

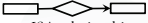
Midterm Review

CPS 116
Introduction to Database Systems

Announcements (Tue. Oct. 4)

- ❖ Homework #1 graded
- ❖ Homework #2 due today
 - Sample solution available tomorrow (Wed.)
- ❖ Midterm exam in class Thursday
 - Open book, open notes
 - Additional copies of sample midterm + solution (from 2009) available today
- ❖ Project milestone #1 due next Thursday
 - See course website for description handout

Topics covered so far

- ❖ Relational model + declarative query language
 - Physical data independence
- ❖ Relational algebra: $\sigma_p, \pi_L, \times, \bowtie_p, \bowtie_L, \rho_L, -, \cup, \cap$
 - Monotonicity
- ❖ Entity-relationship design 
 - Multiplicity, weak entity sets, ISA relationships
- ❖ Design theory (FD's \rightarrow , MVD's \twoheadrightarrow , BCNF, 4NF)
 - Help eliminate redundancy
 - "Key, the whole key, nothing but the key"
 - Attribute closure, chase
- ❖ SQL
 - NULL and three-value logic \rightarrow nifty feature, big mess
 - Bag versus set semantics
 - SEW (or SPJ) queries, subqueries, grouping and aggregation
 - Modifications
 - Constraints \rightarrow the more you know the better you can do
 - Recursion: fixed-point iteration; stratified recursion
- ❖ OLTP vs. OLAP