TA Sections

- Quiz sections: Th 8:30-9:30, 9:30-10:30
  - AA,AB: THO 202
  - AC: MEB 235

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Today: SQL Server Overview

• Login & change password
• SQL Server’s Object Explorer
• Queries on the IMDB database
• Indexes, Query Plans
Login & Change Password

• SQL Server Authentication
• Windows Authentication
  – You don’t want to put UW/CSE password into Java code, so use SQL Server Authentication
Security

• Logins (Authentication)
  – SQL-Server-Level Security
  – Server-Roles

• User permissions
  – Database-Level Security
  – Database-Roles (db_datareader)
System Databases

• master
  – user accounts, info about other databases, server's processes
• model
  – template for creating new user databases
• msdb
  – scheduling maintenance tasks (alerts, backups)
• tempdb
  – temporary storage (dropped on shutdown)
IMDB Database

- Diagram
Queries

• Star Wars movies
• Star Wars movies between 2003 and 2008
• Number of actors by gender
• Number of movies by genre
• ... for movies released during last 5 years
• ... for movies before 1950
Queries

- Top 20 most popular first (last) names among actors
- Actors who played in most movies
- ... in recent years?
- ... in sci-fi movies?
Queries

• What does this query return?
  – SELECT COUNT(*) FROM (SELECT did, mid FROM Movie_Directors) md

• Same as this?
  – SELECT COUNT(*) FROM Movie_Directors

• And this one?
  – SELECT COUNT(*) FROM (SELECT DISTINCT did, mid FROM Movie_Directors) md

• What’s going on here?
Queries

• How can we find the duplicates?
• To get #unique pairs, we sum duplicates and subtract them
• Sum - Counts
• Compare Results
Indexes

• Clustered Index
  – Determines order in which rows of the table are physically stored
  – Can only have 1 clustered index per table
  – Primary Key Index: unique clustered index

• Non-Clustered Index
  – Separate objects that points to specific rows in table
Queries

• Movies that have at least one actor

  – SELECT COUNT(DISTINCT mid) FROM Casts;
  – SELECT COUNT(*) FROM (SELECT mid FROM Casts GROUP BY mid) a;
  – SELECT SUM(num) FROM (SELECT COUNT(DISTINCT m.id) as num
     FROM Movie m, Actor a, Casts c
     WHERE a.id = c.pid AND m.id = c.mid
     AND a.fname <> " " GROUP BY m.id) b;

• Compare Query Execution Plans
SELECT * 
FROM Actor, Casts, Movie 
WHERE lname='Hanks' and Actor.id = Casts.pid 
and Casts.mid=Movie.id and Movie.year=1995
Which one got picked?

\( \sigma \text{lName} = 'Hanks' \)

\( \sigma \text{year} = 1995 \)

Actor  Cast  Movie

Actor  Cast  Movie
That’s It!
Queries

• Number of actors for each movie
• Problem!
• Solution 1
• Solution 2