



Database Management System Implementation

TR, 10:00am-11:20am
 NTRP B 140
 Instructor: Dr. Yan Huang
 TA: TBD



Welcome!




Who am I?

- Dr. Yan Huang, graduated 2003 from University of Minnesota
- Research interests: database, data mining, GIS
- Taught under/graduate databases, data mining, spatial data management
- Can be reached
 - Email: huangyan@cs.unt.edu (respond in one business day)
 - Phone: 940-369-8353
 - Office hours: TR, 8:55am – 9:55am, NTRP F251 or by appointment
- More information can be found at:
<http://www.cs.unt.edu/~huangyan>


1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 2



Who is the teaching assistant?




1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 3

Who are you? 




1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 4


Course Entrance Survey 

- Answer 25 questions

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 5

What is this course about/not about? 

- It is about **Database Management System Implementation**
 - More *behind the scene* concepts and technologies
- It is not about **database design and implementation**
 - Database design and implementation is covered in database I
 - Major topics include: conceptual model, relational data model, SQL, database design guided by normal forms



1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 6

So databases?!

- It is interesting/boring
 - Interesting: job opportunities, real world applications
 - Boring: it has THEORIES!
- It is easy/hard
 - Easy: it is just about data, I've been doing this all my life
 - Hard: "I thought it was just about manipulating my data, why do I need to know all the other stuff?"
- We will try to make it interesting and easy. But it is definitely not an interesting and easy course as you thought!

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 7

So what shall you expect/not expect?

- Expect to learn
 - Core behind the scene database management system implementation issues
 - Disk management, file organization, access control, transactions, concurrent control, query processing and optimization, recovery, and some advanced database technologies
 - Interesting projects to validate what you learn in class
- Do not expect to
 - Learn button pushing/command picking in vendor specific DBMS
 - Become an vendor specific DBA after this course

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 8

Before you take this class, you should know

- Conceptual database design
- Relational data model
- SQL/relational algebra
- Algorithmic cost analysis
- Simple Java programming

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 9

Books

- **Text Book:** Database System Concepts, 4th edition, McGraw-Hill Higher Education, ISBN 0-07-228363-7
- **Supplement:**
 - Elmasri, Navathe, Fundamentals Of Database Systems W/cd, 3rd, Addison Wesley, ISBN 0-8053-1755-4.
 - Hector Garcia-Molina, J. Ullman, J. Widom, Database Systems - The Complete Book, Prentice Hall, ISBN 0-13-031995-3.
- We will use hand-outs and supplement book whenever the coverage of the topics in the text book is not sufficient

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 10

Grading Scheme

- Midterm exam - 30%
- Final exam - 30%
- Assignments including Projects - 30%
- In-class quiz – 10%.
- Exams will use notations and terminologies covered in slides and class.

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 11

About course projects

- 3-4 small course projects
- **ORACLE**
- Examples:
 - Access control methods in Oracle
 - Exploring indexing schemas to speed up a give set of queries
 - Analyze a query plan in Oracle
 - Concurrency control facilities and the results of a set of queries
 - JDBC

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 12

What do I expect from you?

- Read regularly (hand out/text book)
- To get a passing grade (C or above) minimum requirements
 - Submit all homework/quiz/projects, take all exams
- Respect academic honesty
- Correct my pronunciation

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 13

What should you expect from me?

- Respect and caring
- Timely response to your questions
- Well organized class structure and lectures
- Balanced homework/project assignment, quizzes, and exams
- Fair grading
- Interactive class room learning

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 14

What should you expect from TA

- Timely feedback on homework
- Fairness in grading
- Timely response to your email questions
- Timely feedback on your homework
- Useful help during office hours for lab and homework questions

1/14/2005 Yan Huang - CSCIS330 Database Implementation - Welcome 15

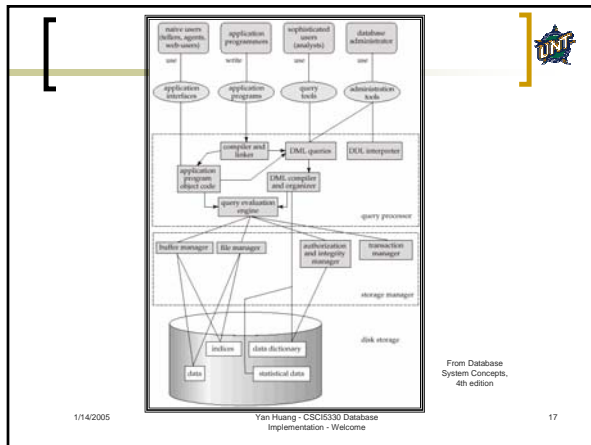
Topics explained

- Conceptual level, logic level, **physical level**
- Now imaging you are a DBMS, you need to resolve a bunch of issues
 - Disk management, file organization
 - access method
 - Transactions
 - concurrent control
 - query processing and optimization
 - recovery

1/14/2005

Yan Huang - CSCIS330 Database Implementation - Welcome

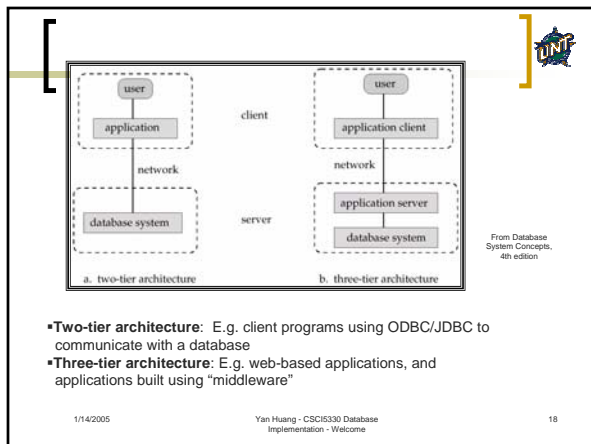
16



1/14/2005

Yan Huang - CSCIS330 Database Implementation - Welcome

17



- **Two-tier architecture:** E.g. client programs using ODBC/JDBC to communicate with a database
- **Three-tier architecture:** E.g. web-based applications, and applications built using "middleware"

1/14/2005

Yan Huang - CSCIS330 Database Implementation - Welcome

18

Oracle



- DBA will create an oracle account for everyone and send an email to you
- A simple demo
- Ullman has a very good tutorial for beginners
 - <http://www-db.stanford.edu/~ullman/fcdb/oracle/or-intro.html>
- A searchable online Oracle documentation
 - <http://esupport.csci.unt.edu/oracle>

1/14/2005

Yan Huang - CSCI5330 Database
Implementation - Welcome

19
