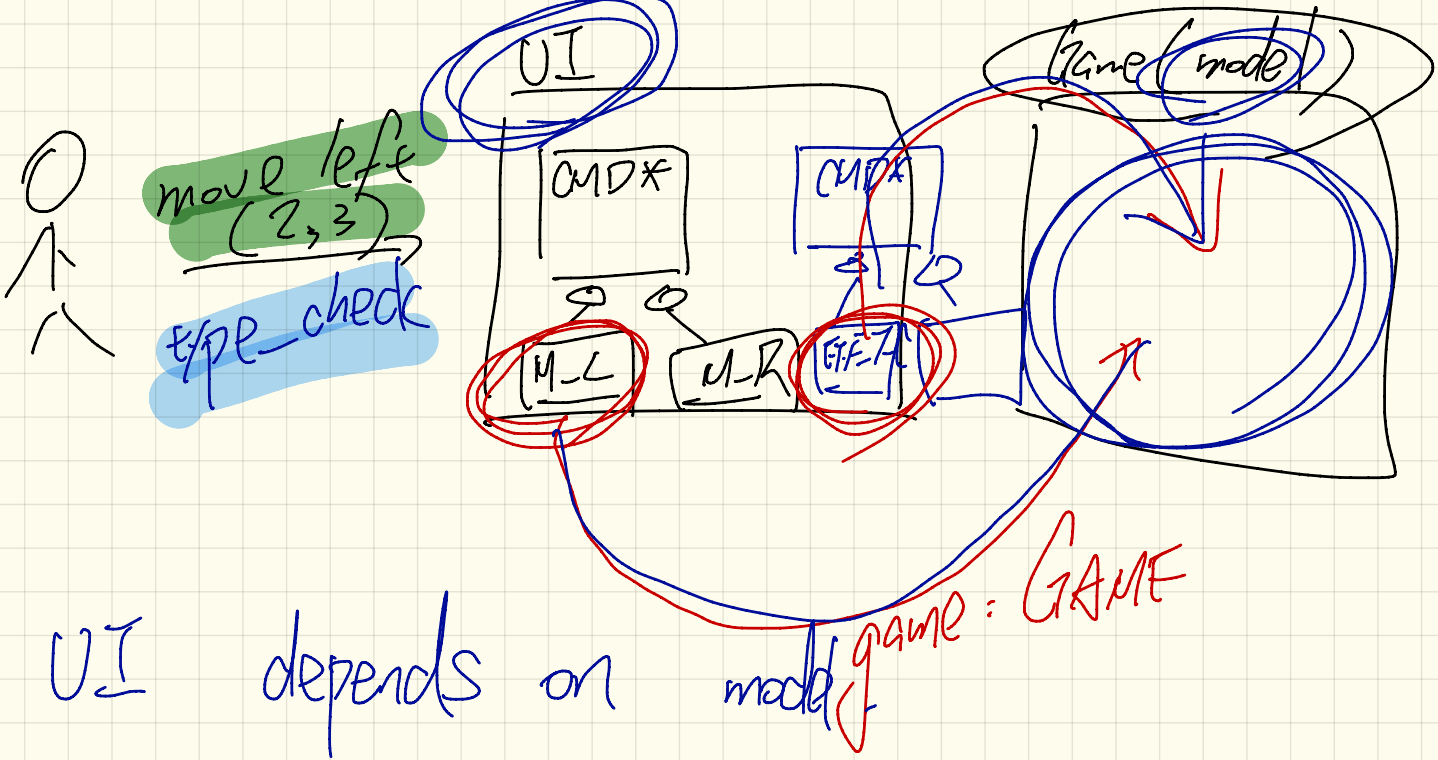
Lecture 21

Monday Nov. 27



UI depends on model

Model doesn't depen on UI.

ETF/??

- test cases not written in a programming language.

- acceptance testing

clients

- imp./design is not relevant.

at1.txt
at2.txt

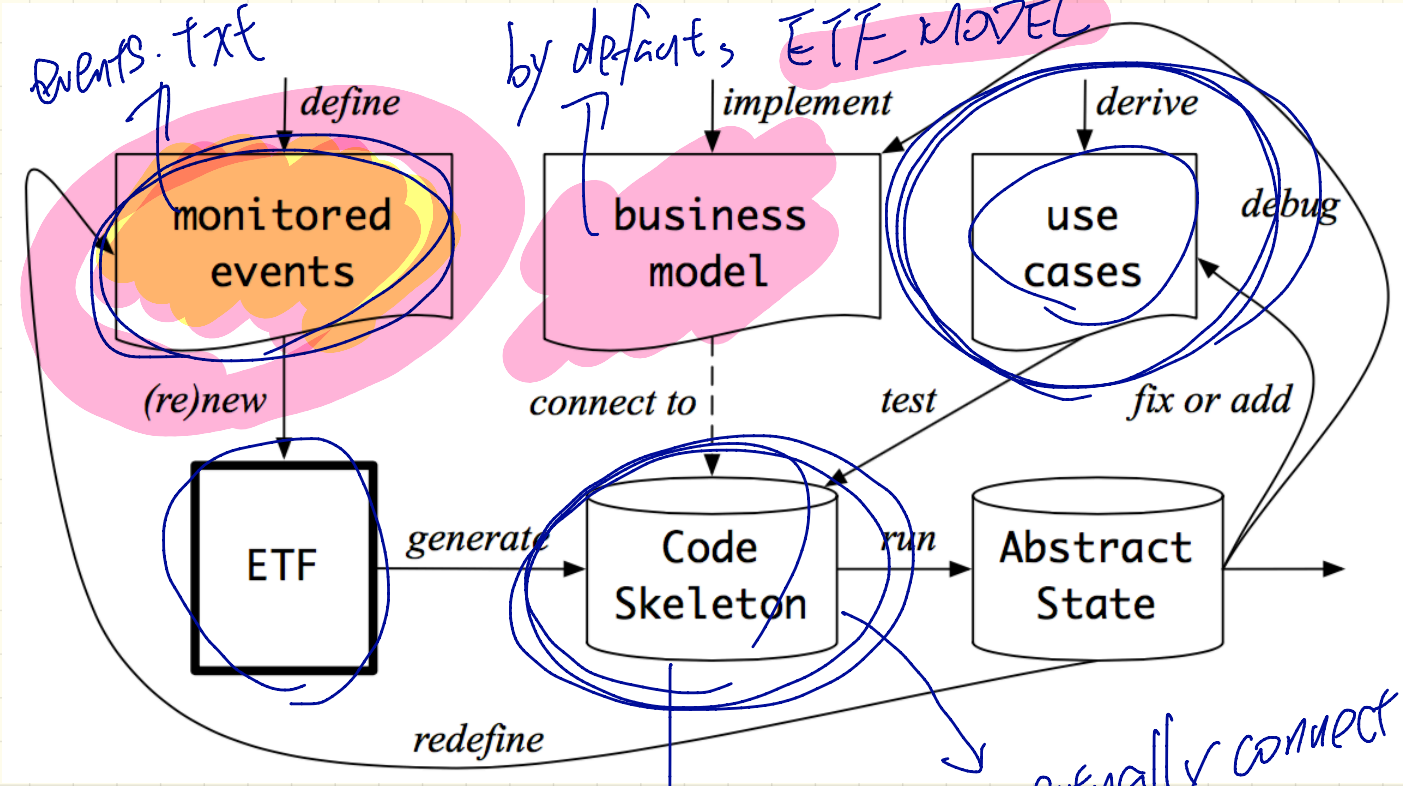
new("Store")
deposit("Store", 200)

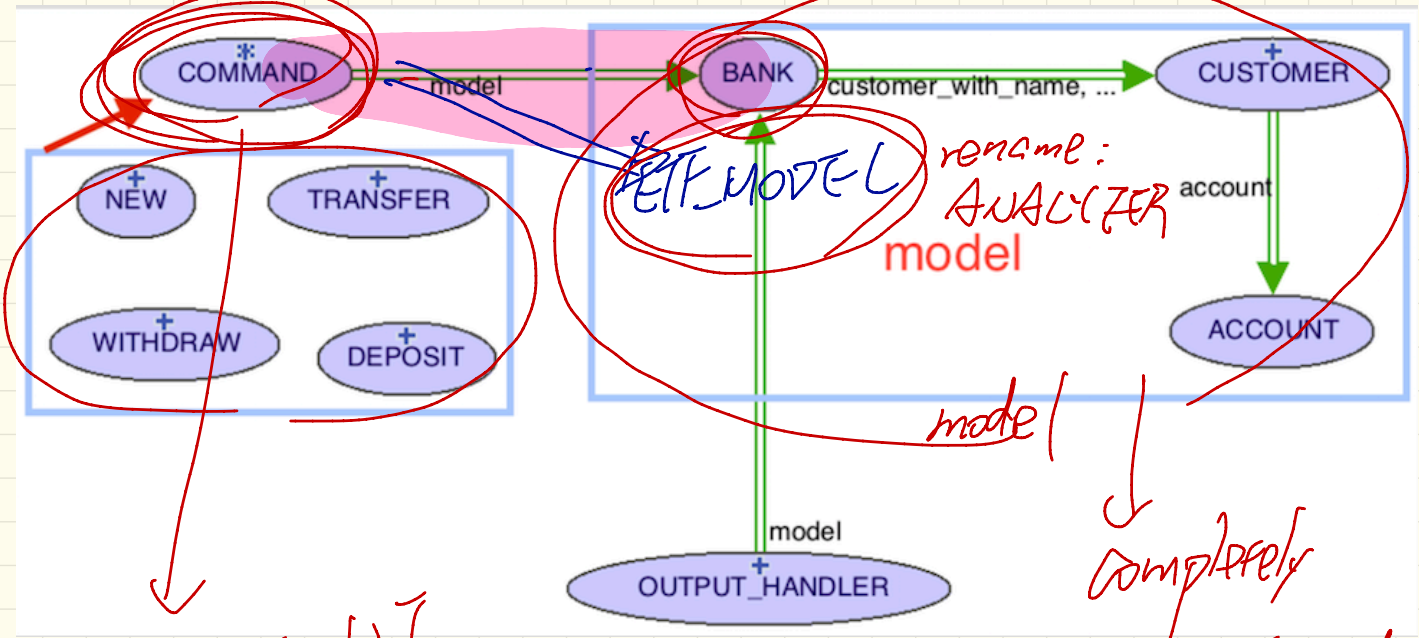
ESpec/JUnit

- test cases written in a prog. language.

- Unit Testing (classes/features/methods)

- imp. is relevant.

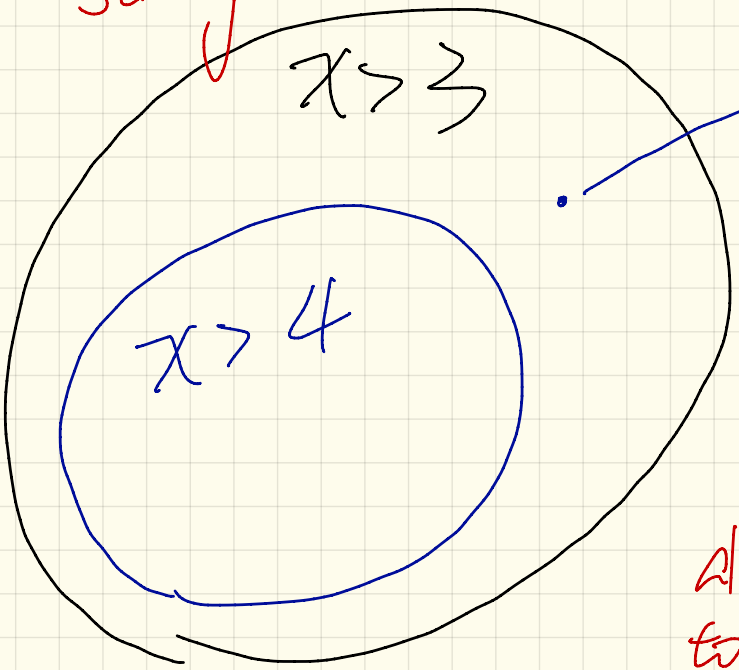

events.txt
define
monitored events
(re)new
ETF
by default, ETF_MODEL
implement
business model
connect to
derive
use cases
debug
test
fix or add
generate
Code Skeleton
run
Abstract State
redefine
starter project. eventually connect to ur own desing/imp.


COMMAND
model
BANK
customer_with_name, ...
CUSTOMER
NEW
TRANSFER
WITHDRAW
DEPOSIT
SELF.MODEL
rename:
ANALYZER
model
account
ACCOUNT
model
model
OUTPUT_HANDLER
abstract UI
(stable)
completely
up to d.

$x > 4 \Rightarrow x > 3$

stronger

weaker



e.g. 4

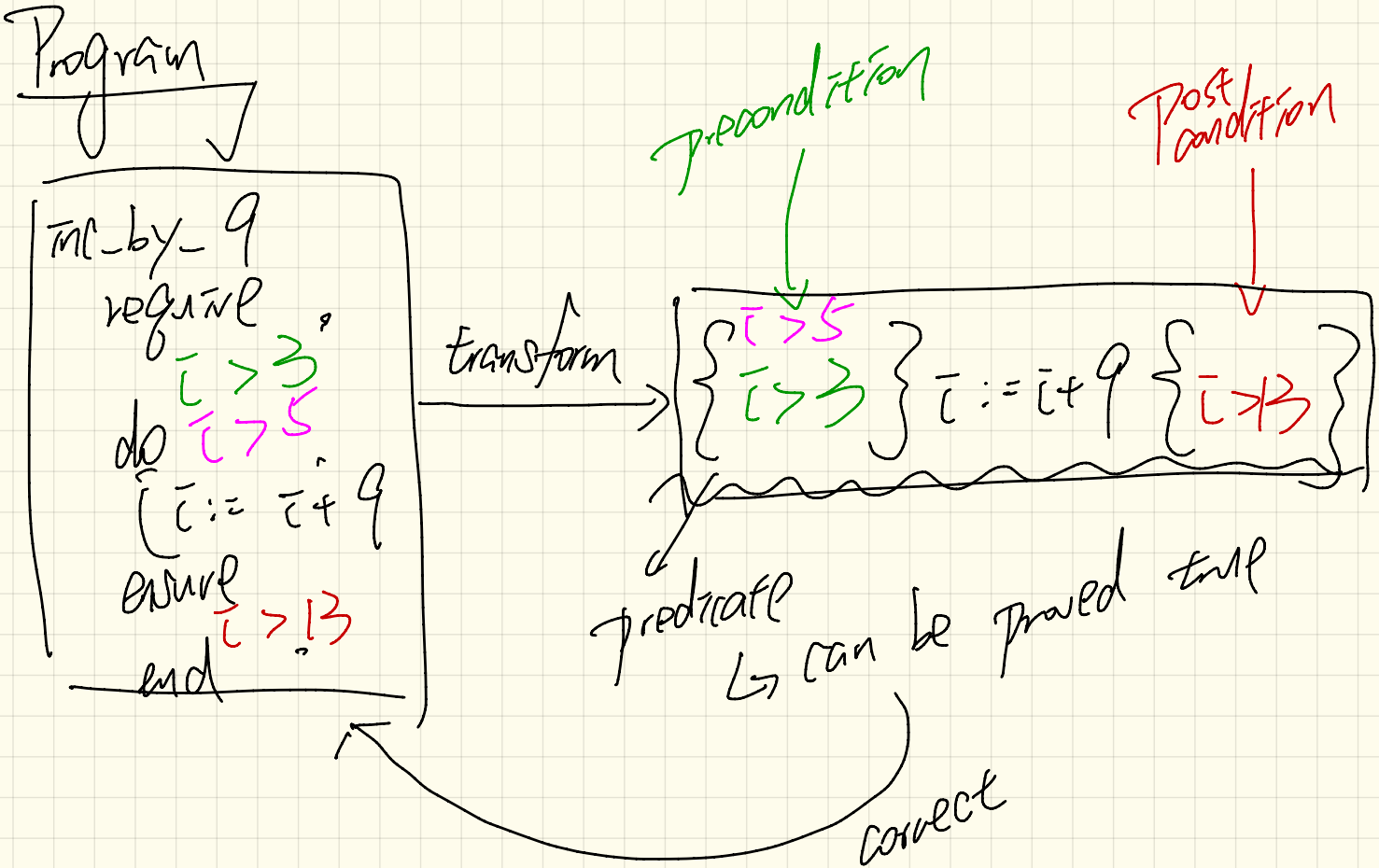
$x > 3$ allows more values to be included

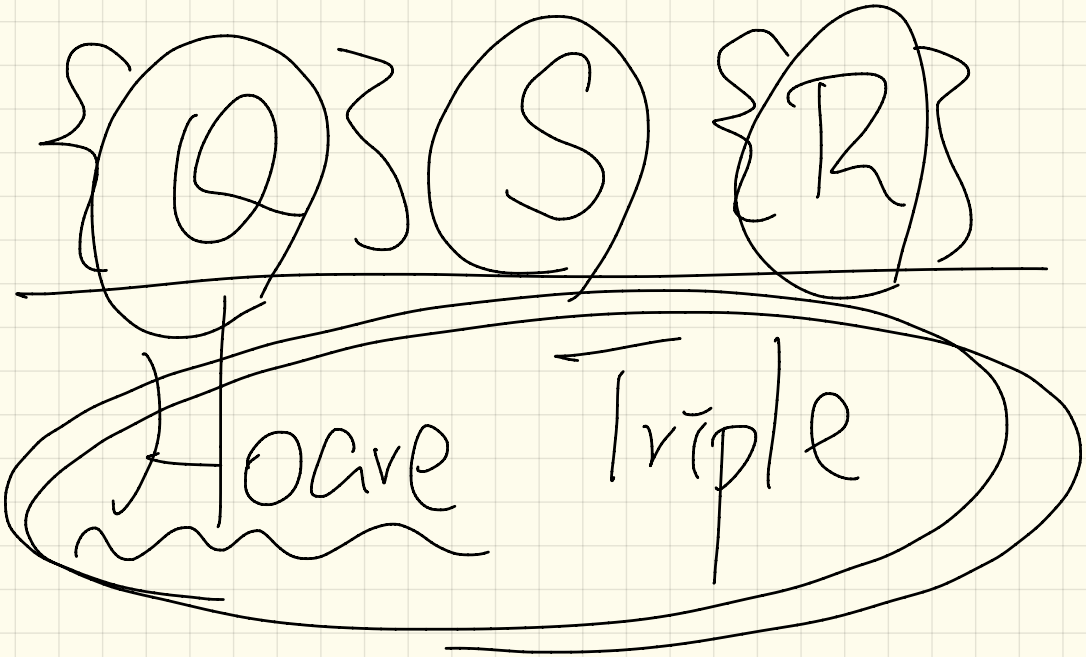
$x > 3$ is a weaker than $x > 4$

$x > 4$ is

stronger than $x > 3$

allows fewer values to be included in the set.


Program
inc_by_9
require
i > 3
do
i > 5
i := i + 9
ensure
i > 13
end
transform
precondition
post condition
i > 5
i > 3
i := i + 9
i > 13
predicate
↳ can be proved true
correct


{Q} S {R}
Hoare Triple

How to prove $\{Q\}\ S\ \{R\}$?

1. Calculate the wp for S to establish R.

$wp(S, R)$

4 loops

1. $x := e$
2. if B then S_1 else S_2
3. $S_1 ; S_2$

2. Prove that Q is no weaker than $wp(S, R)$:

$$Q \Rightarrow wp(S, R)$$

Define wp

wp(program statement , assertion)

wp($x := e$, R) = ?

wp(if B then S_1 else S_2 end , R) = ?

wp($S_1 ; S_2$, R) = ?

$$wp(x := x_0 + 1,\ x > x_0)$$

$$= x > x_0\,[x := x_0 + 1]$$

$$= x_0 + 1 > x_0$$

$$= 1 > 0 \equiv \mathit{True}$$