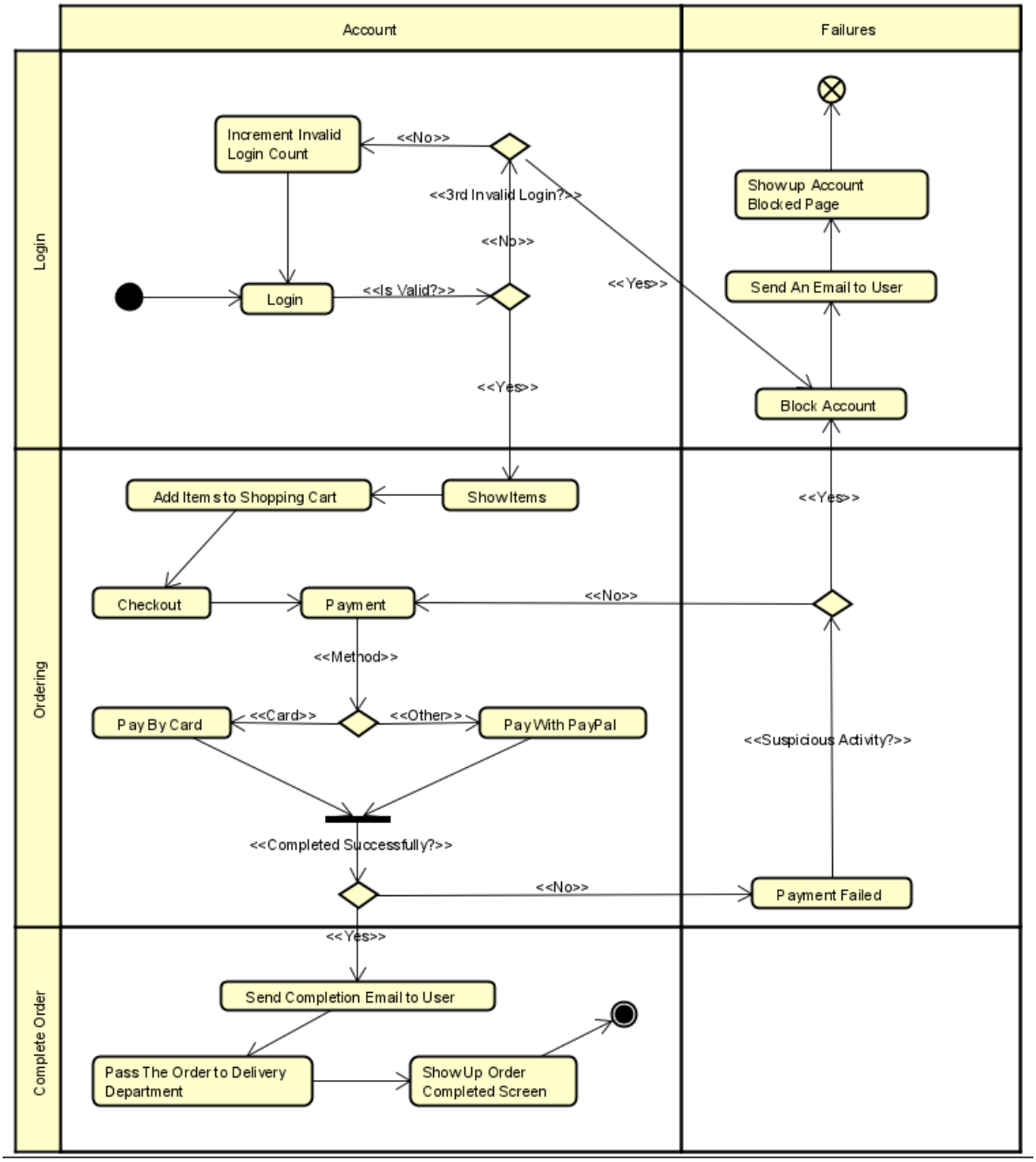
- Lifeline
- Message (Synchronous, Asynchronous)
- Create/Reply Messages
- Combined Fragment (alt, loop, opt)



Activity Diagram

Shapes

- Partitions (Vertical, Horizontal)
- Initial/Final/ Flow Final Nodes
- Ovals - Actions
- Lines - Control Flow
- Decision and Join Nodes



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