# Review Q & A - Oct. 6

**Programming Test 1** 

PracticeTest1 Solution Walkthrough Lab1 Solution Math Review Lecture

# Announcements/Reminders

Released:

- Lab2 solutions (PDF & a walkthrough tutorial video)
- PracticeTest1 solution

## PracticeTest1 Solution: Context





#### PracticeTest1 Solution: Events (Init, Admission, Leave)



### Lab1 Solution: Machine (Variables & Invariants)



inv6: dom(b) = dom(owner)

Consistent domains of the balance and owner functions (ENV9) - Solution to Exercise 4 of Lab1 (Note. If we declared this invariant as a theorem, then it must be provable/derivable from other invariants that are declared as axioms, which is not the case. Instead, we also declare this invariant as an axiom (i.e., not as a theorem) so that proof obligations (POs) will be generated regarding it being established (by INITIALIZATION) and preserved (by other events).)

## Lab1 Solution: Machine (transfer)

# $\begin{array}{l} \textbf{MACHINE Bank0} \\ // \text{ Initial model of the bank system} \\ \textbf{SEES C0} \\ \textbf{VARIABLES} \\ \text{b balance (ENV2)} \\ \text{d cash drawer (REQ7)} \\ \text{owner account owner (ENV9) - Solution to Exerce} \\ \textbf{INVARIANTS} \\ \text{inv1: } b \in ACCOUNT \rightarrow \mathbb{Z} \end{array}$

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inv1: b \in ACCOUNT \Rightarrow \mathbb{Z}

inv2: d \in \mathbb{Z}

inv3: \forall a \cdot a \in dom(b) \Rightarrow b(a) \geq -c

(ENV3)

inv4: \forall a \cdot a \in dom(b) \Rightarrow b(a) \leq L

(ENV3) - Solution to Exercise 3 of Lab1

inv5: owner \in ACCOUNT \Rightarrow PERSON

(ENV9) - Solution to Exercise 4 of Lab1

inv6: dom(b) = dom(owner)
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