CS 174A
Fundamentals of Database Systems
Discussion Session
Logistics

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- **Office Hours**
  - Wednesday and Thursday, 11:30 - 12:30.
  - Trailer 936.
  - Or by appointment.

- **Questions**
  - General interest? Use Piazza.
  - Individual concern? Make it via private Piazza message to instructors.
  - Anything else you’d like to discuss? Email me 😊

- You may attend any discussion section or office hours by any of the course TAs.
... About your TA

- Software Engineer, Computer Scientist, and currently a PhD student.

- Member of the *Computational Applied Science Laboratory* (CASL)
  - **Office:** Engineering II, Room 2315.
  - **Advisor:** Prof. Frédéric Gibou.

- Research interests
  - Computer Graphics.
  - Machine Learning.
  - Applied Mathematics.

- What I will do:
  - Help you as much as I can.
  - Learn with and from you.
  - Work with you as another teammate.

- What do you expect from our discussion sessions?

- What about materials, slides, etc.?
... About Piazza

- Make sure your questions are clear
  - Be specific.
  - Include as much information as possible.
  - For homework assignments and project, avoid posting your (attempted) solution or code - It’s against the law!
  - If in doubt, please ask us.

- For questions related to your approach to homework assignments or project, please come to office hours or arrange for an appointment 😊

http://piazza.com/ucsb/fall2019/cs174a
Checking in

- What do you think a database is good for?
- Can you name a few examples of databases? How do they differ?
  - Critical consistency: banks, airplane reservations, etc.
  - Eventual consistency: your preferred social network.
  - Centralized versus distributed.
  - Etc.
- Can you think on the **type of operations** you would perform to a DB?

Queries
Insertions
Deletions
Updates
An Example: Online Store (Amazon)

- What kinds of data would you store in this Amazon DB?
  - Products, Customers, Purchases.

- What information do you need to store for Products?
  - Name, Price, Quantity.

- We acquired a new product to sell on Amazon, but it has the same Name and Price than an already-existing product in the DB. Is there any problems if we store it in the DB? If so, how would you solve the issues?
  - Issue: duplicity. A customer may end up being charged for multiple products they didn’t purchase.
  - Solution: enforce uniqueness, on, say, a product’s Name, which may work as the product ID.
There are millions of products in the DB, and a customer wants to search for those whose price is within $5 and $10. How do we apply the filter quickly?

- Create an index on the product Price.

We have thousands of customers who look and purchase items. How can we handle concurrent queries to product listings? What about concurrent updates to a product Quantity, for example?

- Introducing transactions.
- Locking system!
Questions?