OTHER DIAGRAMS (LAST OF THE UML VARIETY)

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OUTLINE OF THIS TALK

- Package Diagrams
- Composite Structures
- Component Diagrams
- Timing Diagrams
- Deployment Diagrams

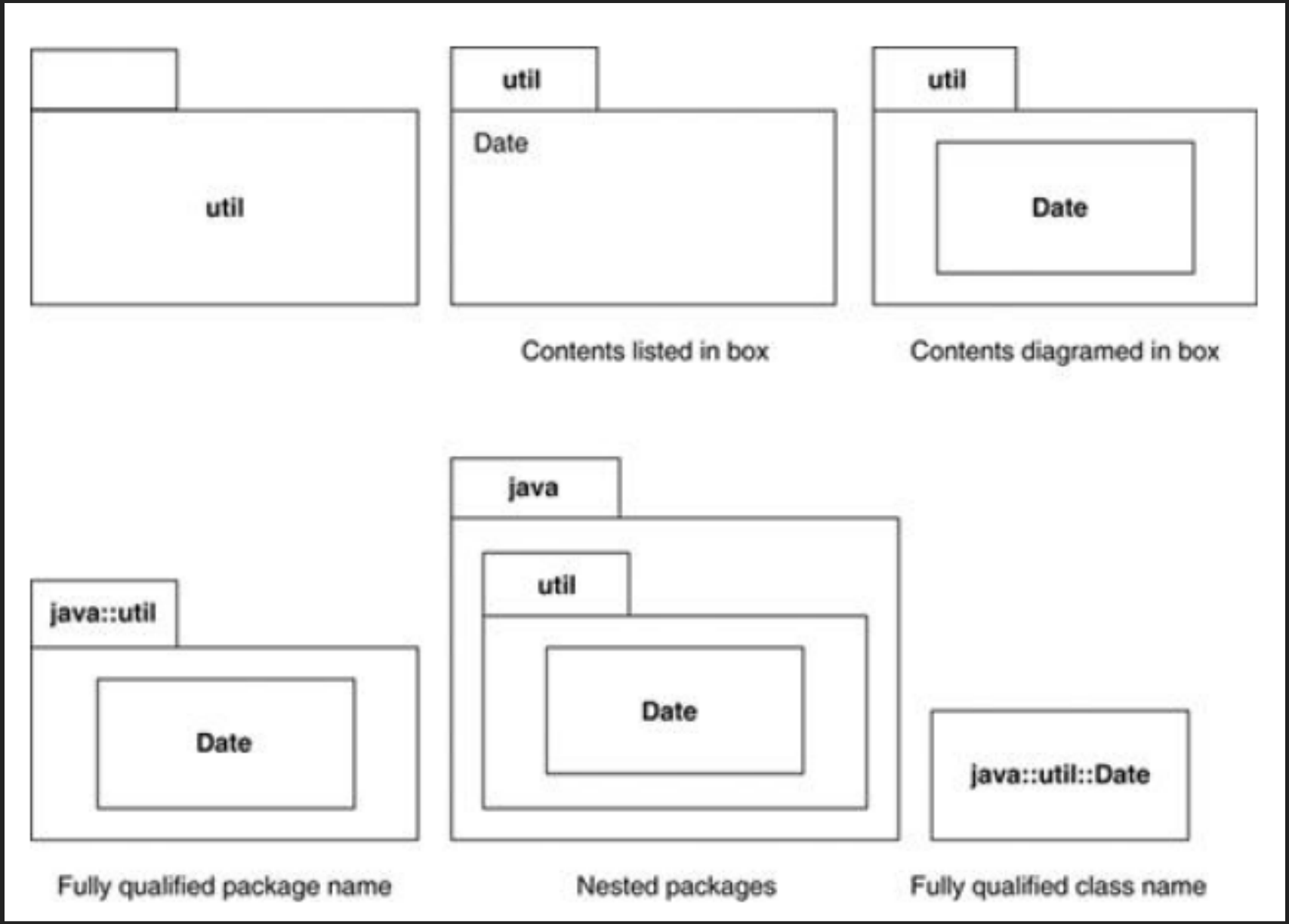
WHAT IS A PACKAGE?

- A UML construct to group elements together. Of any kind.
- Most commonly used to group classes
- Each package represents a namespace

PACKAGES

- Allows multiple names to live together without conflict
- Shown using *fully qualified name*
  - E.g., `java::util::Date` and `cs3012::Date`
- Can contain both, sub-packages as well as classes

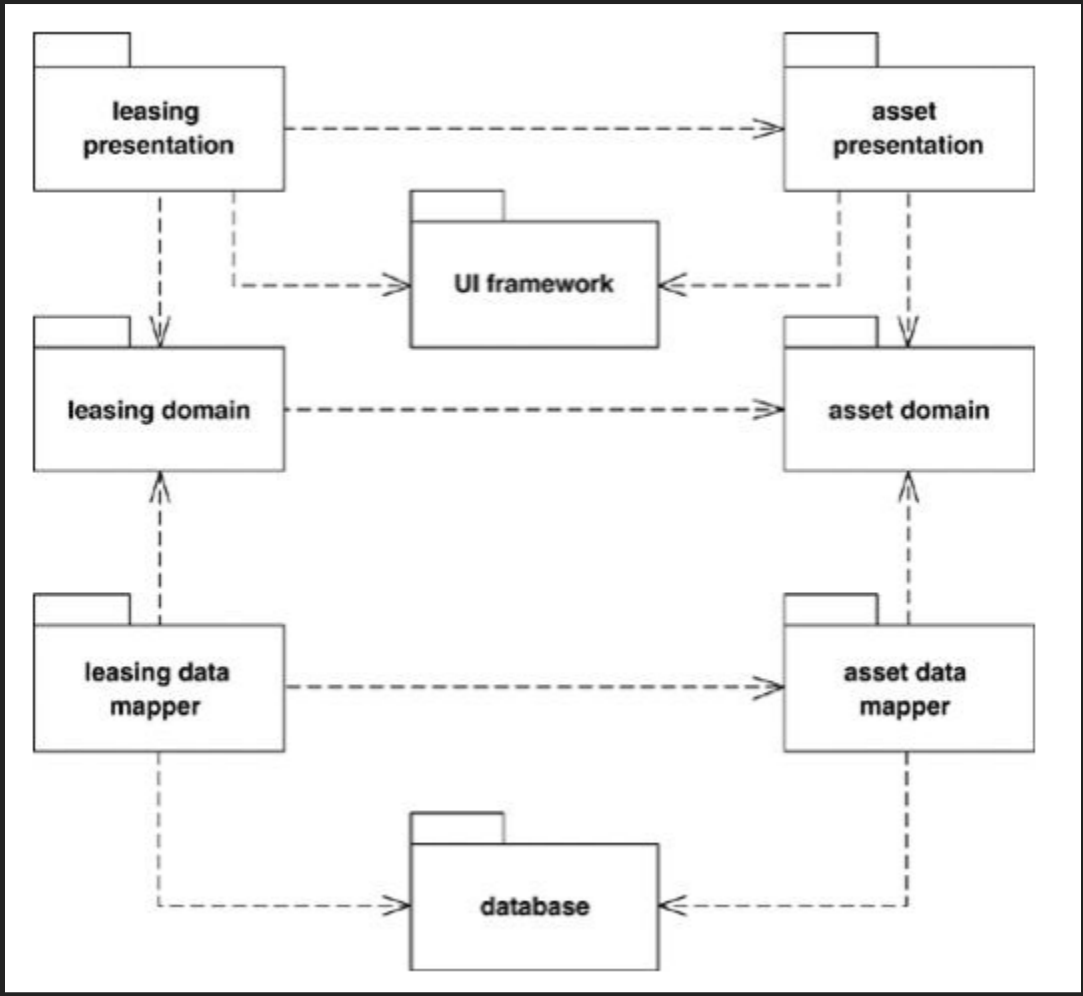
WAYS OF SHOWING A PACKAGE



BEHAVIOUR OF A PACKAGE

- Classes in a package can be both, `public` and `private`
- A public class is a part of the interface of the package
- Good practice: reduce interface by making all classes private
- Good practice: add extra classes that only contain desired public methods

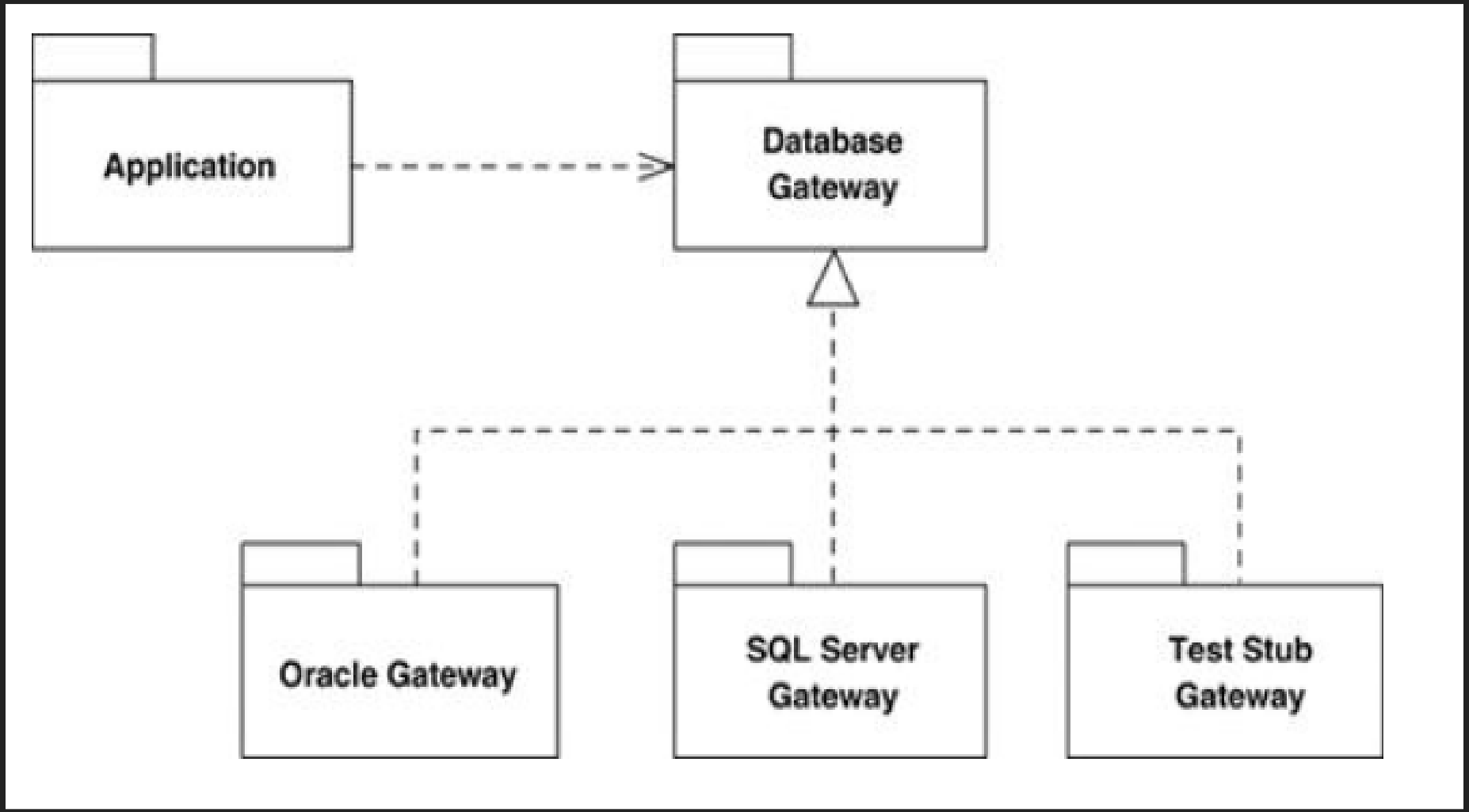
PACKAGES AND DEPENDENCIES



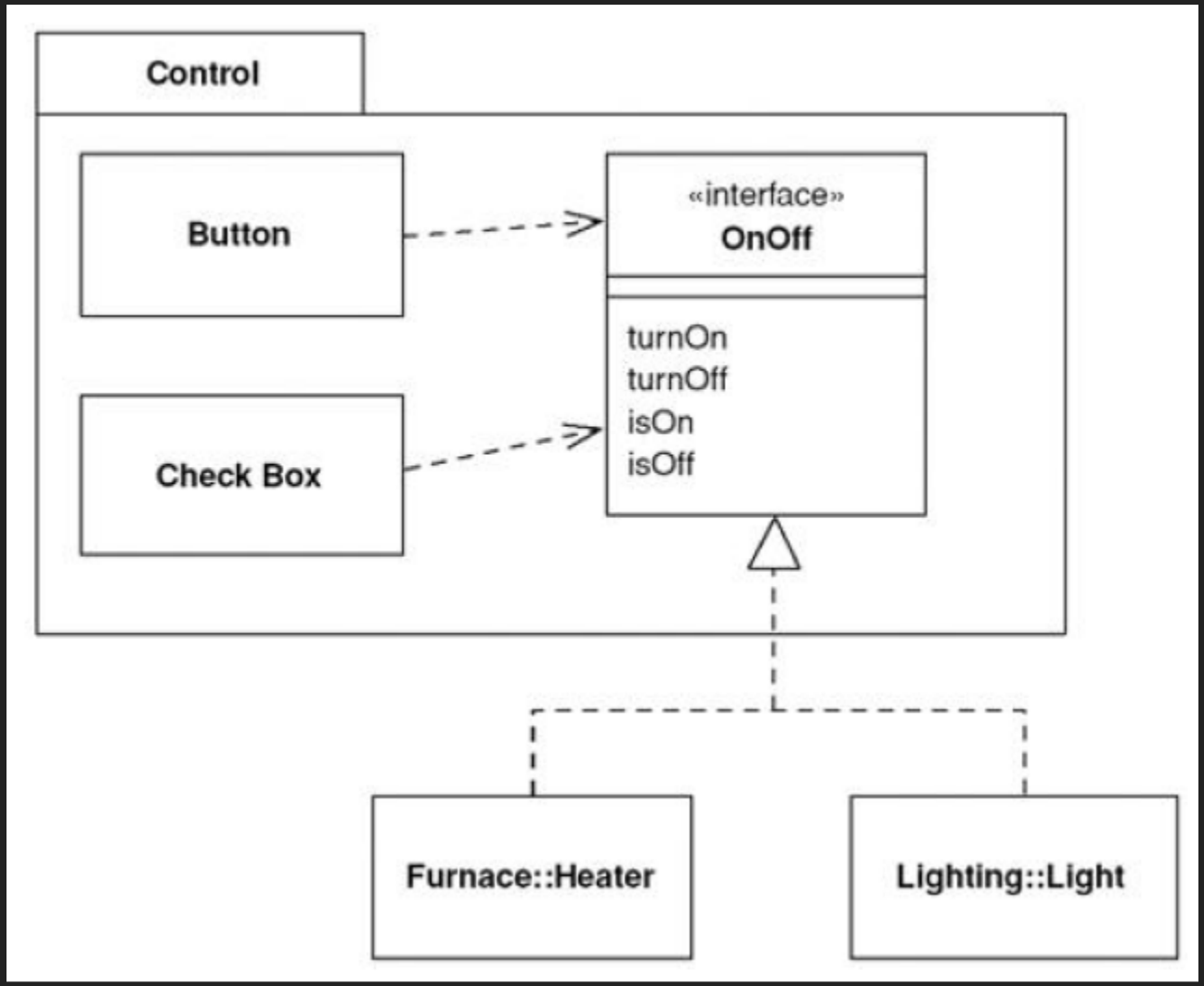
PACKAGES AND DEPENDENCIES - II

- The more the dependencies, the more stable the interface needs to be
- Stable packages tend to have interfaces and abstract classes
- In general, dependencies are not transitive

IMPLEMENTING PACKAGES



UTILITY OF PACKAGES WITH INTERFACES



WHEN TO USE PACKAGES

- On large-scale systems, with multiple major elements
- *Beware*: Compile-time grouping only

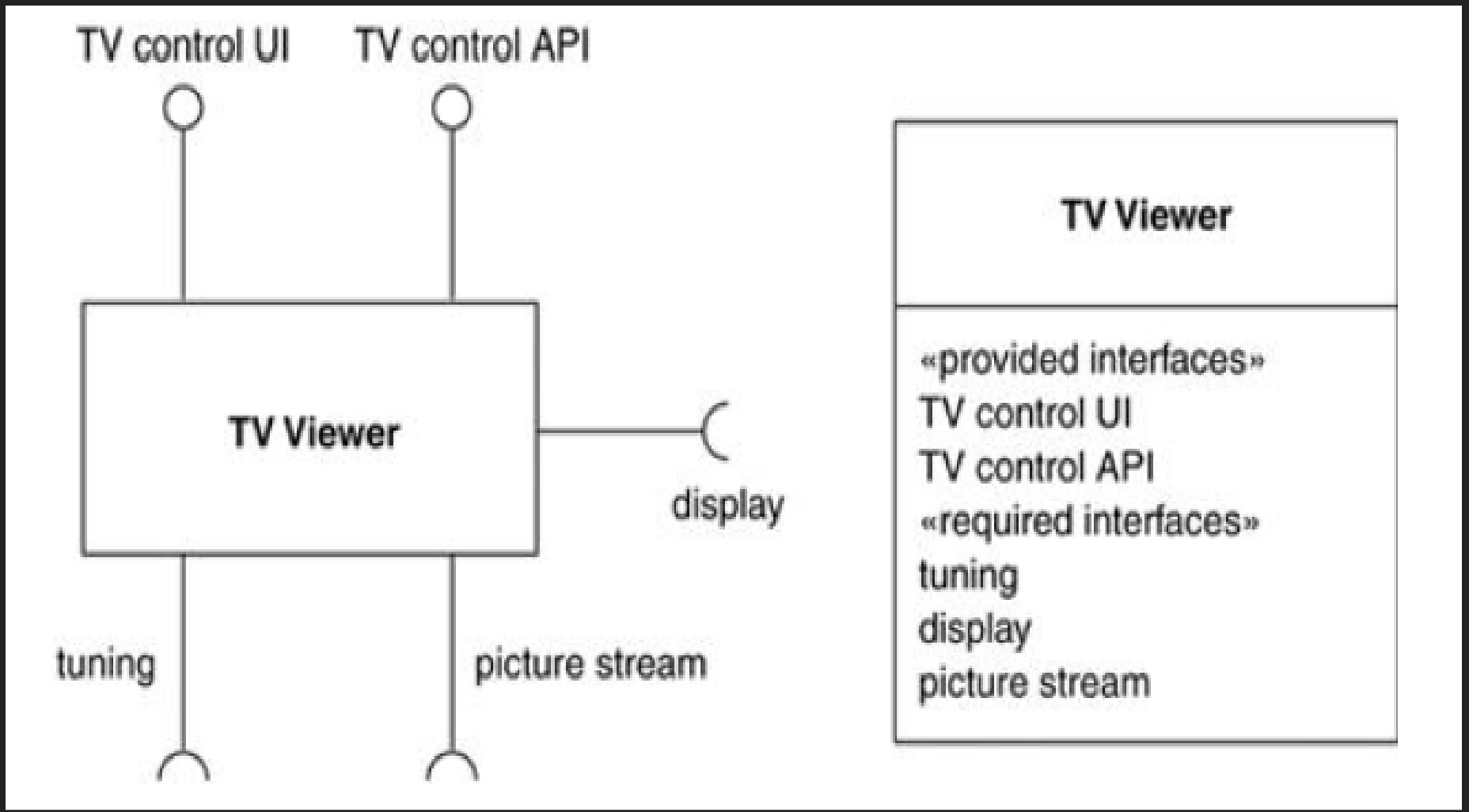
  For runtime grouping: use composite structure diagram

COMPOSITE STRUCTURE DIAGRAM

A fairly new feature of UML

Takes a complex object and break it into parts

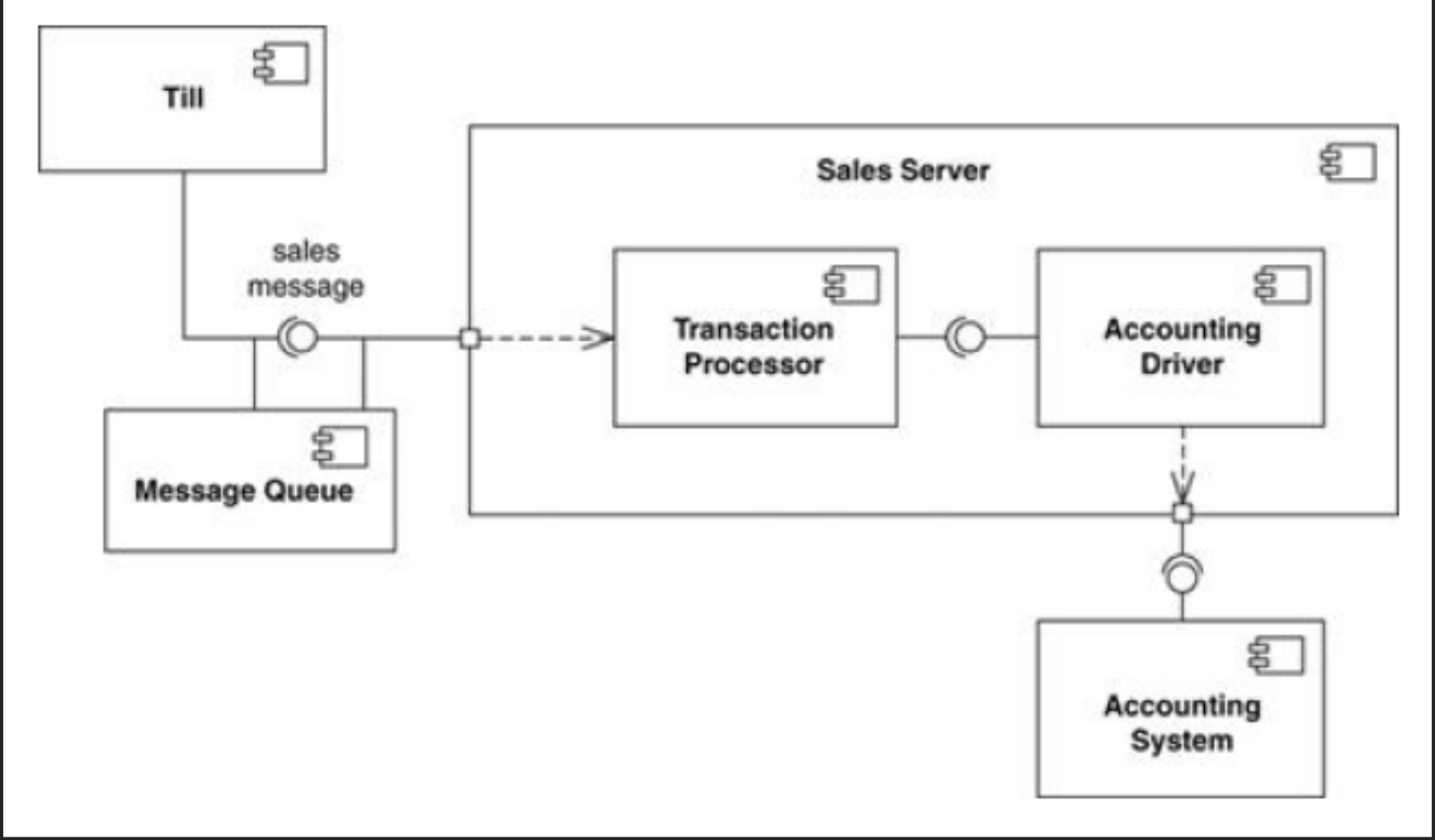
SHOWING COMPOSITE STRUCTURE



LOGICALLY GROUPED COMPOSITE STRUCTURES

- Tend to end up as components
- What is a component?
  - Unsettled debate in the OO community
  - Typically things that can be mixed-and-matched
  - Independently purchaseable?

SHOWING COMPONENTS

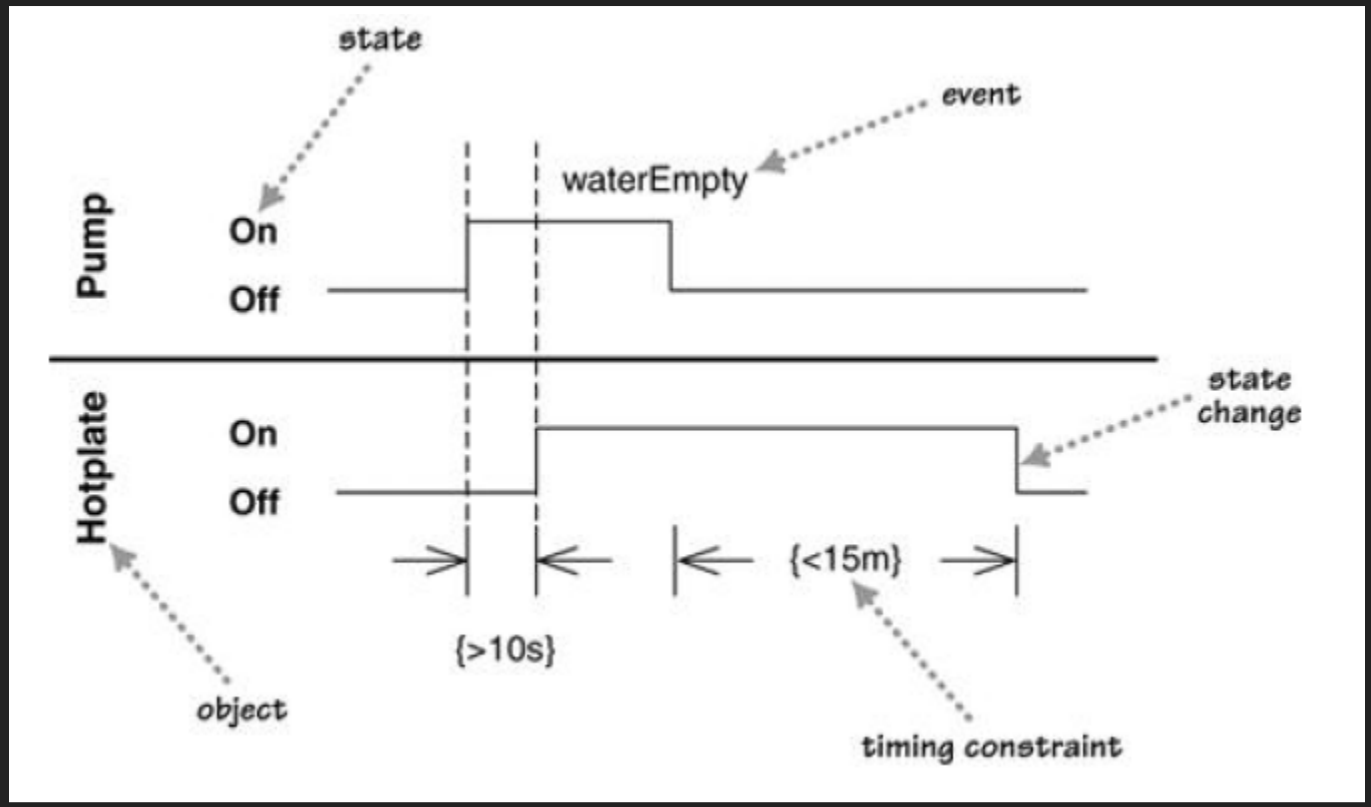


TIMING DIAGRAMS

Suppose you have a usecase that says:

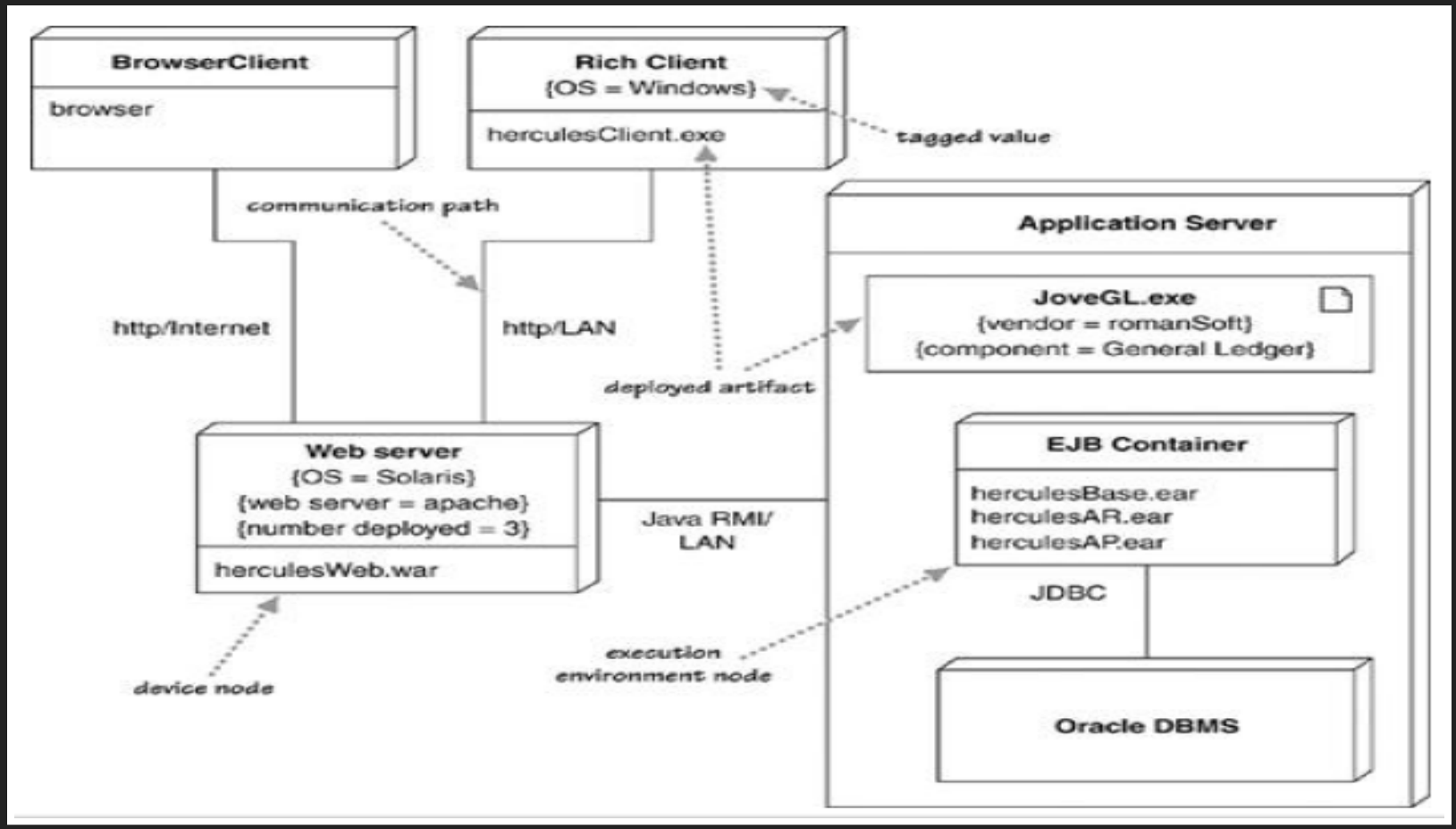
- There are two devices: pump and hotplate
- The pump must be on for at least 10 seconds before the hotplate can turn on
- When the water is finished, the pump must turn off
- After the pump turns off, the hotplate must be on for at most 15 minutes

TIMING DIAGRAMS - II



Focus is on timing between events or constraints on behaviour between several objects

AND FINALLY



A *deployed* view of the system a.k.a. deployment-diagram

BEFORE WE GO...

New assignment available on website (in 15 mins)

Deadline: *26-October-2016, 10:00 a.m.*

Test-case marks will be emailed today

If you're still having problems with Gitlab, contact Andrei Palade

ONE MORE THING...

Single-term students: please contact me!

THAT'S ALL, FOLKS!

Questions? Comments?