Lesson Plan 2/13
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- Admin
  - How to knit PDFs for submission if you have errors?
  - SQL examples from last times added to calendar
- HDSC:
- Finishing from last time
  - The arrow discussion
  - Group by and summarize
  - Subqueries
- Operations with two tables (joins)
  - All the joins
- SQL as a data definition language
  - Create, Insert, Delete, Update
  - Views
  - NULLs
- Parting shots
  - Optimization
  - JSON

Entity set $E_1$

Entity set $E_2$

$R: E_2 \times E_2 \quad e.g. \quad (e_1, e_2)$
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Table 1 join

"inner-join": only "natural join": 

Left

Right

Outer Join

likes from two tables

each in E

E1 and e2 ∈ E2

at "player only plays for one team"

e appears once in R

b) "by one" appears once in R


- Table 2 join condition about non-matching entities include entities that satisfy our condition

Join: Keep all entities in left table
Join: Same for right table

Keep all entities
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To list all states in even if no players

Playing in:

Master John

Includes birthdate we need all entries in the database or outer??

Database Query E

SQL: Declarative

How: Procedural
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Query Optimizer:
Find execution plan to evaluate in query most efficiently

- Find candidate plans
- Estimate cost each plan

"Search problem"

How to estimate cost:
→ Estimate of operation size
  "How many rows satisfy a filter"
Set $S \to R$

Describe: operations

1. Describe Results
2. Cost of accessing rows
3. Eight weeks of operation costs

$\Phi$ refers to attitude values
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