

CS363: INTR DATABS MGT SYS

Instructor: Qi Li

Department of Computer Science

Iowa State University

qli@iastate.edu

Office: Atanasoff 102

Outline



Course Policies



Tools



Course overview

Course Resources

- Instructor: Qi Li
 - Class hours: TT 9:30-10:45 am
 - Office hours: TT 10:45-11:59 am
- Course website: Canvas
 - submission of homework, quizzes, grades, etc.
- Course website: Teams
 - Announcements, lecture slides, and meetings
- Course website: Piazza
 - Discussions, Q&A
 - Piazza are also available from Canvas and Teams

Course Format

◆ Online

- Lecture: Teams + studio (for short videos)
 - ◆ Recorded
- Office hour: Teams + Webex (TA)
 - ◆ Not recorded
- Martial: Canvas + Teams
 - ◆ Slides and notes: Teams
 - ◆ Assignments: Canvas
 - ◆ Exams & quizzes: Canvas
- Discussion: Piazza

Assessments

- ◆ Weekly Quizzes: 10% (highest 10 will count)
- ◆ 4 homeworks: 20%
- ◆ 3 programming projects: 25%
- ◆ 3 exams: 45%

You should expect 3-6 additional hours of outside work per week

Other Policies

- **Academic Honesty**
 - Students who plagiarize other work in any part of assignment/tests will receive F as the letter grade for this course, and will be reported to the university.
- **Disability**
 - If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me soon.

How to perform well

- Attend lectures
 - No class attending required, but you are required to know everything covered in lectures
- Practice
- Make friends
 - No friend is needed, but they will be your treasures
- Ask questions, in-class or off-class
 - Your instructor and TAs are here to help

How to perform well

- Think about the lectures
 - What concepts are covered?
 - Are they simple or complicated?
 - Why are they important?
 - Do they inspire something beyond the lectures?
 - ◆ e.g., How can I apply those techniques to solve real-world problems?
- ◆ Review your weekly quizzes

Outline



Course Policies




Tools



Course overview

Walk Through Canvas


Account
Dashboard
Courses
Calendar
Inbox
History
Studio
Help


S2021-COM S-363 > Syllabus

Spring 2021

Home
Syllabus
Modules
Assignments
Quizzes
Discussions
Grades
People
My Surveys
Piazza
Webex

Recent Announcements

COM S 363 Section 2 (Spring 2021)

[Jump to Today](#)

Welcome to ComS 363 Spring 2021

Instructors

Dr. Qi Li
Email: qli@iastate.edu

Current Catalog Description

(3-0) Cr. 3. F.S. Prereq: Minimum of C- in COM S 228; ENGL 250
Relational, object-oriented, and semistructured data models and query languages. SQL, ODMG, and XML standards. Database design using the entity-relationship model, data dependencies, and object definition language. Application development in SQL-like languages and general-purpose host languages with application program interfaces. Information integration using data warehouses, mediators, and wrappers. Programming Projects.


Format: online

Class Information

Lecture session 2: Tuesday, Thursday 9:30am -10:45am
Lecture Meets: 01/25/2021 - 05/01/2021

[View Course Stream](#)
[New Analytics](#)
[View Course Calendar](#)
[View Course Notifications](#)

To Do

 [Orientation: Syllabus](#) ×
Jan 26, 2021 at 11:59pm |


<	December 2020							>
29	30	1	2	3	4	5		
6	7	8	9	10	11	12		
13	14	15	16	17	18	19		
20	21	22	23	24	25	26		
27	28	29	30	31	1	2		
3	4	5	6	7	8	9		


Course assignments are not weighted.


Walk Through Canvas


- ◆ Check Canvas/email frequently for announcement!
- ◆ All submissions through Canvas


Walk Through Canvas - Module


IOWA STATE


Account


Dashboard


Courses

Calendar

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Studio

Help

≡ S2021-COM S-363 > Modules

Spring 2021

Collapse All

Export Course Content

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Syllabus

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▼ Orientation: Begin Here


Complete One Item


 Orientation: Your Instructor


 Orientation: Syllabus

Jan 26, 2021 | Mark done

☐

 Orientation: Communication Guidelines

 Orientation: Course Technology

 Orientation: Academic Support

Walk Through Canvas - Module

- ◆ Activities organized based on week
- ◆ You can also find the submission link here
- ◆ There are required tasks for modules

Walk Through Canvas - Module

The screenshot displays the Canvas LMS interface for a course titled "S2021-COM S-363". The left sidebar contains navigation links: Account, Dashboard, Courses, Calendar, Inbox, History, Studio, and Help. The main content area shows the course title and a list of modules. The "Orientation: Syllabus" module is highlighted with a yellow box, and the "Complete One Item" button is also highlighted. The "Orientation: Syllabus" module includes a date "Jan 26, 2021" and a "Mark done" link.

IOWA STATE

Spring 2021

Account

Dashboard

Courses

Calendar

Inbox

History

Studio

Help

Home

Syllabus

Modules

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Webex

S2021-COM S-363 > Modules

Collapse All

Export Course Content

Orientation: Begin Here

Complete One Item

Orientation: Your Instructor

Orientation: Syllabus



Jan 26, 2021 | Mark done

Orientation: Communication Guidelines


Orientation: Course Technology

Orientation: Academic Support


Walk Through Canvas - Module




Account




Dashboard




Courses




Calendar




Inbox




History



Studio



Help

 S2021-COM S-363 > Pages > Orientation: Syllabus

Spring 2021

Home

Syllabus

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Webex

Orientation: Syllabus

To-Do Date: Jan 26 at 11:59pm

Course Information

Class Information

Lecture session 2: Tuesday, Thursday 9:30am -10:45am @ online (Instructor: Qi Li)

Course Outcomes

The course is aimed at students with little or no background in database management systems (DBMS). At the end of the course students should be able to:

- Design and implement database applications using commercial DBMS
- Understand the implementation of a typical DBMS

Tentative Course Topics

- Design and implementation of database applications
 - ER-model
 - Relational data model and mapping from ER-to relations
 - Implementation of a database system design
 - Relational algebra
 - SQL and Neo4J
- Internal of database management systems
 - Storage management
 - Implementation and cost estimation of basic operators
 - Query optimization
- Other topics (depends on time)

Click here

☐ Mark as done

Walk Through Canvas - Piazza

≡ S2021-COM S-363 > COM S 363 Section 2 (Spring 2021)

Spring 2021

Home

Syllabus

Modules

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Quizzes

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piazza

Piazza Setup

Confirm Enrollment

School: Iowa State University
LMS Course Name: COM S 363 Section 2 (Spring 2021)
LMS Course Number: S 2021-COM S-363

Piazza Class Term: Spring 2021
Piazza Class Name: COM S 363 (Spring 2021)
Piazza Class Number: S 2021-COM S-363

Create Piazza Account

Your Email:

Your Name:

Your Role:

Please enter your email to check for an existing Piazza account. You can then create or link this LTI system to your account, if an account exists.

Welcome to Piazza!

Piazza is an intuitive platform for instructors to efficiently manage class Q&A. Students can post questions and collaborate to edit responses to these questions. Instructors can also answer questions, endorse student answers, and edit or delete any posted content.

Piazza is designed to simulate real class discussion. It aims to get high quality answers to difficult questions, fast!

The name Piazza comes from the Italian word for plaza—a common city square where people can come together to share knowledge and ideas. We strive to recreate that communal atmosphere among students and instructors.

[See why Piazza works](#)

Company

[Our Story](#)
[Our Investors](#)
[Jobs](#)

Product

[Why Piazza Works](#)
[Features](#)
[Product FAQ](#)
[Instructor FAQ](#)
[LMS Integration](#)
[Accessibility](#)

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[Privacy Policy](#) · [Copyright Policy](#) · [Terms of Service](#) · [FERPA](#)


Walk Through Canvas - Piazza


- ◆ Piazza for online discussions
- ◆ You can post Anonymously on Piazza
- ◆ Sign-up link
- ◆ [Piazza.com/iastate/spring2021/s2021coms363](https://piazza.com/iastate/spring2021/s2021coms363)
- ◆ NOTE: this piazza is shared for both sections. Homework and Projects are the same for both sections, but EXAMS ARE NOT. If you have questions regarding EXAMS, please email me directly.


Walk through Teams


 Microsoft Teams


 Search





 Activity


 Chat


 Teams


 Assignments


 Calendar


 Calls

 Files

 Zoom





 Apps

 Help


[< Back](#)

Join or create a team






Create a team




Create team



Join a team with a code

Enter code


Got a code to join a team? Enter it above.



Degree Audits

Public


Degree Audits



AV Professionals

Public


Audiovisual Professionals



F20 ME Welcome Back Event

Public

Fall 2020 Mechanical Engineering
Welcome Back Event



Hixson-Lied Student Success C...

Public

Hixson-Lied Student Success Center--
Building group

Walk through Teams – join by code

Microsoft Teams

Search

< Back

Join or create a team

Search teams

Create a team

Join a team with a code

Enter code

Got a code to join a team? Enter it above.

Degree Audits

Public

Degree Audits

AV Professionals

Public

Audiovisual Professionals

F20 ME Welcome Back Event

Public

Fall 2020 Mechanical Engineering
Welcome Back Event

Hixson-Lied Student Success C...

Public

Hixson-Lied Student Success Center--
Building group

Enter code:
7u4vknw

Walk through Teams – Meeting

The screenshot shows a Microsoft Teams channel interface. At the top, there is a navigation bar with tabs: 'General' (highlighted with a yellow circle), 'Posts', 'Files', 'Class Notebook', and '3 more'. Below the navigation bar, there are two buttons: 'Upload Class Materials' and 'Set up Class Notebook'. The main content area shows a post from 'Li, Qi [COM S]' dated '12/13/20 1:27 PM'. The post text is 'Added a new tab at the top of this channel. Here's a link.' Below the text is a link card for 'Piazza'. Below the link card is a 'Reply' button. Below the post is another post from 'Li, Qi [COM S]' dated '12/13/20 1:20 PM' with the text 'lecture'. Below this text is a meeting card for 'lecture' with the text 'Occurs every Tue and Thu @9:30 AM until 4/30/21'. The meeting card is highlighted with a yellow circle. Below the meeting card is a 'Reply' button. At the bottom of the screenshot, there is a status bar that says 'Meeting ended: 56s'.

General Posts Files Class Notebook 3 more +

Upload Class Materials

Set up Class Notebook

Li, Qi [COM S] 12/13/20 1:27 PM
Added a new tab at the top of this channel. Here's a link.

Piazza

Reply

Li, Qi [COM S] 12/13/20 1:20 PM Edited
lecture

lecture
Occurs every Tue and Thu @9:30 AM until 4/30/21

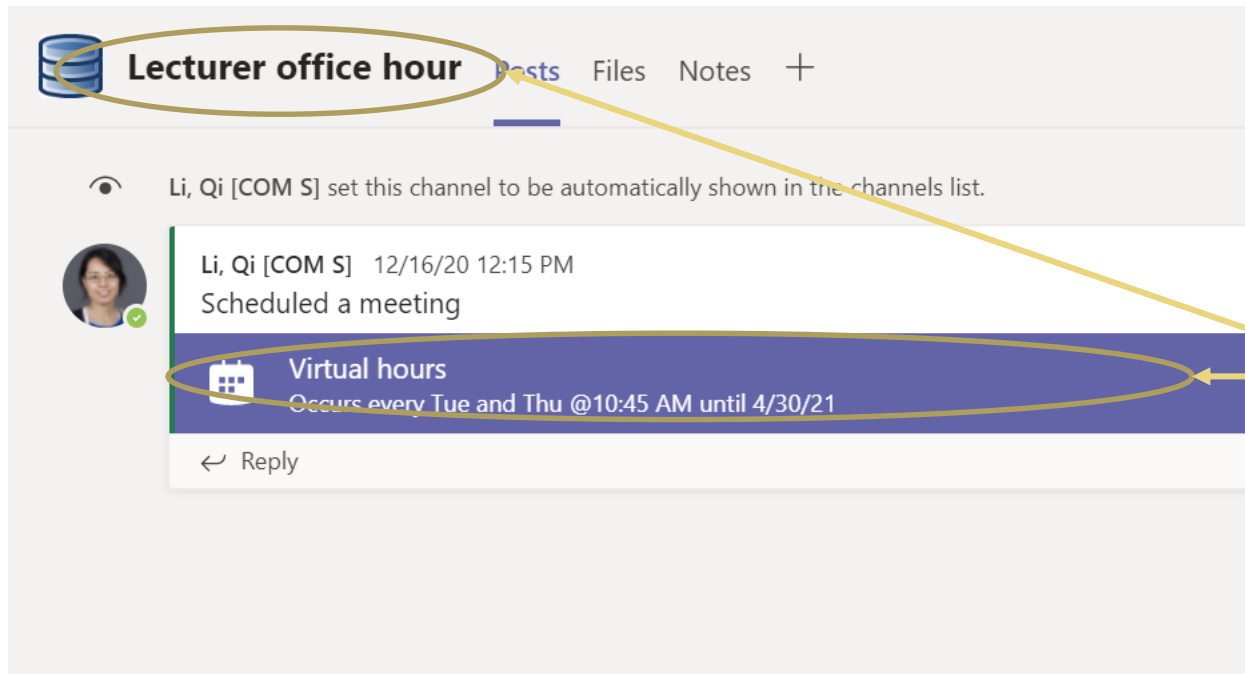
Meeting ended: 56s

Reply

December 16, 2020

Join lecture

Walk through Teams – Meeting



Join office hour

Walk through Teams

The screenshot displays the Microsoft Teams interface. At the top, there is a search bar and a user profile. Below this, the 'General' channel is selected. The 'Files' tab is highlighted with a yellow circle, and a yellow arrow points from it to the 'Class Materials' folder, which is also circled in yellow. A text box on the right states 'All lecture slides are available here' with an arrow pointing to the 'Class Materials' folder. The interface includes a top navigation bar with a search bar, a user profile, and a 'Meet' button. Below this is a secondary navigation bar with tabs for 'General', 'Posts', 'Files', 'Class Notebook', 'Assignments', 'Grades', and '1 more'. The 'Files' tab is selected. Below the navigation bar is a toolbar with buttons for '+ New', 'Upload', 'Sync', 'Copy link', 'Download', and 'All Documents'. The main content area shows a list of files and folders. The 'Class Materials' folder is highlighted with a yellow circle. The list has columns for 'Name', 'Modified', and 'Modified By'. The 'Class Materials' folder is listed with a yellow folder icon, the name 'Class Materials', and the modified by 'Li, Qi [COM S]'.

Search

General Posts **Files** Class Notebook Assignments Grades 1 more New

+ New Upload Sync Copy link Download ... All Documents

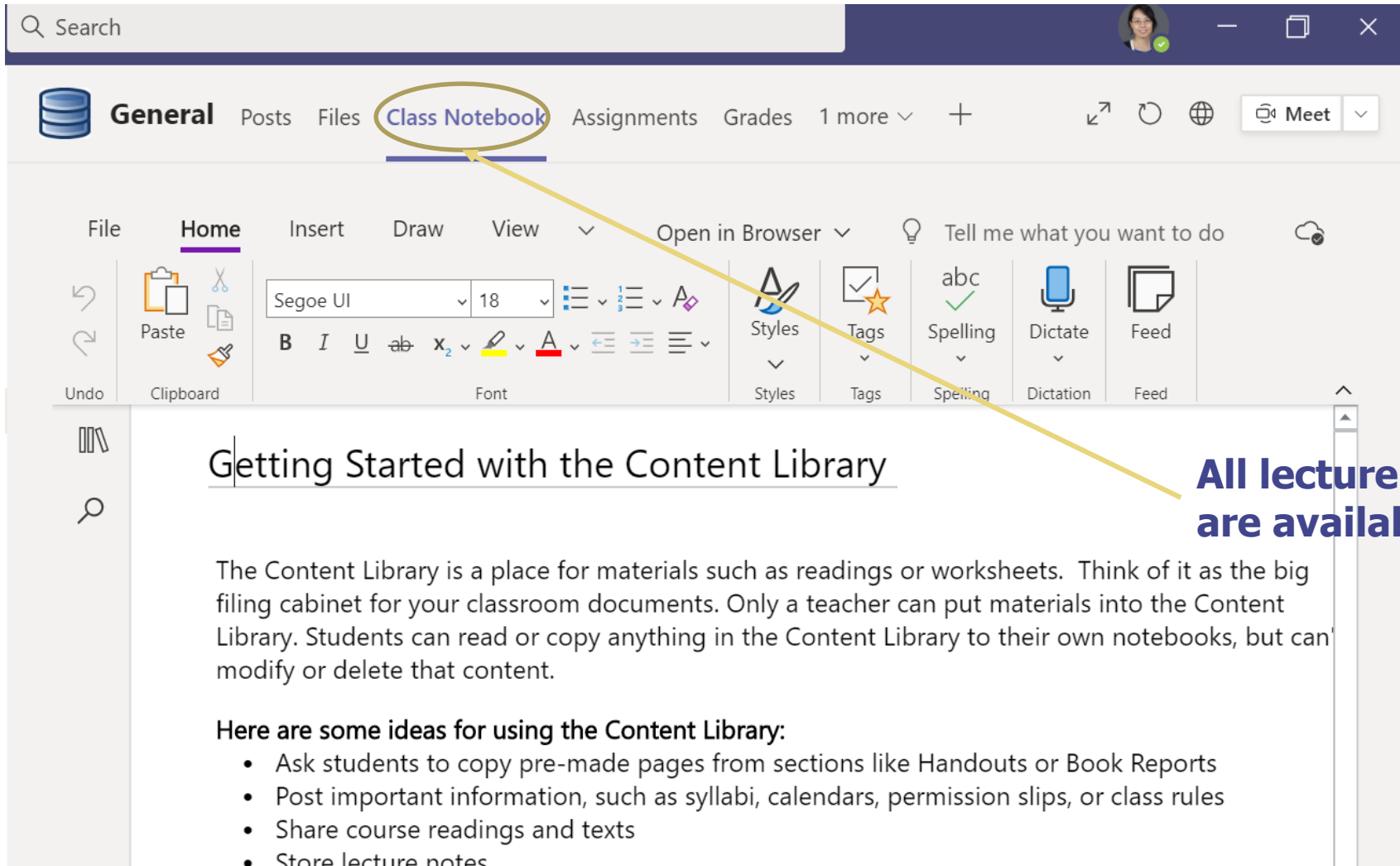
General

Name Modified Modified By

Class Materials Li, Qi [COM S]

All lecture slides are available here

Walk through Teams



Search

General Posts Files **Class Notebook** Assignments Grades 1 more +

File Home Insert Draw View Open in Browser Tell me what you want to do

Undo Paste Font Styles Tags Spelling Dictation Feed

Getting Started with the Content Library

The Content Library is a place for materials such as readings or worksheets. Think of it as the big filing cabinet for your classroom documents. Only a teacher can put materials into the Content Library. Students can read or copy anything in the Content Library to their own notebooks, but can't modify or delete that content.

Here are some ideas for using the Content Library:

- Ask students to copy pre-made pages from sections like Handouts or Book Reports
- Post important information, such as syllabi, calendars, permission slips, or class rules
- Share course readings and texts
- Store lecture notes

**All lecture notes
are available here**

Walk through Teams

The screenshot shows the Microsoft Teams interface. On the left is a dark blue sidebar with navigation icons for Activity, Chat, Teams, Assignments, Calendar, Calls, Files, Zoom, Apps, and Help. The main area displays the 'General' channel of a team named 'COM S 363 section 2 sp...'. At the top of the channel is a header bar with tabs for General, Posts, Files, Class Notebook, Assignments, Grades, and a '1 more' dropdown menu. The 'New' button in the '1 more' dropdown is circled in yellow. Below the header is a toolbar with buttons for '+ New', 'Upload', 'Sync', 'Copy link', 'Download', and 'All Documents'. A table below the toolbar lists files in the channel. A yellow arrow points from the text 'Click here for Piazza' to the 'New' button.

Name	Modified	Modified By
Class Materials		Li, Qi [COM S]

Click here for
Piazza

Walk through Teams

The screenshot displays the Microsoft Teams application interface. On the left is a dark blue sidebar with navigation icons for Activity, Chat, Teams, Assignments, Calendar, Calls, Files, Zoom, Apps, and Help. The main area is divided into three sections. The top section shows the 'All teams' list with a team named 'COM S 363 section 2 sp...'. The middle section is the 'General' channel of this team, featuring a search bar, a 'New Post' button, and a list of pinned and recent posts. The bottom section is a 'Piazza' class page, which includes a 'Class at a Glance' summary, a 'Student Enrollment' section, and a 'Share Your Class' section with a demo link.

Teams Interface Overview

- Left Sidebar:** Activity, Chat, Teams, Assignments, Calendar, Calls, Files, Zoom, Apps, Help.
- Top Bar:** Search bar, user profile, and window controls.
- Channel Header:** General | Posts | Files | Piazza | 3 more | +
- Channel Content:**
 - Search:** Search or add a post...
 - PINNED:**
 - Private Search for Teammates! (12/10/20)
 - LAST WEEK:**
 - Private Introduce Piazza to your stu... (Thu)
 - Private Get familiar with Piazza (Thu)
 - Private Tips & Tricks for a successf... (Thu)
 - Welcome to Piazza! (Thu)
- Piazza Class Page:**
 - Class at a Glance:** Updated 29 seconds ago. Reload
 - 5 unread posts (5 total p)
 - no unanswered questions (5 total c)
 - no unresolved followups (0 instru)
 - Student Enrollment:** 0 enrolled (n/a avg. n)
 - Share Your Class:**
 - Professors appreciate Piazza best when they see how it is being used.
 - Allow colleagues to view your class through a demo link - a restricted, read on students' names are anonymized and all student information hidden.
 - https://piazza.com/demo_login?nid=kijj6ptgao49m&auth=82e48e9
 - Opening this link in the same browser will log you out as c
 - Product Updates: November 1**
 - We've created this space in your home screen to inform you of product update
 - [Released] Nested folders for easier class topic organization

Walk through Teams

- ◆ You can also send me direct message on Teams if it is urgent or need my immediate action.
- ◆ For non-urgent requests (deadline extension, additional meeting, etc), please send me an email with title .

Outline



Course Policies



Tools



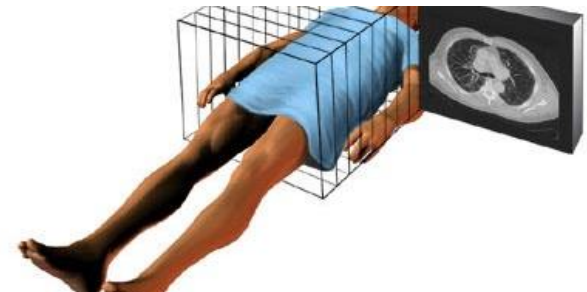
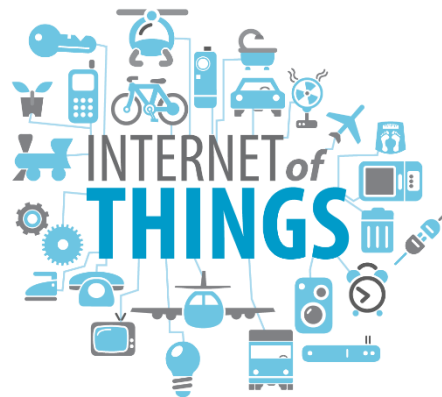
Course overview

Database

- A collection of related data [Elmasri]
 - A database represents some aspects of real world called “miniworld” [Elmasri] or “enterprise” [Ramakrishnan]
 - A database can be of any size and of varying complexity
 - It may be generated and maintained manually or using computers

Database

- ◆ To store
- ◆ To organize
- ◆ To retrieve
- ◆ To analyze

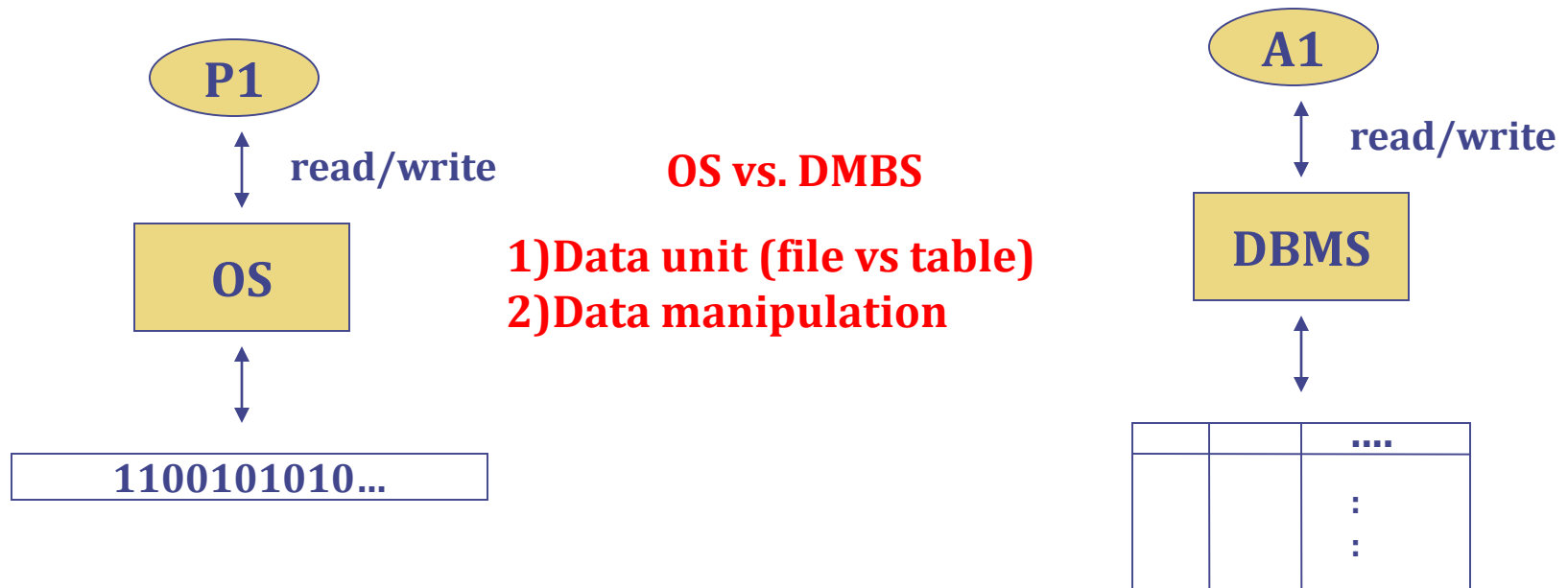


Database Management System (DBMS)

- A software package designed to store and manage databases
 - Relational DBMSs: MySQL, DB2, Informix, Oracle, Microsoft Access, Microsoft SQL Server, FoxBase, Paradox
 - Graph DBMSs: Neo4j

Why DBMS?

- Data is large, extremely large, beyond the limitation of general-purpose operating systems
- Allow users to manipulate the data in a convenient way
- Index data for efficient data retrieval
- And a lot of more



Objectives

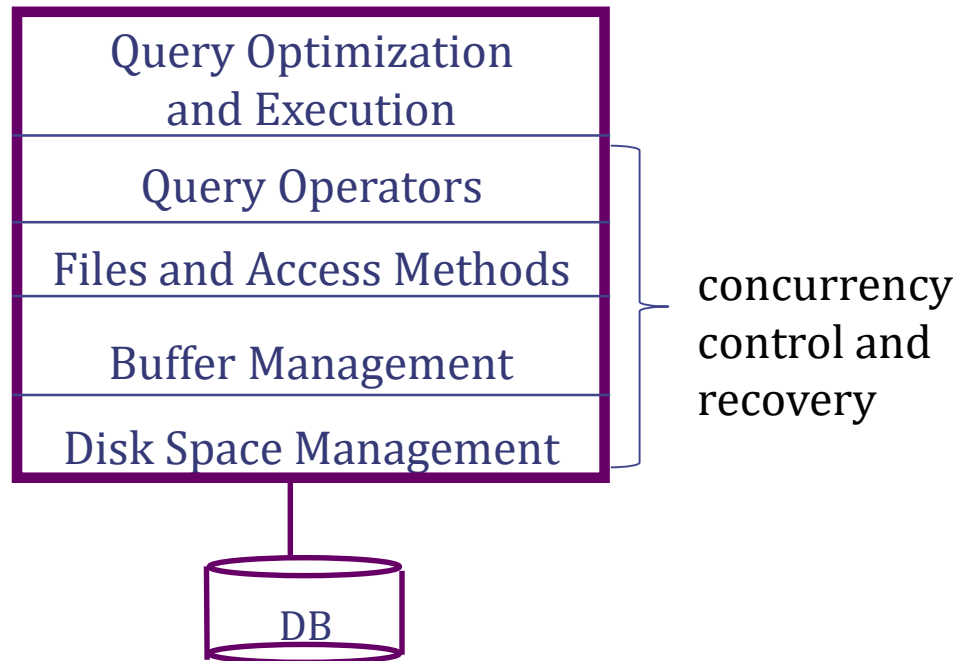
- Provide students with necessary background for
 - Designing and implementing database applications using some commercial DBMS
 - Understanding the internal implementation of a typical DBMS

Topic Coverage: Part 1

- Design and implementation of database applications
 - Entity-Relationship (ER) model
 - Relational data model and mapping from ER-to relations
 - Implementation of the design of a database application
 - SQL

Topic Coverage: Part 2

- Internal of database management systems
 - Storage management
 - Implementation and cost estimation of basic operators
 - Query optimization
 - Transaction management



Topic Coverage: Part 3

- Advanced topics
 - Data mining
 - Data warehousing

Course Materials

- Required
 - Lecture notes available from Teams
 - Videos available from Canvas + Teams
- Recommended

