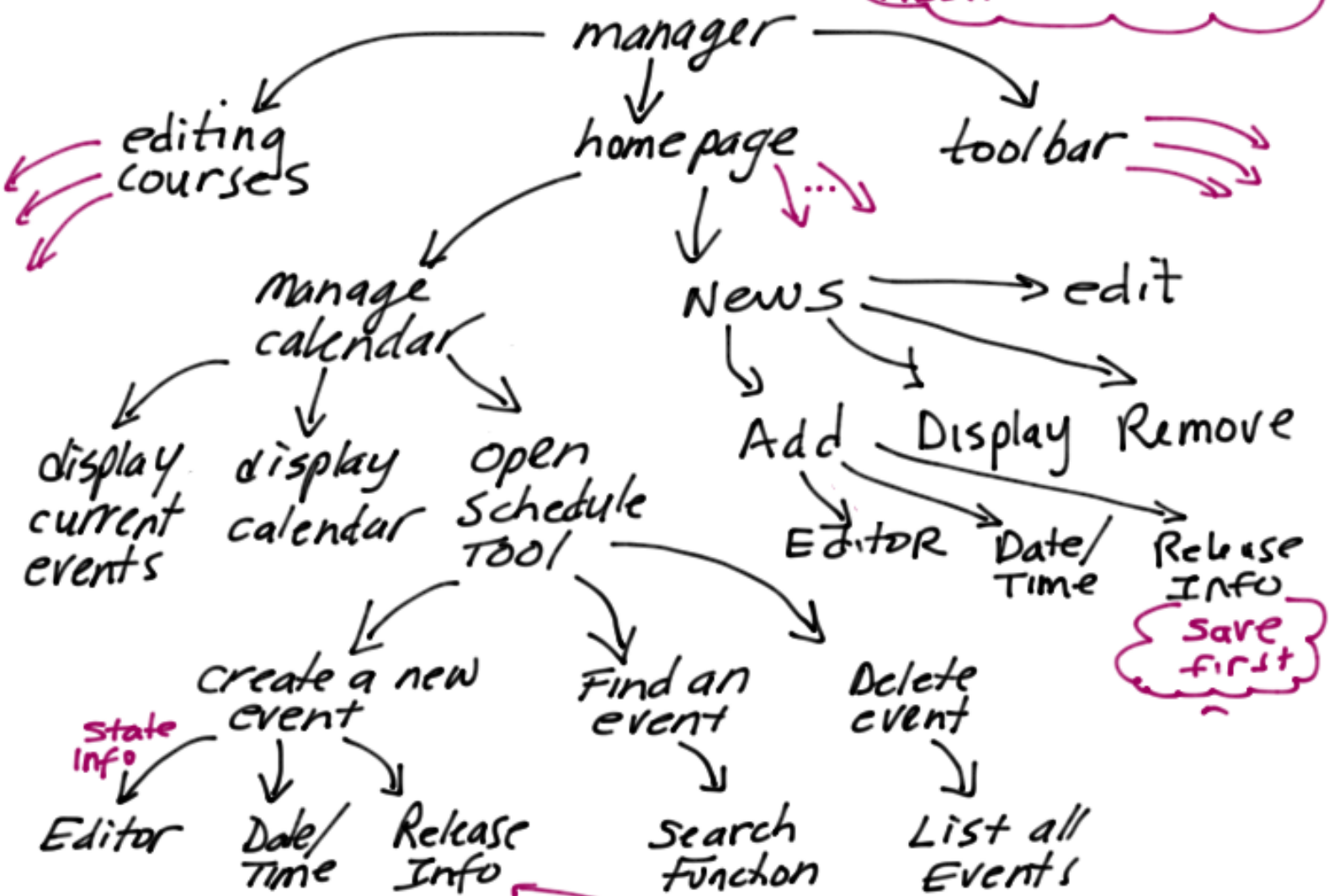


Example Designs - Procedural vs. OO

D2L

NOTICE THE
COMPLEXITY
USING PROCEDURAL
ABSTRACTION



sometimes it
is displayed on
the same page &
sometimes it has its
own "tab"

some places you have
to save first then set
release criteria, other
times it saves
automatically!

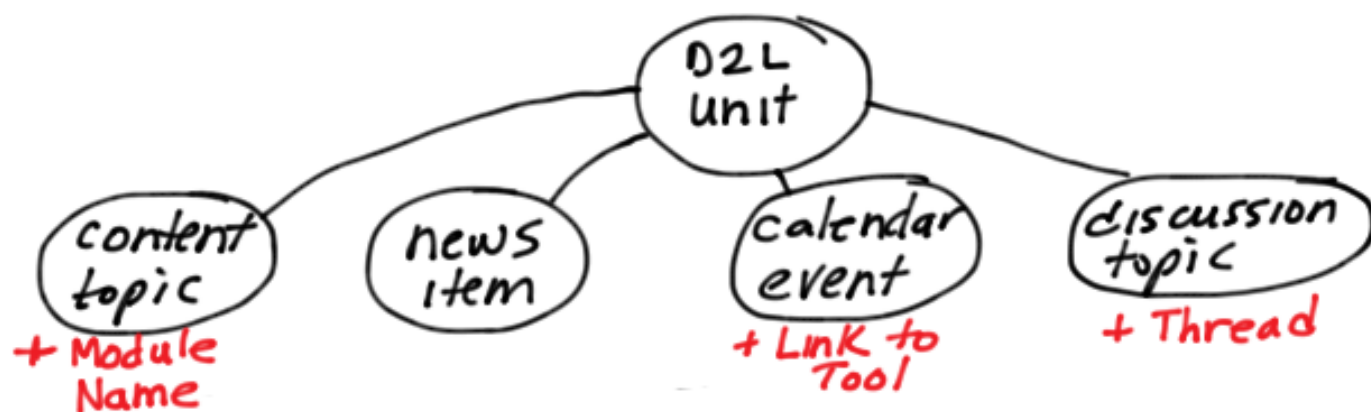
Break the Problem into Objects

D2L "Unit"

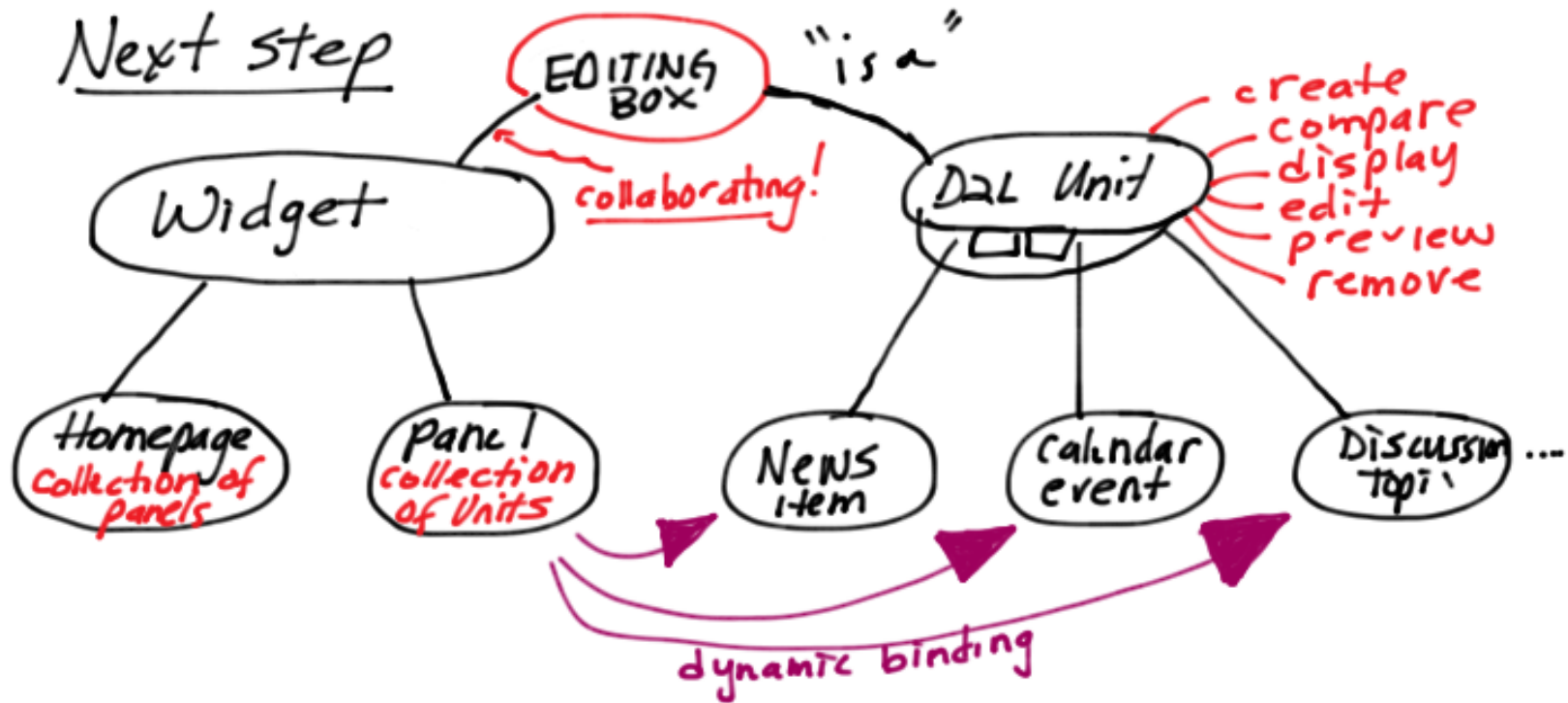
- Editing Box
- Schedule (start/stop/post in calendar)
- Restrictions (activities that must be done before this unit is active)

← The unit does not keep "state" information

- Create New
- Edit Existing
- Remove
- Display
- Compare... - Preview!



Next step



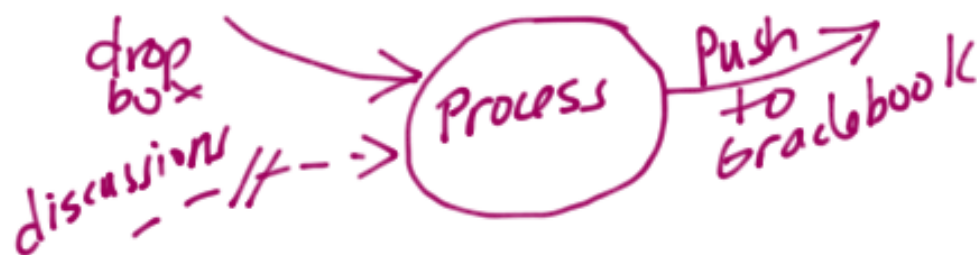
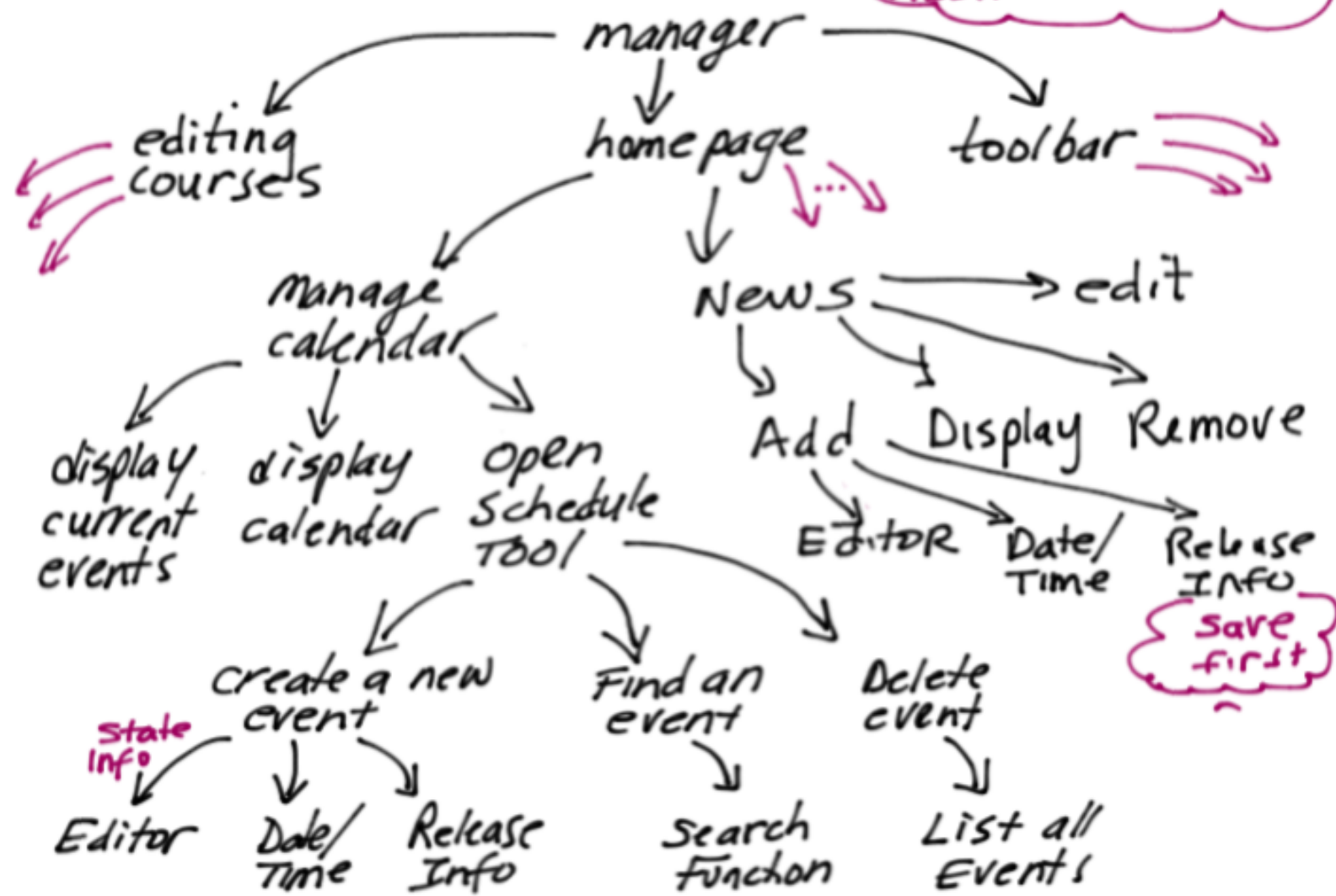
Result

- 1) Every editing box will be/act/appear the same
- 2) Static data could be used so all editing box instances would share size of the box!!
- 3) All tools could be previewed the same way
- 4) Restrictions would be consistent
- 5) Question: "has a" vs. "is a" relationships for the "D2L Unit"

What about Grades?

D2L

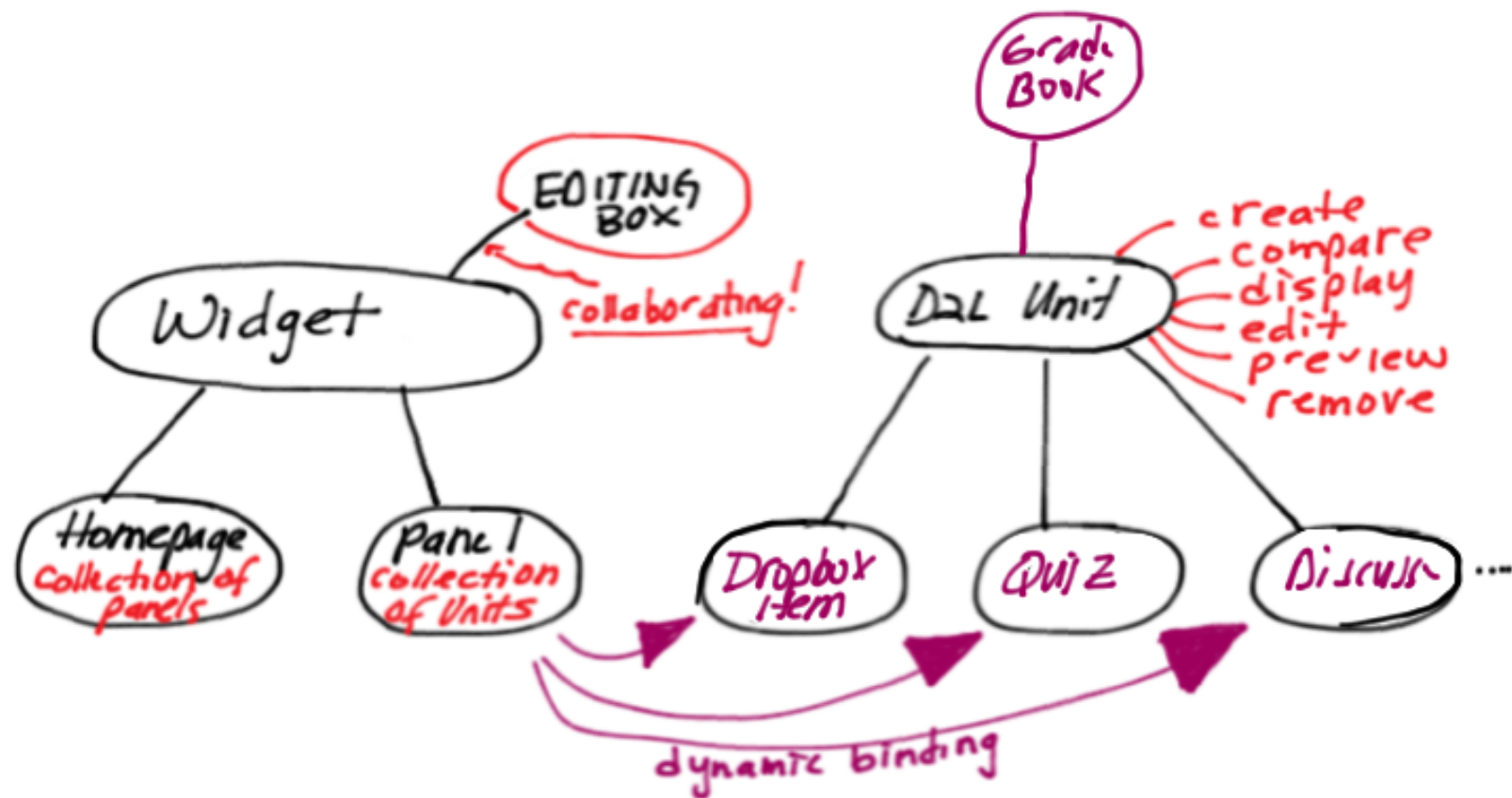
NOTICE THE COMPLEXITY USING PROCEDURAL ABSTRACTION



Who owns the grades?

One Gradebook!

- Static data members will share among all objects!



Example #2 - Real Estate Brokerage handling investment real estate

Nouns:

house, address, square ft, #bedrooms, #bathrooms
lot size, property taxes, size of rooms,
number of levels

Physical

Financial, price, debt, price per square ft,
rental \$, interest, property taxes owed,
closing costs

Financial

collection of houses, type of property, neighborhood,
search criteria, bank owned, short sale, seller
financing, hoa's, etc.

Display
EDIT

Property
Location

Look for ...
Enter ...
Remove ...

- Street, city, State, ZIP
- Address, neighborhood

String

physical
+ sqft, levels...

Financial
+ price, debt...

String

Listing
+ broker

New listing
Cancel
Modify Listing
Display Listing for Agent
Display Listing for client
(Email)

Agent

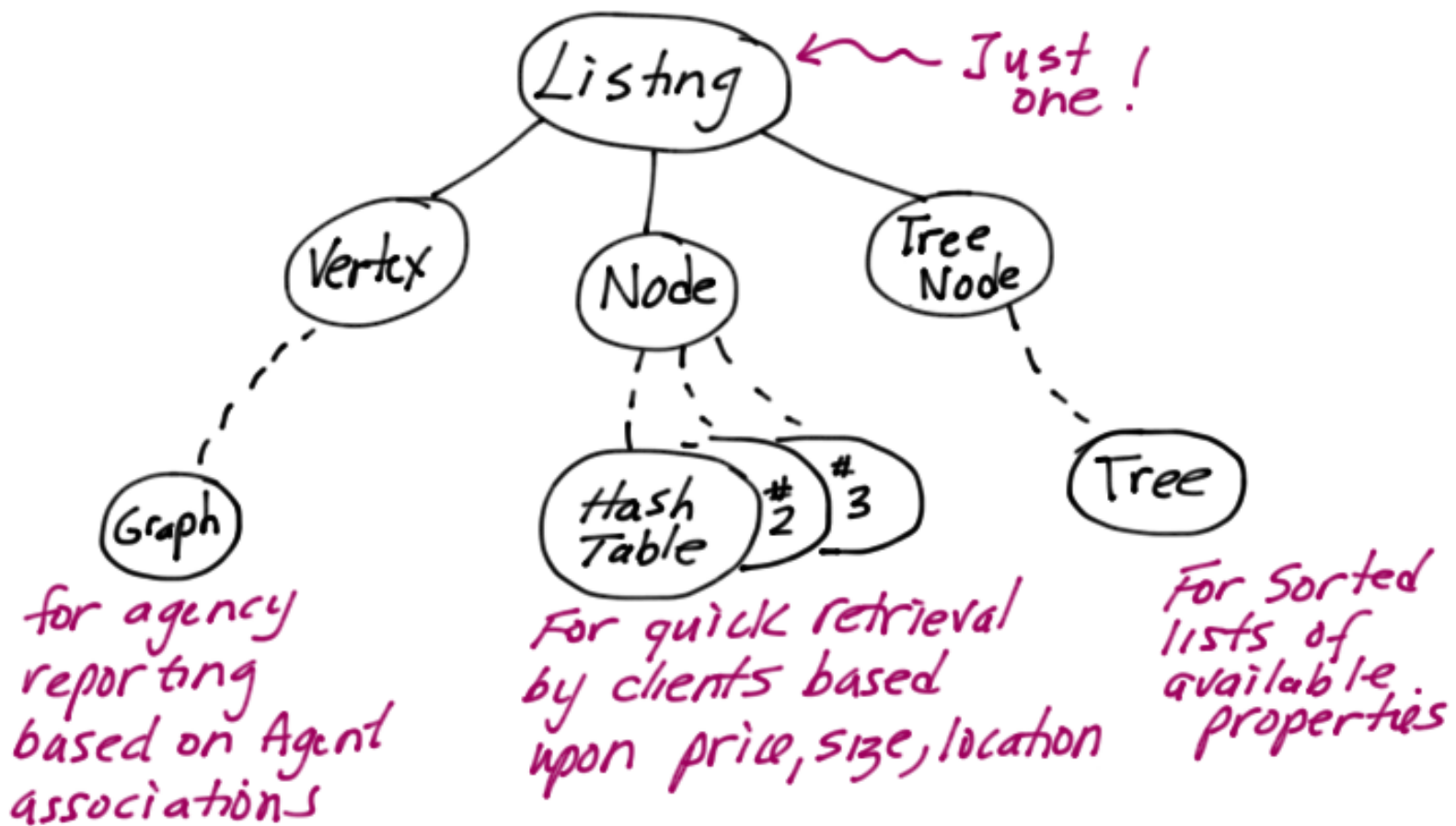
name, license #
affiliation

Broker

Property
mgr

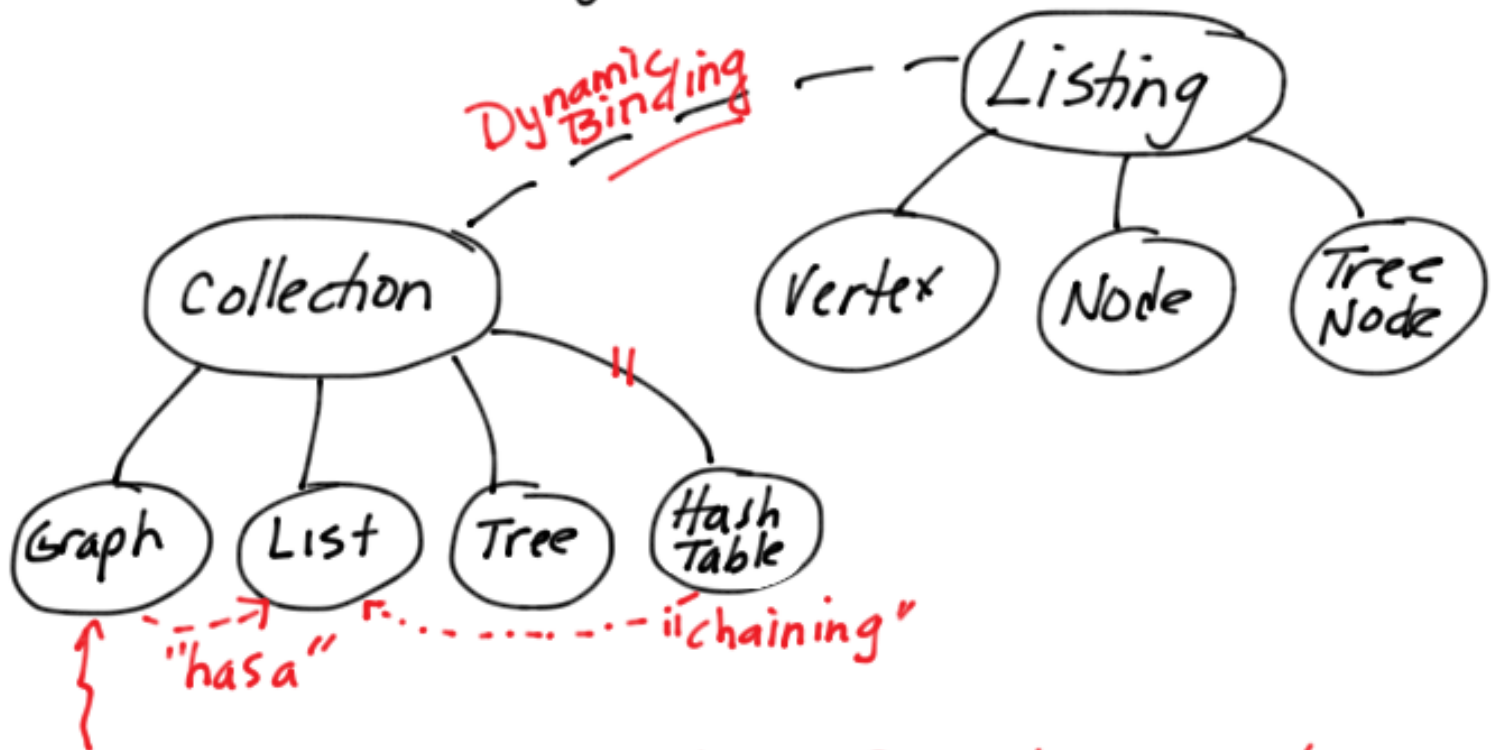
Principal

Collections!



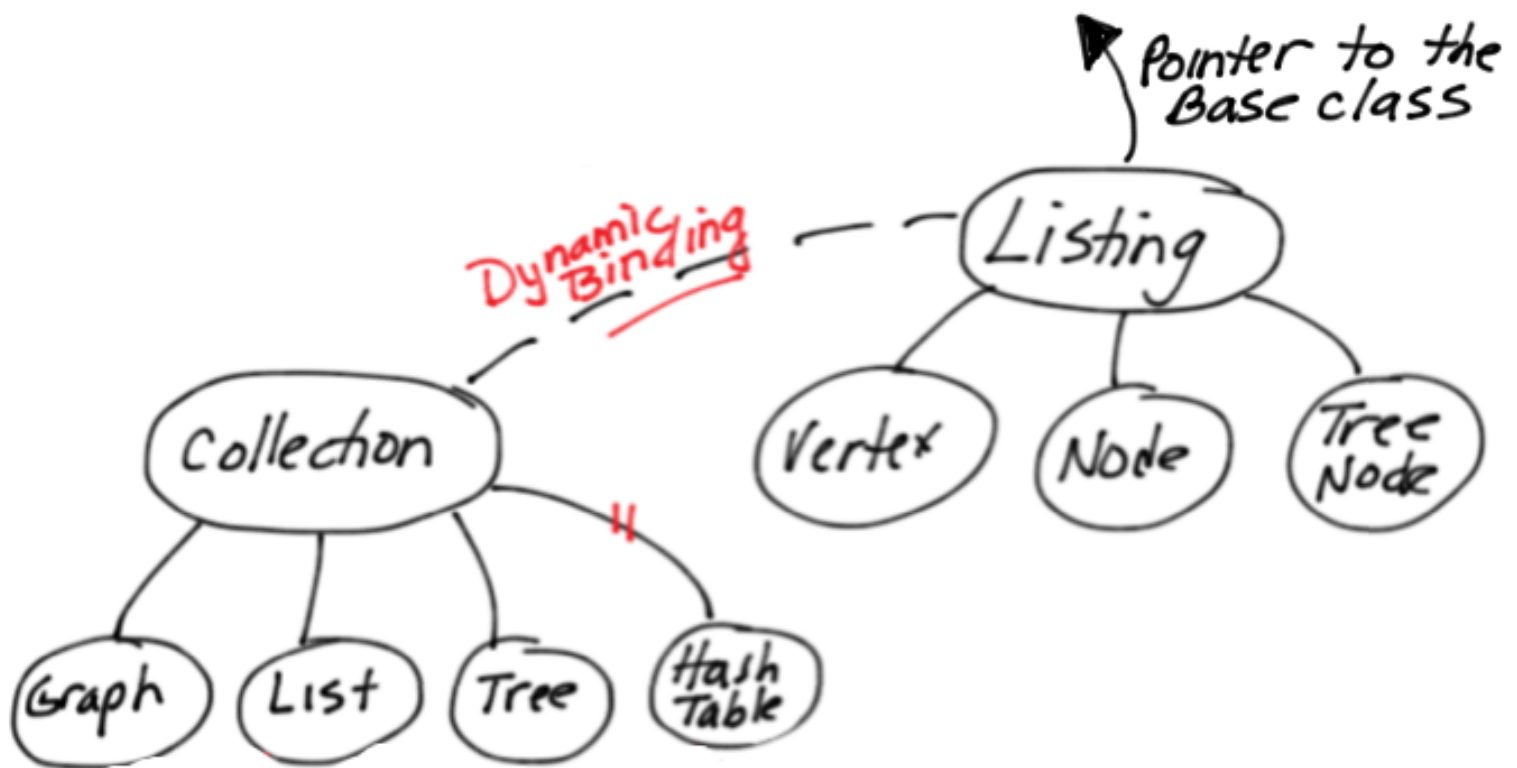
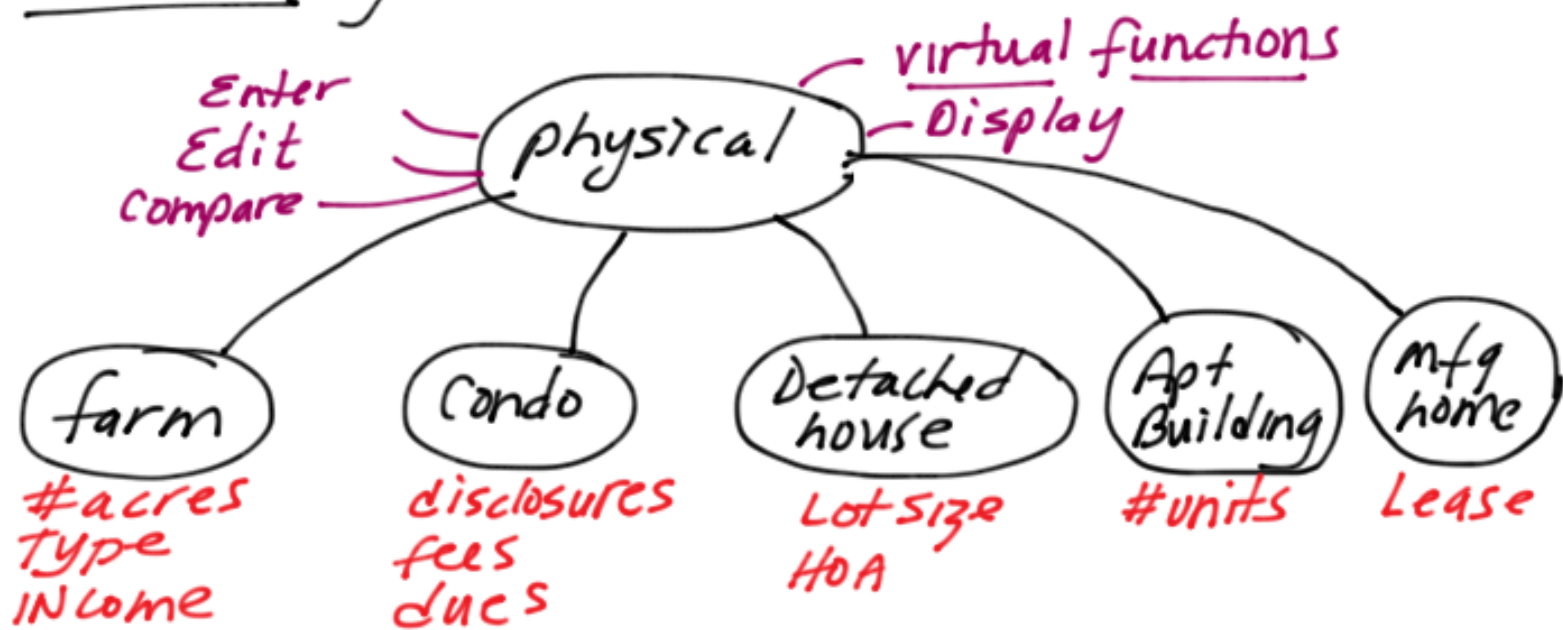
Question - how many of these use LLL?

Alternate Design



A graph is a collection of vertices and
"has a" collection of edge Lists

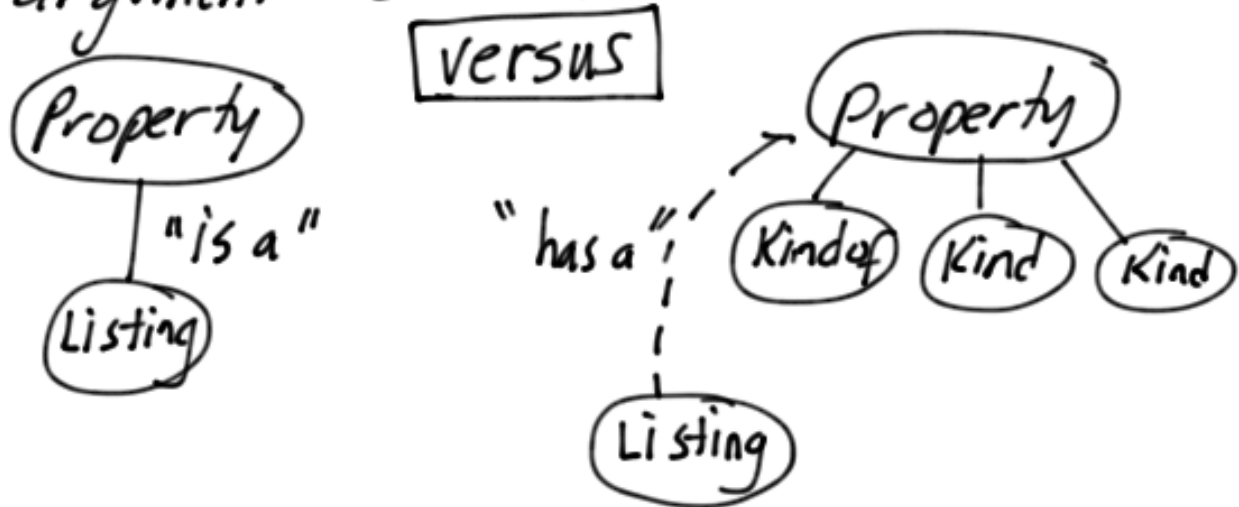
Alternatively - Better or Worse ???



Question: how would you compare to see if a Listing has the square ft. desired?
more work or less?

Discussion

1. On one hand now Condos won't be listed when looking for a farm
2. But, other than that does it simplify the design or make it more complex
3. How often do we want to only work with one type excluding all others?
4. If you ever want to work with multiple categories it may double, triple, or quadruple the amount of work required.
5. The argument revolves around:



Examples of C# & Java Projects

For each set of example code, answer the following questions

(Online students - these questions can be found as part of Lecture #8 Activity #2 on D2L or may be submitted to the D2L dropbox. Results will be reviewed during Lecture #9 on June 4th)

- 1) Prepare a general object diagram with the classes with "is a" & "has a" relationships
- 2) Find 3 constructs that convince you that it is an OO solution
- 3) Find 3 constructs within the implementation that are NOT Object Oriented
- 4) Rate the design 1-10 ← Best