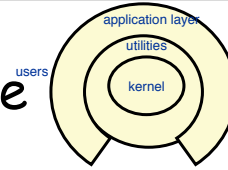# Architecture Modeling

Overview

- More about layered architecture
- UML package diagram
- Case study: POS system

Layered Architecture

- Logical Architecture
  - Large-scale organization of SW classes into packages (or namespaces), subsystems, and layers
- Layer
  - Coarse-grained grouping of classes having responsibility for major aspects of a system
    - Strict – only higher layers call lower layers
    - Relaxed – higher layer may call any lower layer below
    - Responsibilities of objects in a layer are strongly related

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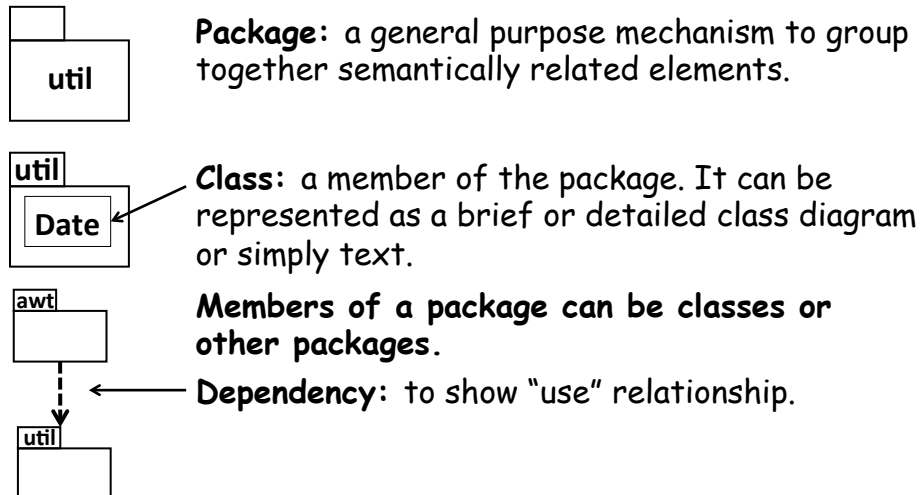
UML package diagram

- To organize elements and diagrams into groups
- To show packages and dependencies between the packages
- Can illustrate layered architecture
  - A layer, such as UI layer, can be modeled as a package named UI
  - Depicts relations between packages that make up a model

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Legends with JDK Packages

util

Package: a general purpose mechanism to group together semantically related elements.

util
Date

Class: a member of the package. It can be represented as a brief or detailed class diagram or simply text.

awt

Members of a package can be classes or other packages.

Dependency: to show "use" relationship.
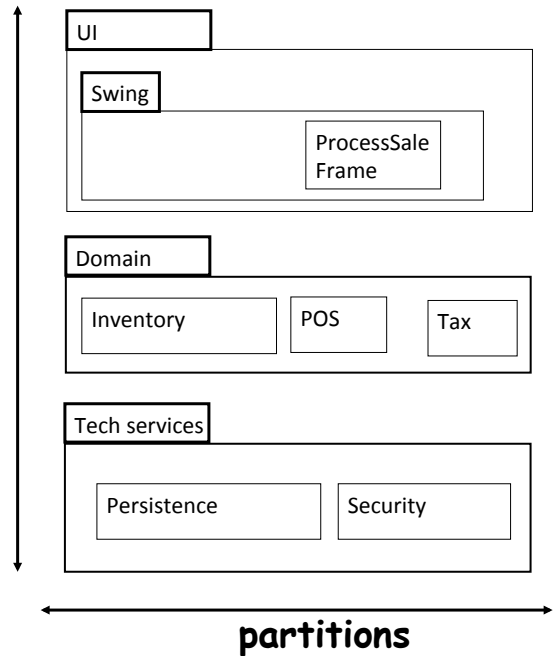
util

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Case Study: POS system

- 3-layer architecture
  - User interface
  - Application logic and domain objects
    - Software objects representing domain concepts, such as Sale
  - Technical services
    - General-purpose objects and subsystems that provide supporting services, such as interfacing with database or error logging
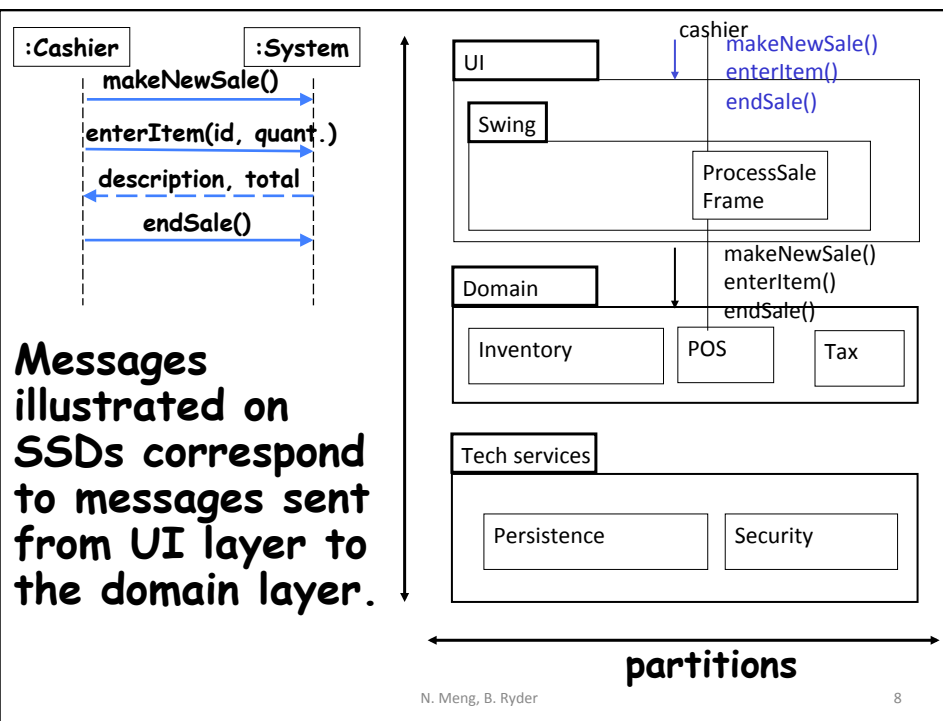   - Usually application-independent and reusable across system

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What is the relationship between SSDs and Layers?

UI

Swing

ProcessSale Frame

Domain

Inventory | POS | Tax

Tech services

Persistence | Security

partitions

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:Cashier   :System

makeNewSale()

enterItem(id, quant.)

description, total

endSale()

Messages illustrated on SSDs correspond to messages sent from UI layer to the domain layer.

cashier
makeNewSale()
enterItem()
endSale()

UI

Swing

ProcessSale Frame

makeNewSale()
enterItem()
endSale()

Domain

Inventory | POS | Tax

Tech services

Persistence | Security

partitions

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