Online Analytics Applications

*a quick overview of the material*

What is an online analytics application?

- User: A business user/analyst
- Goal: obtain insights into the data by online interaction with the application
- Typical functions: Aggregate across dimensions, drill-down, pivot,
  - Demo
- Also: what-if, classifications, recommendations and more
- Also: write down derived knowledge, share

Basic Architecture: Pure server-side Web Application with Java, JSP, JDBC/SQL

- Discussion of http, servlets, JSPs
- Using the Java programming language (Java servlets and JSPs) and JDBC/SQL-based databases
- Key lessons:
  - The role of application servers
  - The role of database servers
Using relational databases, SQL

Database programming “fast track” course
- Practical database design techniques
- SQL programming
- Use of JDBC in web applications, connection pools
- PL/SQL basics

Achieving high performance

- Database performance issues for applications where users issue demanding analytics queries
- Basics of performance tuning
  - Understand what’s happening in the database
  - Set up indices
Advanced performance

• Utilize materialized views (precomputation)
  – How to use
  – How to maintain
  – Star schemas

• Utilize column databases
  – Emulate a column database with appropriate reorg of your basic database

• Utilize parallel databases
  – Effectively MapReduce for databases

Visualization & Interaction w/ Ajax

• Maps, charts and other fancy JS components
• How to bring them cleanly in the architecture with aggressive application of Model-View techniques

Grading & Projects

• Midterm: best of 12% or 15%
• Final: 35% or 38%
• Project: 50%
  – a subset of demo functionalities
  – teams of three
  – be careful: do not (over)split the work!
Material & Communications

• Communication via csemoodle.ucsd.edu with your UCSD username/password
• Extension students: Please email asap csehelp@cs.ucsd.edu
  “please add me to the CSE135 moodle”
• Next lecture slides will be available online