Lecture 9 - Oct. 3

Math Review

Partial Function vs. Total Function Relational Img vs. Function App Modelling Decision: Rel, Pfun, Tfun

Announcements/Reminders

- Lab2 due tomorrow at noon
- Guide for **Programming Test 1** released

* Each domain relie maps to at most one varge value ** Two distance values for the range cannot be Functional Property mapped by the same isFunctional(r) ⇔ ∀ s, †1, †2 • $\{(a, 1), (a, +)\}$ ($s \in S \land \dagger 1 \in T \land \dagger 2 \in T$) $\Rightarrow \quad \text{``ti $=$ t2 $=](($,t_1) \in Y \land ($,t_2) \in Y)}$ $((s, \pm 1) \in \mathbf{r} \land (s, \pm 2) \in \mathbf{r} \Rightarrow \pm 1 = \pm 2)$ -> Q Smallest relation satisfying the functional property. Ø Q How to prove or disprove that a relation r is a function. Q: Rewrite the <u>functional property</u> using <u>contrapositive</u>. Fore $\frac{Drspore}{VI \neq VZ}$ find a writness, which shows that $P \Rightarrow g \equiv 7g \Rightarrow 7p$ $O Trivic(VI \neq VZ (O(3, VI) \in V and (O(3, VZ) \in V) @ Y \neq 0$ Ghav that there's no such (Siti) ~ (Siti) Tr V check to make sine no dom value maps to distint val. values.







Relational Image vs. Functional Application







Modelling Decision: Relations vs. Functions

An organization has a system for keeping <u>track</u> of its employees as to where they are on the premises (e.g., ``Zone A, Floor 23''). To achieve this, each employee is issued with an active badge which, when scanned, synchronizes their current positions to a central database.

Assume the following two sets:

- *Employee* denotes the **set** of all employees working for the organization.
- Location denotes the set of all valid locations in the organization.

Is where_is ∈ Employee <-> Location appropriate?

Is where is \in Employee \rightarrow Location appropriate?

Is where_is ∈ Employee + Location appropriate?

