Project Proposal and Design Document Overview

CS433

Johannes Gehrke

Updated Office Hours

Johannes Gehrke (johannes@cs.cornell.edu)
Office hours: Fridays, 11-noon, Upson 3105B

Lin Zhu (lz26@cornell.edu)
Office hours: Tuesdays, 1-2pm, Upson 328

Scott Selikoff (sms65@cornell.edu)
Office hours: Fridays, 3:30-4:30pm, Upson 328

Vincent Gu (vg32@cornell.edu)
Office hours: Mondays, 3:30-4:30pm, Upson 328.

Where are you right now?

1. You have found a partner and have some idea about the project who want to do.
2. You have written the draft of the project proposal.
What is coming up?

September 12: Project proposal due.

September 25: You can hand in a draft of the design document, and the Tas will give you feedback. Bring a hardcopy of your draft to class.

October 16: Final design documents due.

Today

- Project Proposal
- Design Document
- Answer any questions that you might have.

Recall: The modified three-tier Architecture

Client Program (Web Browser)

Application Server

Local Database System

External Database System
What is the External Database?

- For simplicity can assume (do not have to):
  - read-only
  - it stores data that has the same structure as your own database, although you do not have to.
- The main requirement:
  - Queries that span both databases
  - You will merge data from the two databases to obtain the result of a query.

Project Proposal

- Choose anything that fits the (modified) three-tier architecture
- Project proposal (high level)
  - The application (airline reservation, …)
  - What is stored in the database system (ticket availability, flight information, …)
  - What is done in the application server (purchase tickets, cancel tickets, …)
  - What is done at the client (log in users, present form-based GUI, …)
  - How two database systems can be used (finding cheapest tickets across airlines)

One Specific Project

- Design and Implement an Interface to the University Photography Database.
Design Document

- Detailed description of how you will implement the functionality in project proposal
- Have extended deadline and spaced out deliverables
  - First draft can be handed in on September 25
  - Final design document due on October 16
- Incrementally develop the design document in three stages.

What should I write in Stage One?

- Database design
- Client functionality
- High-level application flow

Stage One: Database Design

- Entity-Relationship Diagram
- Map E-R diagram to relational tables
  - Domain constraints
  - Key, foreign-key, and other constraints
- For each table
  - Describe its purpose and usage
- Somebody not familiar with your project should be able to use your design document and create relational tables
Stage One: Client Functionality

- Describe web pages to be presented to users in detail
  - What are the different classes of users? (customers, travel agents, etc.)
  - What can each class of users do? (login, reserve tickets, etc.)
  - For each action, what are the inputs the users have to provide? What are the sequence of steps?
  - What are the access restrictions?

Stage One: High-level Application Flow

- Describe how each user action is handled by the application
  - Can be at a high level
  - Example: When the user purchases a ticket, the number of available tickets is reduced by 1. Also, the itinerary for the user is stored in the database
  - Will flesh out details of this in Part 2

Design Document Stage Two

- Includes material from Stage One
- Add details of how application logic is implemented
  - Application flow (flow charts, algorithms)
  - Data (SQL queries, temporary state)
  - Access control (Authorization, etc.)
Stage Two: Application Flow

- For each user action
  - Detailed algorithm/flow chart of what happens
  - "What-if" descriptions (If X then do … else do …)
- First present a high-level description
- Break it down into smaller pieces
- Finally, talk about implementation

Stage Two: Data

- Describe data involved in application logic
- Database interactions
  - SQL queries
  - Data stored in the database
- User state (current user id, etc.)
- Temporary state (cheapest price so far, etc.)

Stage Three: Access Control

- How is access control provided?
  - Authorization mechanism
  - Sessions
- Data they can access/manipulate
Reminder

- Design document counts for 20% of your grade

- Other assignments:
  - JSP: Out on September 25, due on October 8.
  - Stored Procedures: Out on October 9, due on October 22.
  - Servlets and XML: Out on October 23, due on November 7.