

# Requirements Analysis

# Overview

- Unified Modeling Language (UML)
- UML Use case diagram
- Case study

# Unified Modeling Language (UML)

- Definition
  - A **visual** language for specifying, constructing, and documenting the artifacts of systems
  - Standard **diagramming notation** for drawing pictures related to software
  - Includes 13 types of diagrams

# Two Categories of UML Diagrams

- Structural UML diagrams
  - Class diagram
  - Object diagram
  - ... ..
- Dynamic UML diagrams
  - Use case diagram
  - Sequence diagram
  - ... ..

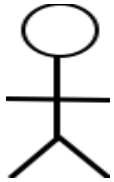
# We will discuss

- Use case diagram (Requirement)
- Class diagram (Requirement & Design)
- Sequence diagram (Requirement & Design)
- Package diagram (Design)

# Use case diagram

- Definition
  - A representation of interactions between actors and the system
- It shows relationship between actors, use cases, and the system
  - the scope of the system
  - the external actors
  - how actors use the system
- It is secondary to text documentation

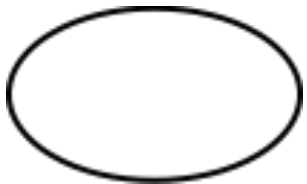
# Legends



**Actor:** an entity that interacts with the system.



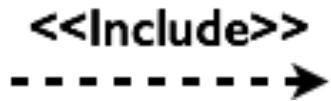
**Actor:** a computer system that interacts with the system under discussion



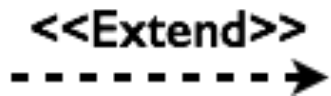
**Use case:** usage of a system



**Association:** relation between an actor and a use case

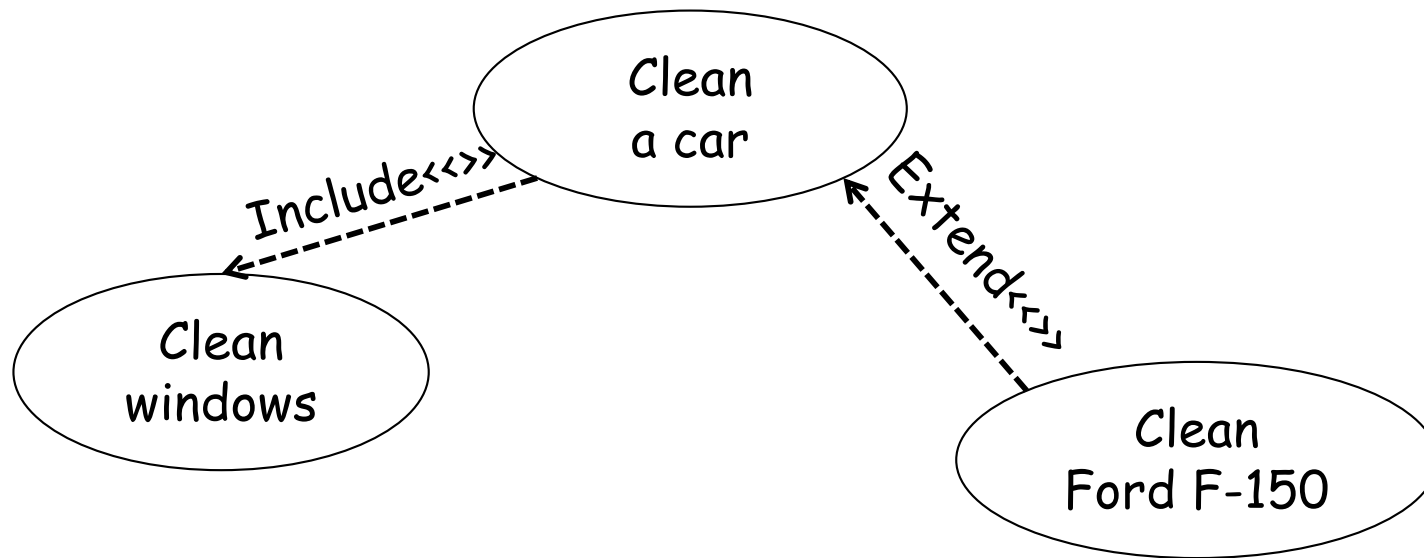


**Includes dependency:** a base use case includes a sub use case as component



**Extends dependency:** a use case extends the behavior of a base use case.

# What are the relations?





# Case study: POS system

- With a POS system,
  - a cashier can perform the following tasks (with help of the manager if necessary):
    - Process sale
    - Handle return
    - Register product specification
  - For each activity, the system may first authenticate the cashier or manager
- The POS system interfaces to third-party tax calculator, inventory control, and the credit card company

# Use Case Diagram

- What are the actors?
- What are the use cases in the system?
- What is the relationship between use cases?

# Use Case Diagram

