# software
## studio

# object models:
# classification

Daniel Jackson

# atoms (aka objects)

**atoms are**
› distinguishable: have an identity
› immutable: don't change
› indivisible: not structured

**consequences**
› don't need to model ids explicitly
› change & structure expressed in sets & relations

# basic sets

› box represents set of atoms
› set may be infinite, empty, singleton

| Shape | Element | URL | Theorem | Patient | Language |
|---|---|---|---|---|---|
| Color | Class | Page | Proof | Prescription | Functional Language |
| Dimensions | Id | Domain | Refutation | Treatment | Haskell |
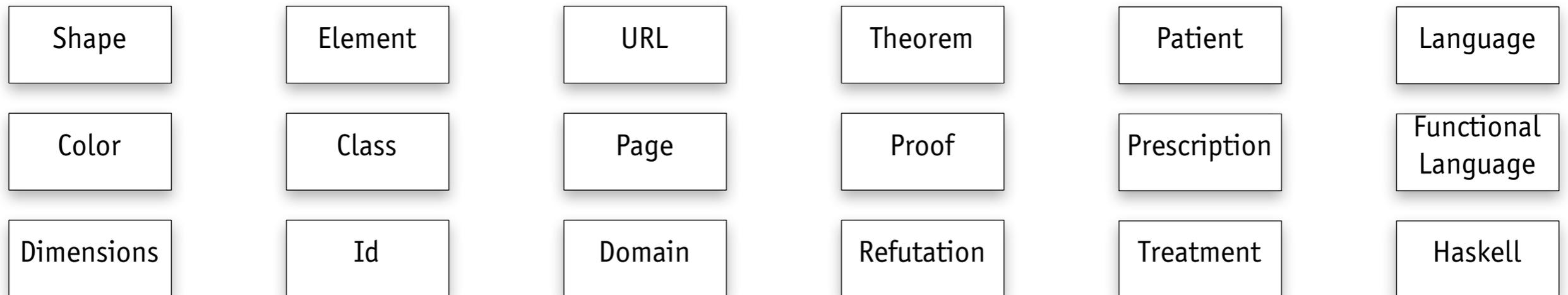
# classification

› shared arrow: disjoint subsets
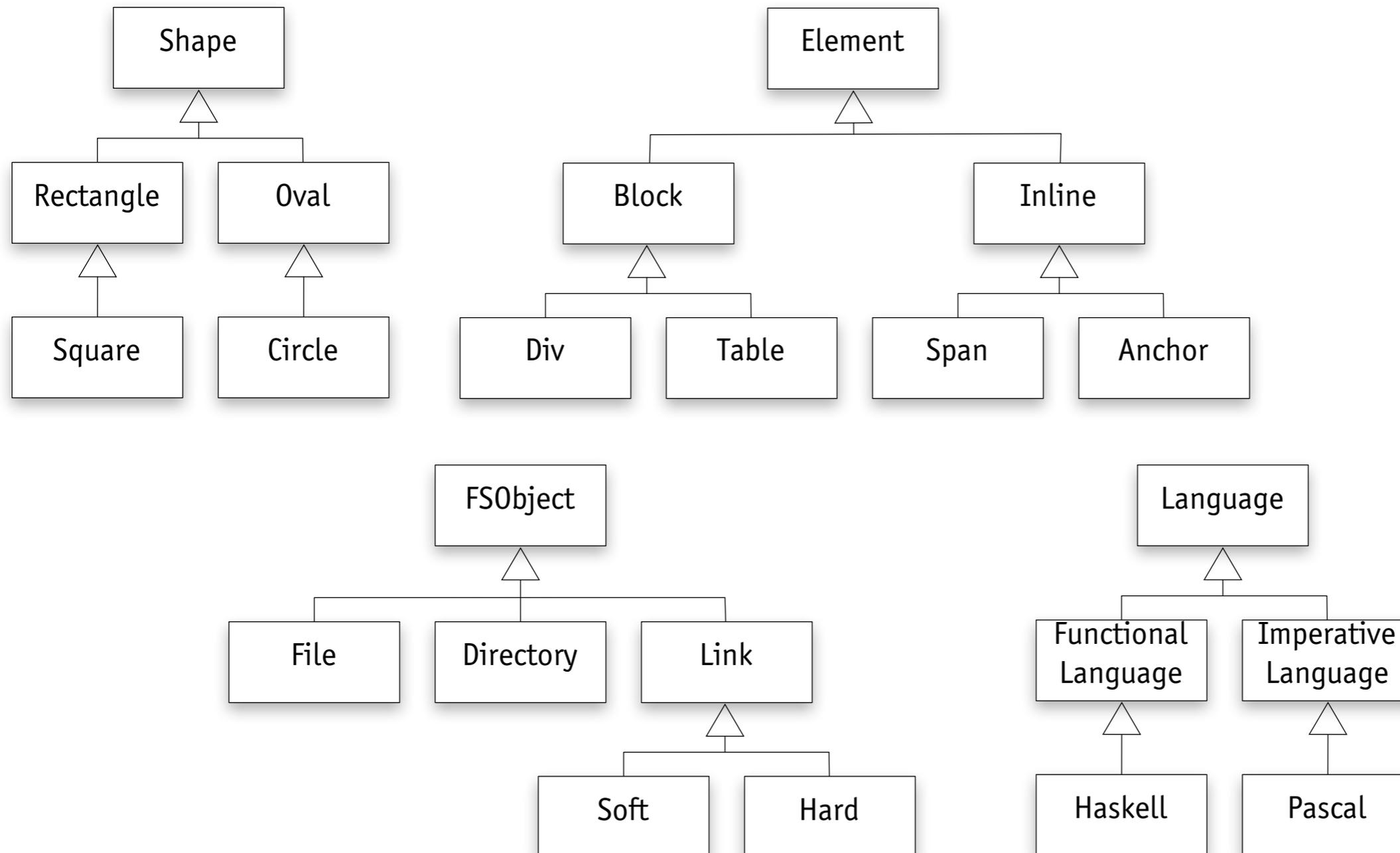
# dynamic sets

**contents change**
› as objects are born & die
› move between sets
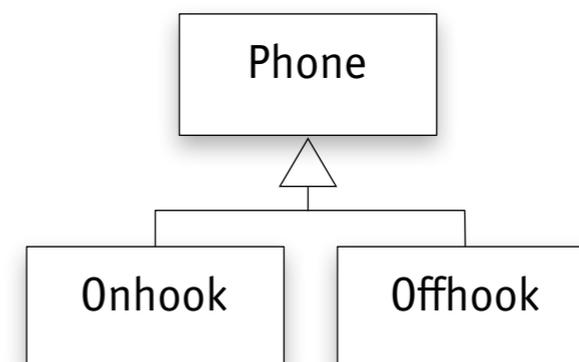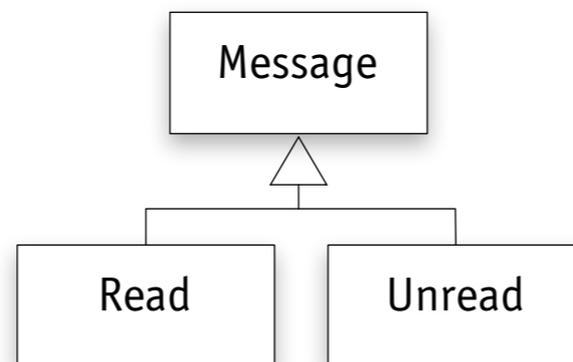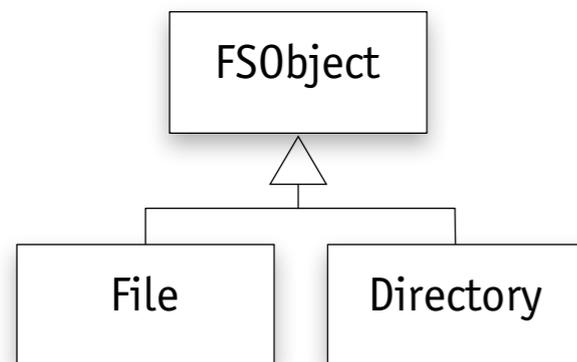
# exhaustion

› abstract set: exhausted by subsets
› indicated by italicizing name
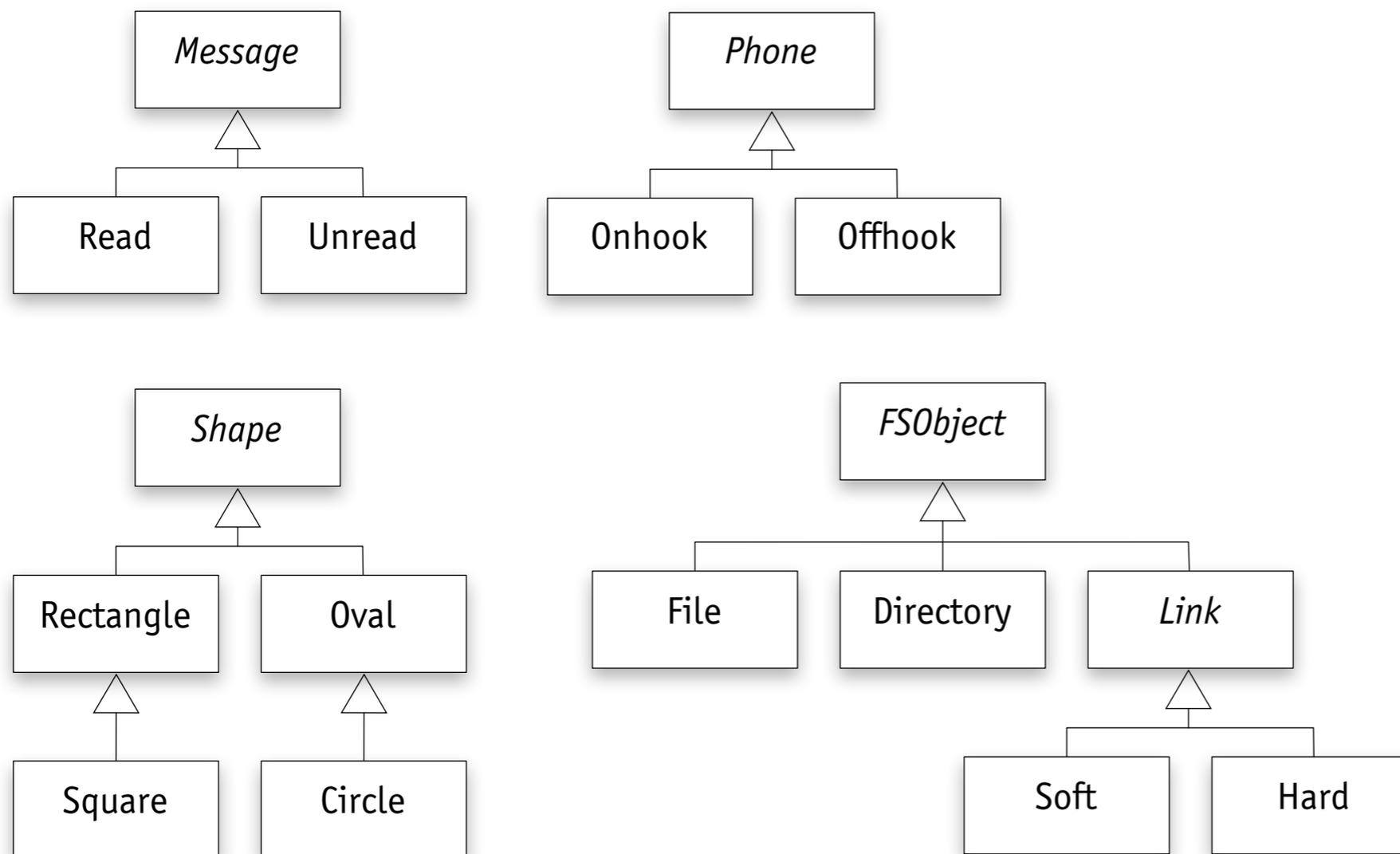
# multiple classifications

› separate subtrees not mutually disjoint
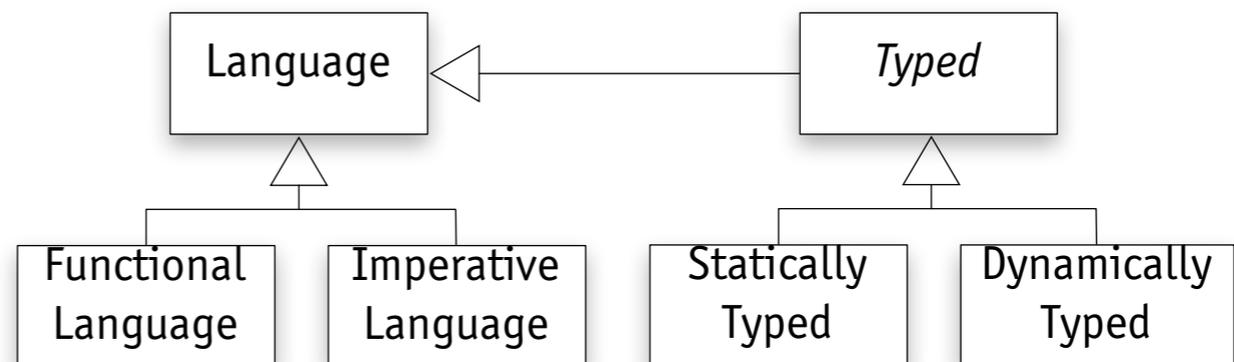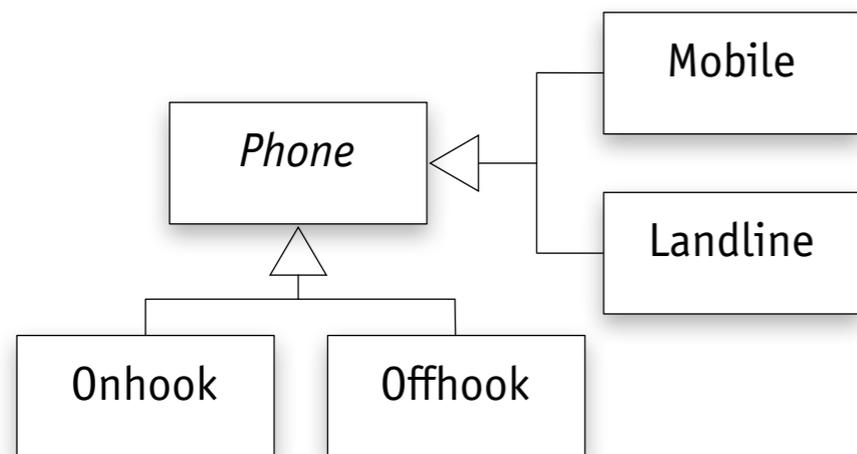
# designations

**meaning of set**
› should be clear
› if not, write 'designation'

L in Statically Typed: in a program written in language L, type errors are caught at compile time; need not imply that types are declared

P in OnHook: phone P is not engaged in a call

# syntax summary



B

A

$A \subseteq B$

B
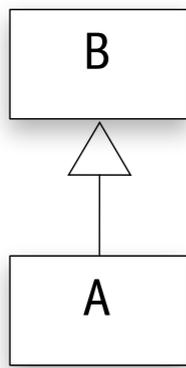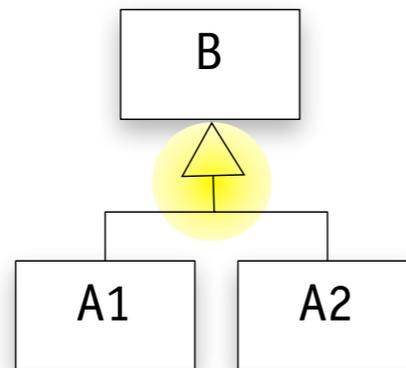
A1    A2

$A1 \subseteq B, A2 \subseteq B$
$A1 \cap A2 = \varnothing$

B
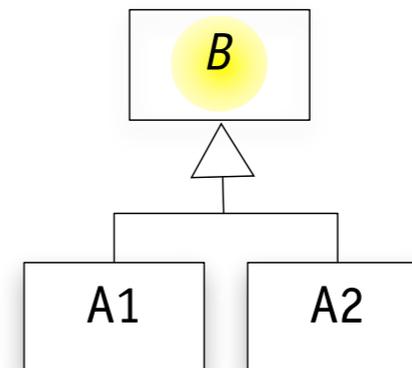
A1    A2

$A1 \subseteq B, A2 \subseteq B$
$A1 \cap A2 = \varnothing$
$A1 \cup A2 = B$

# common mistakes

**#1. bad sets**

    ill-defined: Weather

    collections: Set

    singletons: Page (in a model of a webpage)

**#2. using subset for relationship role**

    Friend

**#3. reading subset as is-a**

    Lassie is-a Dog

    Dog is-a Species

Member

↑
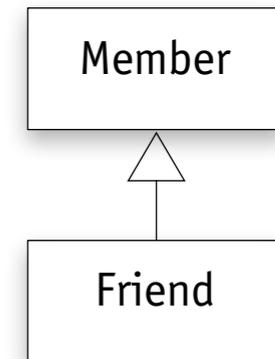
Friend

*#2: friend should be a relation*

Species

↑

Dog

↑

Lassie
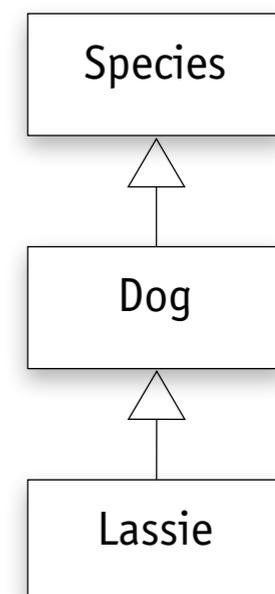
*#3: Dog means two different things!*

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