

Managing Data & Databases

Session 6
Cloud Services and Hosted Data



Format, Structure, Architecture

- Format

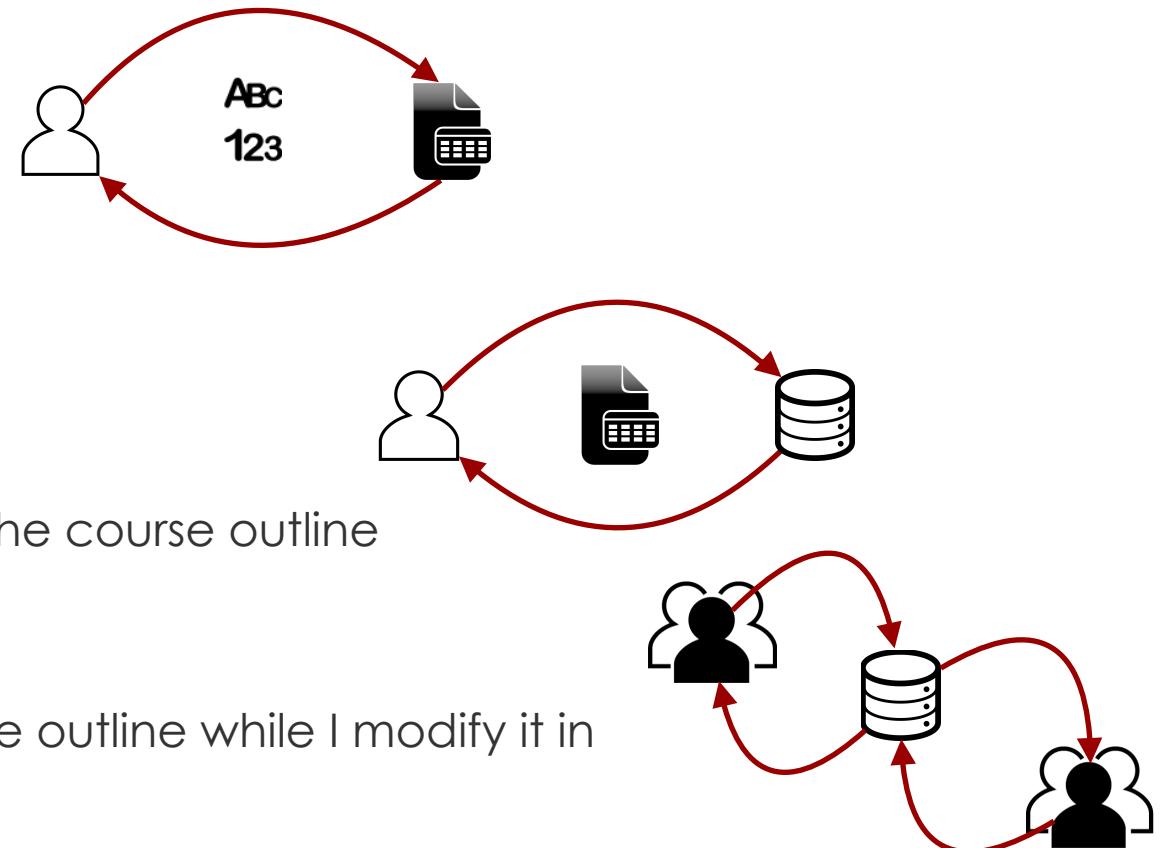
- How to save and retrieve my name
- How to save and retrieve some grades

- Structure:

- How to save and retrieve the class list
- How to save and retrieve all the information in the course outline

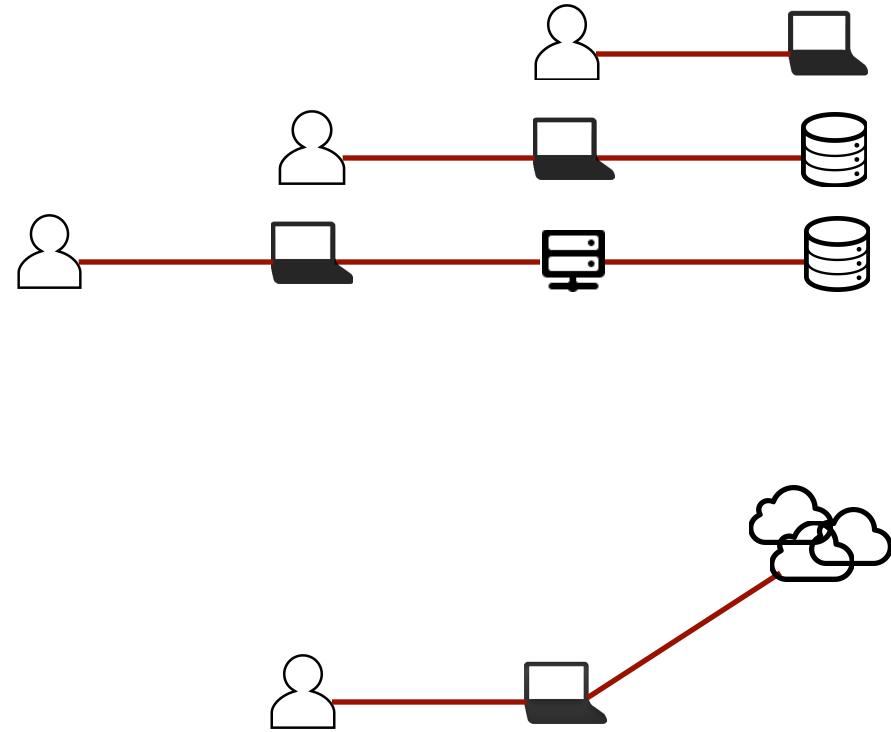
- Architecture:

- How to let the students run queries on the course outline while I modify it in real time

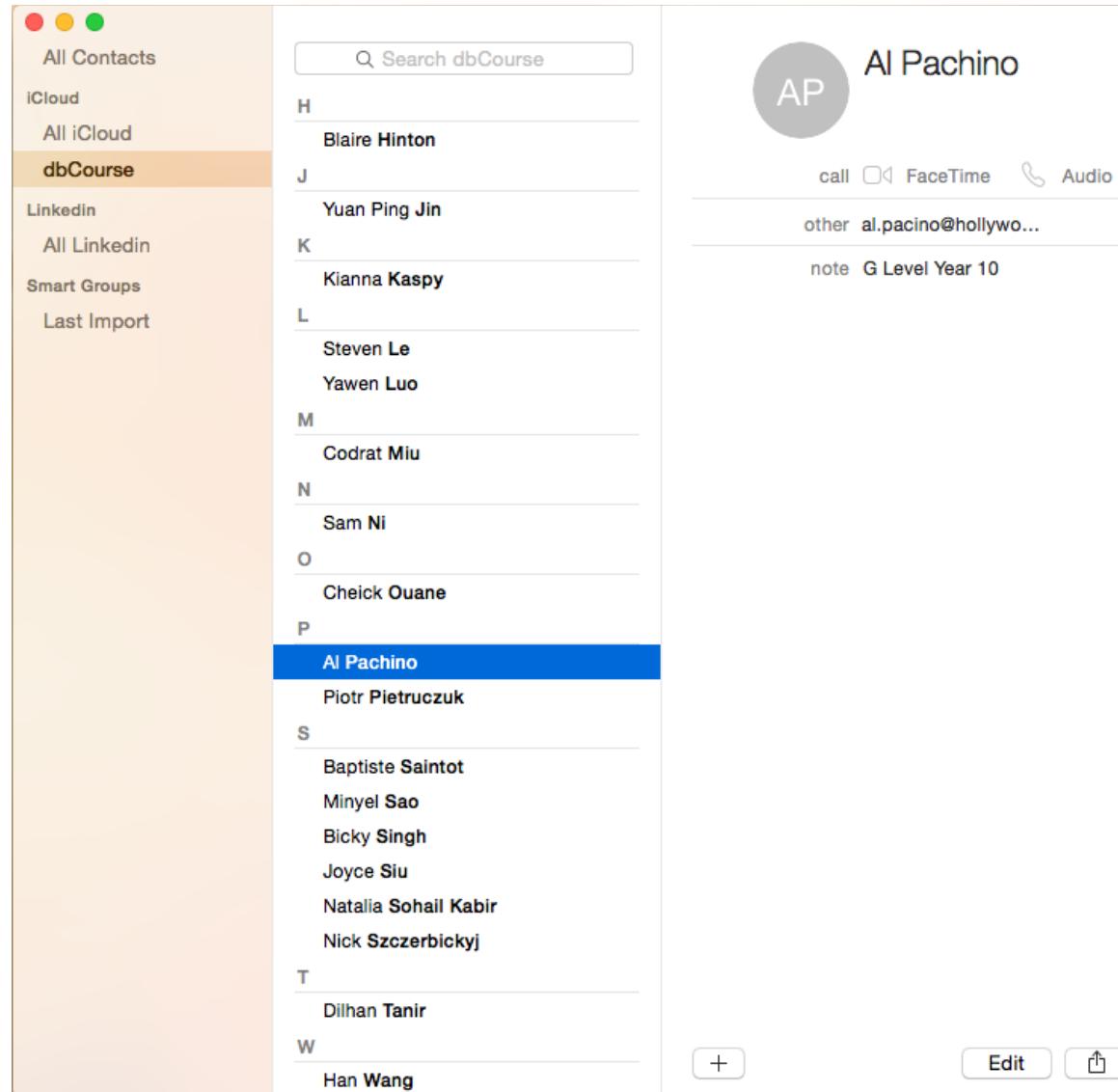


Information System Architecture

- Desktop
- Client-Server (Two-tier)
- Multi-tier
- Cloud?



The Desktop Architecture



The Desktop Architecture

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The screenshot shows a desktop application window titled 'LIBRARY'. The left sidebar contains a navigation menu with sections like 'All Papers' (selected), 'Reading List', 'Recent', 'Last Import', 'Last Read', 'My Collections', and 'Papers' (expanded, showing 'Data Driven', 'Epistemic Objects', 'GBP Term Paper', 'Item Response', 'Microinstitutionalism', 'Pharmacogen', 'Protecode', 'Reuse', 'Readables', 'Samer Course', 'Special Issues', and 'Teaching'). Other sections include 'Shared Collections', 'Recycle' (with 'Archive' and 'Trash' options), and a '+' button. The main content area displays a list of academic papers. At the top of this list is 'The Determinants of Individual Performance and Collective Value in Private-Collective Software Innovation' by Ned Gulley and Karim R Lakhani (SSRN eLibrary, 2010). Below it is 'The Determinants of National Innovative Capacity' by Scott Stern et al. (2000). Further down the list are 'The Development and Enforcement of Group Norms' by Daniel C. Feldman (AMR, 1984), 'The Diffusion of an Innovation Among Physicians' by James Coleman et al. (Sociometry, 1957), 'The Diffusion of Microfinance' by ABHIJIT BANERJEE et al. (2012), 'The Digitization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms' by Chrysanthos Dellarocas (Management Science, 2003), 'The Dimensions and Antecedents of Team Virtuality' by Bradley L. L Kirkman and John E. Mathieu (Journal of Management, 2005), 'The Dimensions, Antecedents, and Consequences of Emotional Labor' by J. Andrew Morris and Daniel C. Feldman (AMR, 1996), and 'The Diffusion of an Innovation among Physicians' by James Coleman et al. (Sociometry, 1957). The right side of the interface includes a search bar ('Q Author'), a toolbar with icons for 'New', 'Edit', 'Delete', 'Import', 'Export', and 'Help', and a status bar at the bottom.

The Diffusion of an Innovation among Physicians¹

JAMES COLEMAN, ELIHU KATZ, *University of Chicago*

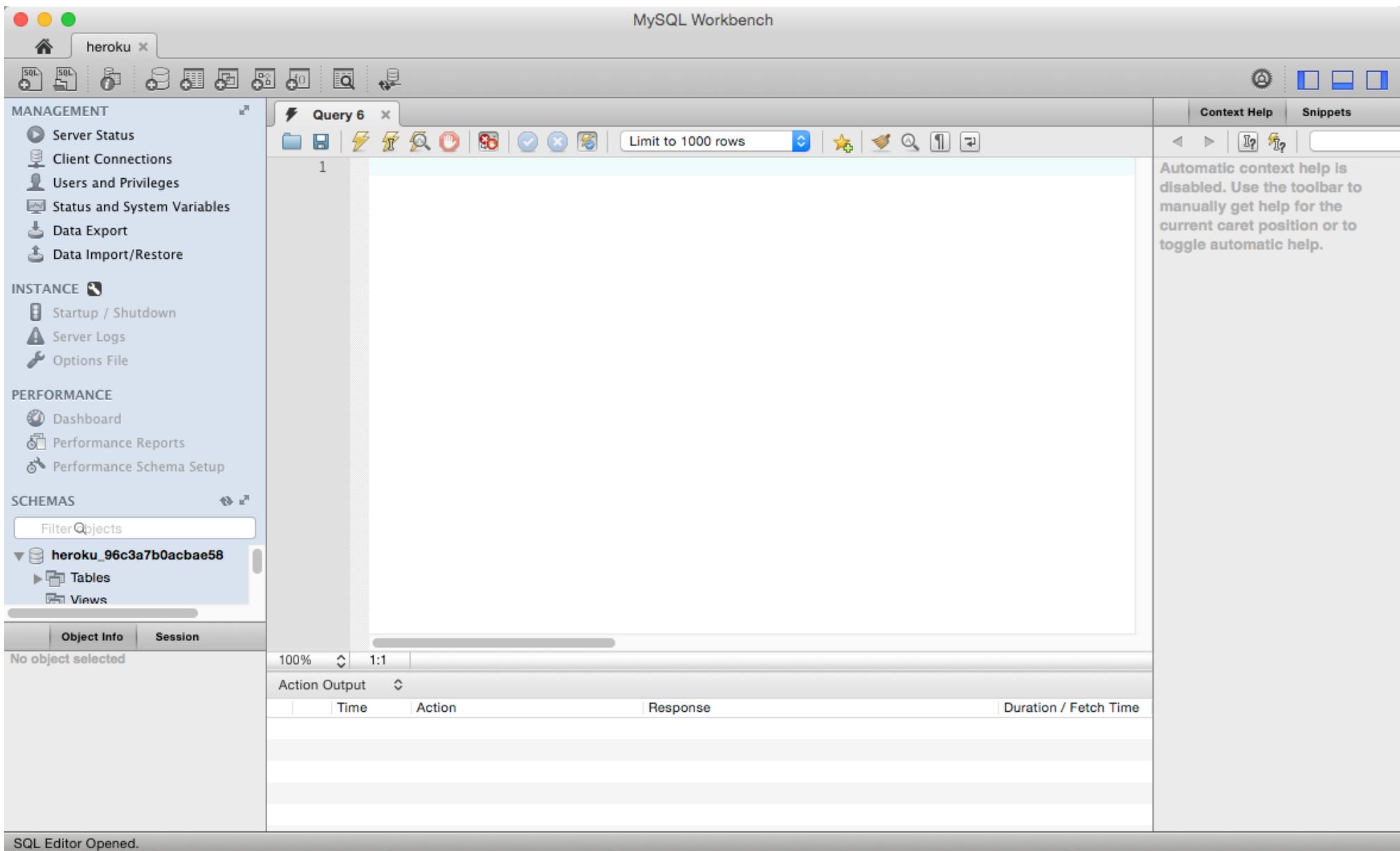
HERBERT MENZEL, *Columbia University*

Anthropologists and sociologists have long been concerned with the processes through which customs, practices, attitudes, or messages spread. Traditionally, these processes have been studied by examining the ecological distribution of the trait at successive points in time. In a few cases, the actual transmission of messages from person to person has been traced out. (e.g., 1, 3, 4, 5, 10) A still different approach to the study of this

Sociometry 1957 Coleman.pdf

The Two-tier Architecture

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The Multi-tier Architecture

The screenshot shows a web browser window for the McGill Minerva system at horizon.mcgill.ca. The browser's address bar and various tabs are visible at the top. The main content area features a large banner with the McGill logo and the word "Minerva". Below the banner is a navigation menu with links for MAIN MENU, Personal, Student, Faculty, Employee, Applicant, and Financial Aid/Awards. A search bar with a "Go" button is also present. The main content area is titled "Main Menu" and displays a welcome message: "Welcome, Mahmood Shafeie Zargar, to Minerva - McGill's Administrative Systems! Last web access on Jan 24, 2015 at 03:05 PM". It then lists several menu sections: Personal Menu, Student Menu, Faculty Menu, Employee Menu, Applicant Menu, and Financial Aid & Awards Menu, each with a brief description of its functions.

horizon.mcgill.ca

Main Menu

MAIN MENU Personal Student Faculty Employee Applicant Financial Aid/Awards

Search Go FRANÇAIS SITE MAP HELP EXIT

Welcome, Mahmood Shafeie Zargar, to Minerva - McGill's Administrative Systems! Last web access on Jan 24, 2015 at 03:05 PM

Personal Menu
Change Minerva PIN or Security Question; Create / Change McGill Password; Update addresses, phone numbers (mobile and landline) and emergency contact information, Email address, name, and other personal data, View or add your Canadian Social Insurance Number.
Important Notice for Students: Please read the [McGill Email Policy](#).

Student Menu
Register for course sections; Add/Drop course sections; Change your curriculum; Choose Satisfactory/Unsatisfactory option; Withdraw from course sections; Review fees; Verify your academic program; Apply for graduation; View grades and order transcripts; Tax receipts; Generate a Degree Evaluation (selected programs); Mercury.

Faculty Menu
Display your class list; View your class schedule; Enter final grades; Create a course in *myCourses*; Create requests for course proposals and revisions; View your multiple choice exam marks and statistics reports.

Employee Menu
Pay stubs; Direct Deposit; Benefits; Job summary; Tax slips; Employee equity; Salary policy confirmation; Floating holiday conversion; Staff training registration; Organization Chart.

Applicant Menu
File an application for admissions; View status of existing applications, including the receipt of supporting documents; Confirm space in Residence (eligible students).

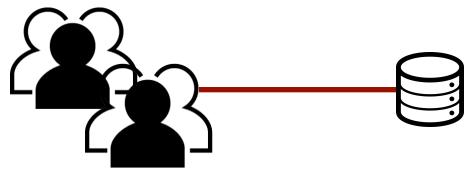
Financial Aid & Awards Menu
Apply for Financial Aid; View application status; View award status; View document requirements; View loan details.

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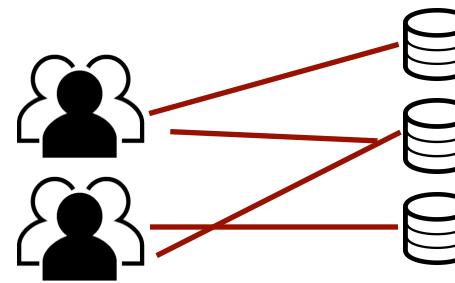
Some Cloudy Terms

- Commodity Hardware
- Virtualization
- Scalability
- SaaS (Software as a service)
- PaaS (Platform as a service)
- Load Balancing
 - Cluster vs. Worker
 - Sharding vs. Partitioning vs. Replication
- Elasticity (Computation & Bandwidth)
 - Dedicated vs. Reserved vs. Provisioned vs. On-demand vs. Spot

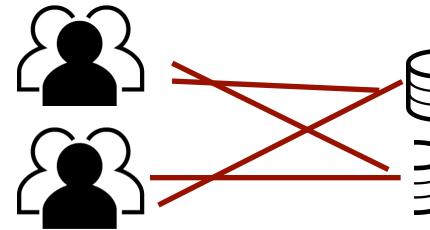
Load balancing



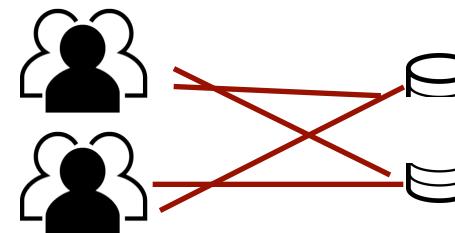
Replication



Partitioning



Sharding



Why is cloud worth it for clients?

Why is cloud worth it for providers?

What is problematic about cloud? (for clients)