



Introduction to Database Systems: CS312

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14 January 2019

Meeting Time

Please read the syllabus before next class!!

Introduction
to Class

Instructor's
Office Hours

Overview

Consider this!

Group work

- Lecture, Discussion, Presentations, and Group Work:
 - Monday, Wednesday, Friday 10:00AM - 10:50AM, Alden Hall, Room 101
- Laboratory Session:
 - Friday 2:30PM - 4:20PM, Alden Hall, Room 101

Instructor's Office Hours'

Please make an appointment first!

Introduction
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Group work

- Monday: 2:00pm – 4:00pm (10 minute time slots)
- Tuesday: 11:00am – 12pm *and* 2:30am – 4:30pm (10 minute time slots)
- Thursday 11:00pm – 12:00pm (10 minute time slots)

To schedule a meeting with me during my office hours, please visit my Web site and click the “Schedule” link in the top right-hand corner. Now, you can view my calendar or by clicking “schedule an appointment” link browse my office hours and schedule an appointment by clicking the correct link to reserve an open time slot.

Websites

Please read the syllabus before next class!!


Introduction
to Class


Instructor's
Office Hours


Overview


Consider this!


Group work

 :: *Data Analytics* :: CS301


 :: *Discrete Structures* :: CS102


 :: *Bioinformatics* :: CS300

 :: *Operating Systems* :: CS440

 :: *Jr. Seminar* :: CS580

 :: *Theory of Computing* :: CS230

 :: *Databases* :: CS312

 :: *Codester Workshop*

- **Instructor website:**

<http://www.cs.allegheny.edu/sites/obonhamcarter/>

- **Course webpage:**

<http://www.cs.allegheny.edu/sites/obonhamcarter/cs312.html>

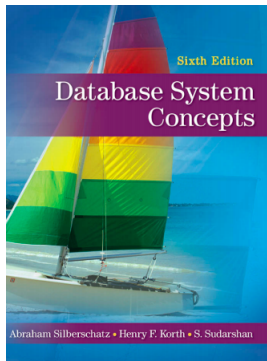
Introduction
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Overview

Consider this!

Group work



- Database Systems Concepts, *Fifth or Sixth Edition*.
Avi Silberschatz, Henry F. Korth, and S. Sudarshan.

Course Overview

Introduction
to Class

Overview

Consider this!

Group work

- Database systems
- Data models and schemas
- Database design and implementation
- SQL programming
- Python for automatic queries
- XML
- Object-based databases
- Data Warehousing and Mining
- Distributed Databases
- NoSQL databases (i.e., MongoDB)
- And more!!

Consider this!

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Consider this!

Group work

What is a Database??

Some Ideas...

Introduction
to Class

Overview

Consider this!

Group work

Definitions...

- *"A set of information held in a computer"* - Oxford English Dictionary
- *One or more large structured sets of persistent data, usually associated with software to update and query the data" - Free On-Line Dictionary of Computing*
- *"A collection of data arranged for ease and speed of search and retrieval" -Dictionary.com*

Database Systems

Introduction
to Class

Overview

Consider this!

Group work



- Database systems allow users to work with data:
 - Storing
 - Updating
 - Retrieving
 - Organizing
 - Providing protection and security

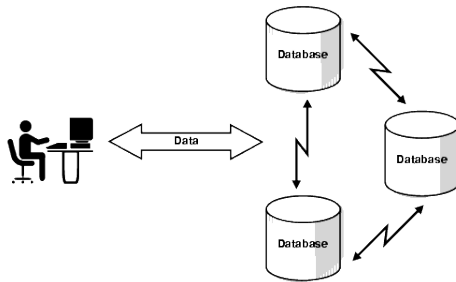
Database Systems

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Consider this!

Group work



- A database system consists of ...
 - Data and Container Design
 - Software and its Hardware
 - Users (do not forget this part!)
 - Implementation of the above
- (We will focus mainly on the design, software and programming)

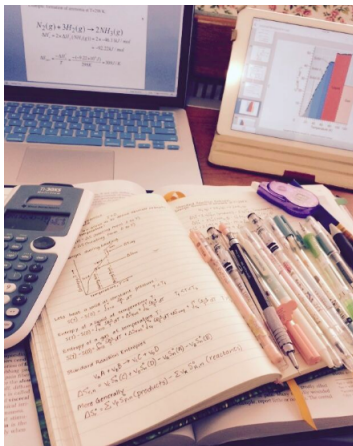
Let's Discuss...

Introduction
to Class

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Consider this!

Group work



So, why study database systems??



- Databases are useful
 - Many computing applications deal with large amounts of information
 - Database systems give a set of tools for storing, searching and managing this information
- Databases in CS
 - Databases are a core topic in computer science
 - Basic concepts and skills with database systems are part of the skill set you will be assumed to have as a CS graduate

Database Administrator salaries in United States

\$94,769 per year [?]

Based on 5,145 salaries



[Database Administrator salaries by company in United States](#)

<https://www.indeed.com/q-Database-jobs.html>

[https://www.computerscience.org/careers/
database-administrator/](https://www.computerscience.org/careers/database-administrator/)

Careers with Data and Databases

- 10) **Data Analyst** Annual Salary Range: \$77,500-\$118,750
Increase in Salary Over the Last Year: 3.8 percent
- 9) **Database Administrator** Annual Salary Range:
\$98,500-\$148,500 Increase in Salary Over the Last Year: 3.6 percent
- 8) **Database Developer** Annual Salary Range:
\$108,000-\$161,500 Increase in Salary Over the Last Year: 5.1 percentone of the top-three highest increases
- 7) **Data Modeler** Annual Salary Range: \$111,000-\$161,500
Increase in Salary Over the Last Year: 3.9 percent
- 6) **Data Scientist** Annual Salary Range: \$116,000-\$163,500
Increase in Salary Over the Last Year: 6.4 percentthe highest increase of all data science jobs

<https://www.northeastern.edu/graduate/blog/highest-paying-big-data-careers/>

- 5) **Business Intelligence Analyst** Annual Salary Range: \$118,000-\$171,500 Increase in Salary Over the Last Year: 4.3 percent
- 4) **Database Manager** Annual Salary Range: \$122,250-\$177,000 Increase in Salary Over the Last Year: 3.7 percent
- 3) **Data Warehouse Manager** Annual Salary Range: \$129,000-\$179,000 Increase in Salary Over the Last Year: 4.1 percent
- 2) **Data Architect** Annual Salary Range: \$131,250-\$184,000 Increase in Salary Over the Last Year: 4.1 percent
- 1) **Big Data Engineer** Annual Salary Range: \$135,000-\$196,000 Increase in Salary Over the Last Year: 5.8 percentthe second-highest salary increase

<https://www.northeastern.edu/graduate/blog/highest-paying-big-data-careers/>

Applications of Database

Where do databases help in business?

Introduction
to Class

Overview

Consider this!

Group work



FedEx and information handling

<https://www.youtube.com/watch?v=1SZdKK14zgq>

Applications of Database

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Overview

Consider this!

Group work



How do you think FedEx uses its
database systems?



Introduction to Class

Overview

Consider this!

Group work

- **All package information must be easily accessible**
- APEC tariff database: An Internet-base customs and trade database
- COSMOS (Customer Operations Service Master On-line System): A computerized package tracking system

Group Work Discussion

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to Class

Overview

Consider this!

Group work

General applications of databases

- 1 Chose one application of a database.
- 2 Describe how databases are used in that application.
- 3 What is the data in your application?
- 4 Who are the users of the application or database?
- 5 Share one an important and interesting fact that your group uncovered concerning databases in your application.
- 6 In your opinion, how could this work be done without the database?