

"Data is not information, Information is not knowledge, Knowledge is not understanding, Understanding is not wisdom."



- Cliff Stoll & Gary Schubert

Topics

- Introduction to Course
- Introduction of Students / Teacher
- File Systems and Databases

Large Amounts of Data

- Libraries
- School Registration
- Taxes
- What else?

Big Databases

How much disk storage is needed for the IRS (USA Income Tax)?

Get into small groups and come up with some ideas.

Introductions

- Your Name
- Your Grade Level
- Your Job
- Your Computer Background
- Some of Your Favorites

College Numbering Schemes

Level	Grade
100	Freshman
200	Sophomore
300	Junior
400	Senior

You should take courses in order...

What I Expect...

- Serious Attitude
- Attendance / Promptness
- 4 Class Rule
- Participation
- Do your own work

University of Maryland University College



- Student's Expectations
- Student's Responsibilities

Student's Expectations

- You can expect that your Maryland teacher will be academically qualified to teach the course in which you are enrolled.
- You can expect that all University of Maryland faculty members will have been thoroughly briefed before they step into the classroom.
- You can expect that the Asian Division will provide various forms of academic support.
- You can expect complete, accurate information about your academic status and your progress toward certificates and degrees.

Student's Expectations

You can expect that your teacher will begin his or her course by explaining clearly what will be covered in each class, what work you will have to do, and how that work will be graded.

You can expect that for each three-credit course you will receive 48 classroom hours of instruction, which is more than at many colleges in the United States.

You can expect to be able to speak to a Maryland administrator whenever you have a question, compliment, or complaint, or when you need advice.

Student's Responsibilities

The University expects you to be serious about learning.

Maryland would rather not have you enroll if you are looking for a "free ride." Maryland lecturers do not "water down" courses because you attend class after a full working day.

Student's Responsibilities

Maryland lecturers expect you to work hard in their courses.

In practical terms this means that two hours of preparation and study outside of class will probably be necessary for each hour in class.

Thus, be careful about telling a Maryland lecturer, "I don't have time to study for your course." We ask lecturers to listen sympathetically but not to lower their standards.

Student's Responsibilities

Maryland faculty expect you to be concerned about how well you write, for they know that clear writing is associated with clear thinking.

They also know how vital written communication is in today's world. And they know, too, that people are judged by how well or poorly they express themselves in writing.

Student's Responsibilities

Maryland lecturers expect you to come to class.

Because the essential points of the course are presented, explained, and discussed in the classroom, regular attendance is one of the most important keys to academic success. If you know that you will have to miss many classes, perhaps you had better wait until the following term to enroll. And when you miss a class, remember that you are still responsible for the material.

Student's Responsibilities

You are expected to read the current Asian Division Catalog and to understand its contents.

The Catalog is the single most important source of information about the Maryland program.

Class Schedule

8 Weeks Tues/Thu, 1800-2045

FOUR (4) Friday Makeup Classes

3 Exams - Computerized & Written

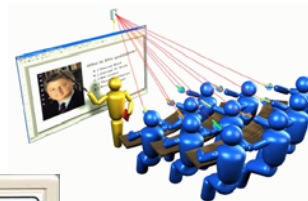
A lot of reading / discussion
Projects

Daily Quiz - 5 Questions

Start of class, no makeups

Clickers

Audience
Response System



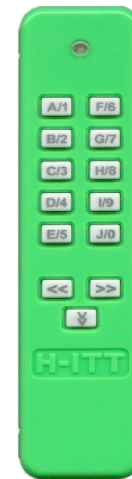
We will use them for A+ questions and trivia. You always have to get the one with your name.

Clicker

LED

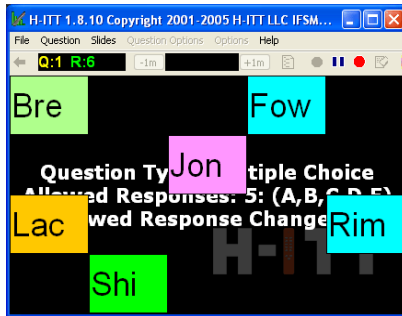
Unique ID Codes
Your name is on the bottom
Get at the beginning of class
Return at the end of class
Do not take it home

Your name will appear on screen if answer is received. LED turns green, you answer was recorded and the remote is now locked out for 2 seconds.

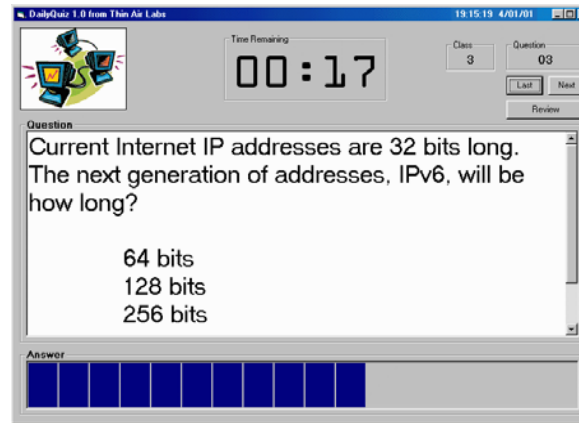


Clicker Demo

Make sure your name shows up...
Last 3 letters of your last name
Aim at receiver!



Daily Quiz



Class Notes

Website - www.thinairlabs.com

Lot of additional information

Check Often

Links to programs, references

Mailing List

Your First Graded Assignment!

Book - Required

Database Systems:
Design, Implementation,
and Management
7th Edition

By Rob & Coronel



Course Notes

Course notes online - PDF Format

Laptops in class - Notes, Software

Warnings

I am **NOT** responsible for any hardware
/ software / data loss

You are to be very careful when working
with these tools

Don't bug the Lab people

Don't wait until the last minute

Towards Certification

Microsoft Office User Specialist
This course should prepare you to
pass the exam for this certification.

Master CIW Enterprise Developer
Database Specialist

Oracle
Oracle Certified Associate (OCA)

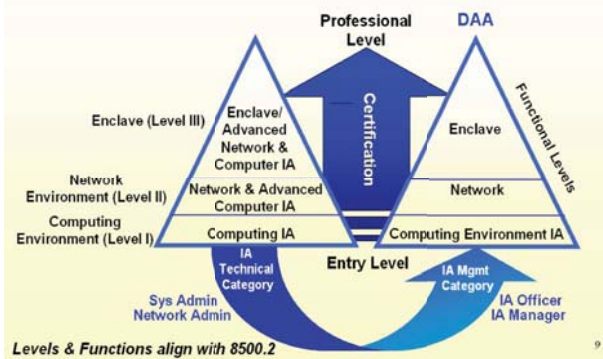
What is DoD 8570.1?

- Information Assurance Workforce Improvement Program
- Requires all individuals possessing privileged access to a DoD Information System (IS) to be properly trained and certified in the secure operation of computer systems used throughout the DoD's Global Information Grid.
- Information Assurance Technical (IAT) and IA Management (IAM) personnel must be fully trained and certified to baseline requirements to perform their IA duties.

Who Does it Apply To?

- Anyone with privileged system access performing IA functions.
- This applies whether the duties are performed full-time, part-time, or as an embedded duty.
- IA Duties can be as simple as resetting passwords, applying patches, etc.
- Basically, anyone with privileged access will be required to obtain the certification.
- DoD estimates it will affect more than 100,000 personnel, including full- and part-time military service members, civilians, foreign nationals, local nationals, and contractors.

IA Workforce Structure



Training & Certification Requirements

Training & Certification Requirement	Technical Category	Management Category	
	Level I - III	Level I - III	DAA (US Gov't Employee only)
Initial Training	Yes	Yes	Yes
IA Certification (From approved list)	Yes (within 6 months)	Yes (within 6 Months)	Yes (DISA WBT or IRMC 4012)
OJT/Familiarization	Yes (for initial position)	No	No
Local OS Cert	Yes	No	No
Refresher Training/Continuing Ed	Yes (as required by Certification)	Yes (as required by Certification)	No
Re-certification	Yes (as required by Certification)	Yes (as required by Certification)	Yes (every 3 years)

Time Frame

- Current Workforce must be qualified by 2010
 - 2006 - 10%
 - 2007 - 40%
 - 2008 - 70%
 - 2009 - 100%
- New Employees within 6 months, date of hire

Continuing Education

- The minimum continuous learning requirement is expected to be 120 hours over a 3 year period.
- Certification providers determine the specific training and other activities that qualify for continuous learning credit.
- Examples of what is likely to be acceptable includes certain DoD IA conferences, workshops, and exercises.
- Note: All certifications included currently do require or will require continuous learning as part of retaining certification status.

The Matrix

Technical		
T1	T2	T3
A +	GSEC	CISSP
Network +	Security +	SCNA
SSCP	SCNP	CISA
	SSCP	GSE
Management		
M1	M2	M3
GSLC	CISSP	CISSP
Security +	GSLC	GSLC
GISF	CISM	CISM

In addition all technical staff will also be required to have the appropriate OS certifications (MCSE, MCDST, Solaris, etc.) required for their jobs.

The Certifications

- A+, Network+, Security+
 - CompTIA, 1 exam, 60 to 90 questions
- CISSP - Certified Information Systems Security Professional
 - (ISC)², Offered 4 times a year, 250 questions
- SSCP - Systems Security Certified Practitioner
 - (ISC)², Offered 4 times a year, 125 questions
- GSEC - GIAC Security Essentials Certification
 - Silver – 2 online exams
 - Gold – Silver + paper

The Certifications

- SSNP - Security Certified Network Professional
 - Hardening The Infrastructure (HTI)
 - Network Defense and Countermeasures (NDC)
- SCNA - Security Certified Network Architect
 - Enterprise Security Implementation (ESI)
 - The Solution Exam (TSE)
- CISA - Certified Information System Auditor
 - ISACA, offered in June and December, 200 questions
- GSE - GIAC Security Expert
 - Requires 5 intermediate level GIAC certifications and 3 days of testing. Currently held by 5 people.

The Certifications

- GSLC - GIAC Security Leadership Certification
- GISF - GIAC Information Security Fundamentals
- GSLC - GIAC Security Leadership Certification
- GISO - GIAC Information Security Officer
 - Silver – 2 online exams
 - Gold – Silver + paper
- CISM: Certified Information Security Manager
 - ISACA, offered in June and December, 200 questions

Recommended Certifications

- Technical
 - Network+
 - Security+
 - CISSP
- Management
 - Security+
 - CISSP

Who Pays for All This?

- No reimbursement for previous certs and training
- Since it is a DoD directive, DoD looking into training and certification issues
- Free and low cost training already available
- Online training available
- Training will be expanded to allow contactors, and others
- DoD will likely purchase exam vouchers for distribution

The Deal

If you take and pass the Access MOUS exam before the final exam, you will get a 100 for the final.

You must email me a copy of the exam results.

If you wish to take another database related exam, contact me for approval.

Class Software

Microsoft Access 2003 (English)
Microsoft not always compatible with itself

Installed in a lab
Test everything in the lab

Inventory

How many laptops?

In class assignments

Should have at least one per group

Course Sequence

- 1 Database Systems
 - 2 Data Models
 - 3 The Relations Database
 - 4 Entity Relationship Modeling
 - 5 Normalization
 - 9 Database Design
- B-C University Lab: 1 & 2
- 9 Database Design
 - 7 SQL
 - 15 Database Administration

Other ideas?

What do you want to learn?

Project

Real Project

Real Customer

Real Problems

Real Solutions

Shameless Plug

Seoul Computer Club

www.seoulcc.org



2nd Saturday of each month, 2pm

USO at Camp Kim, 2nd Floor
Across from Gate 1

Chapter 1

Database Concepts

Most Information is

Wrong
Worthless
Incomplete

Making Use of Data

Collecting
Organizing
Extracting
Using

Database Elements

Data Item
Field
Record
File (Table)
Database

Development of Databases

<i>Era</i>	<i>Milestone</i>	<i>Features</i>
1960's	Transaction Processing	Volume Standards
1970's	Network and Hierarchical	Concurrency Efficiency Reliability
1980's	Relational	PCs, Popularity Intuitive Ease of use
Mid 80's	Client Server	Connectivity

<i>Era</i>	<i>Milestone</i>	<i>Features</i>
Late 80's	Distributed	Flexibility
Early 90's	Object Oriented	Reusability
Mid 90's	Multimedia Networks	Accessibility Pictures, sounds, movies, animations

Historical Roots

Files and File Systems

C_NAME	C_PHONE	C_ADDRESS	C_ZIP	A_NAME	A_PHONE	TP	AMT	REN
Alfred A. Raman	615-844-2573	218 Fork Rd., Babo, TN	38123	Lesh F. Hahn	615-882-1244	T1	\$100.00	05-Apr-2006
Leona K. Dunne	713-894-1238	Box 12A, Fox, KY	25246	Alex B. Alby	713-228-1249	T1	\$250.00	16-Jun-2006
Kathy W. Smith	615-894-2285	125 Oak Ln., Babo, TN	38123	Lesh F. Hahn	615-882-2144	S2	\$150.00	29-Jan-2007
Paul F. Olowski	615-894-2180	217 Lee Ln., Babo, TN	38123	Lesh F. Hahn	615-882-1244	S1	\$300.00	14-Oct-2006
Myron Orlando	615-222-1672	Box 111, New, TN	38155	Alex B. Alby	713-228-1249	T1	\$100.00	28-Dec-2006
Amy B. O'Brian	713-442-3381	387 Troll Dr., Fox, KY	25246	John T. Okon	615-123-5589	T2	\$850.00	22-Sep-2006
James G. Brown	615-297-1228	21 Tye Rd., Nash, TN	37118	Lesh F. Hahn	615-882-1244	S1	\$120.00	25-Mar-2006
George Williams	615-290-2556	155 Maple, Nash, TN	37119	John T. Okon	615-123-5589	S1	\$250.00	17-Jul-2006
Anne G. Farris	713-382-7185	2119 Elm, Crew, KY	25432	Alex B. Alby	713-228-1249	T2	\$100.00	03-Dec-2006
Olette K. Smith	615-297-3809	2782 Main, Nash, TN	37118	John T. Okon	615-123-5589	S2	\$500.00	14-Mar-2006

Figure 1.3, Page 11

What are some problems with this?

Other Problems with Files

Extensive Programming

Growth

Changing the Structure

Non-Unique Identifier

Data Redundancy

Data Inconsistency

Data Anomalies

Modification
Insertion
Deletion

Better Design

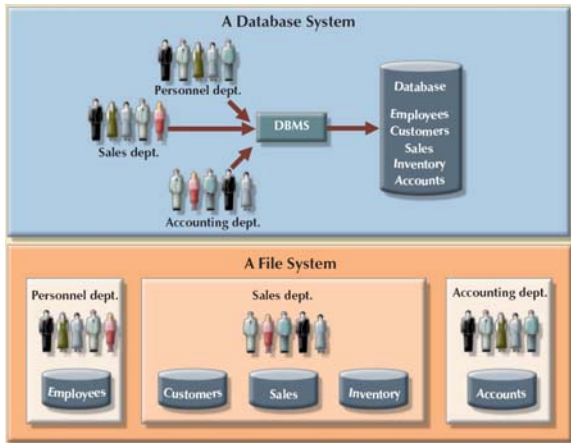
FIGURE 1.4 Contents of the AGENT file

A_NAME	A_PHONE	A_ADDRESS	ZIP	HIRED	YTD_PAY	YTD_FIT	YTD_FICA	YTD_SLS	DEP
Alex B. Alby	713-228-1249	123 Tol, Nash, TN	37119	01-Nov-1988	\$36,596.24	\$6,641.56	\$2,125.30	\$132,735.75	3
Lesh F. Hahn	615-882-1244	334 Main, Fox, KY	25246	23-May-1984	\$32,213.76	\$8,053.44	\$2,577.10	\$138,967.35	0
John T. Okon	615-123-5589	452 Elm, New, TN	38155	15-Jun-2003	\$23,198.29	\$5,799.57	\$1,855.06	\$127,093.45	2

A_NAME = Agent name YTD_PAY = Year-to-date pay
A_PHONE = Agent phone YTD_FIT = Year-to-date federal income tax paid
A_ADDRESS = Agent address YTD_FICA = Year-to-date Social Security taxes paid
ZIP = Agent zip code YTD_SLS = Year-to-date sales
HIRED = Agent date of hire DEP = Number of dependents

But still not perfect...

Database vs. File Systems



Database Systems

Multiple Files Linked Together

Eliminate problems of files

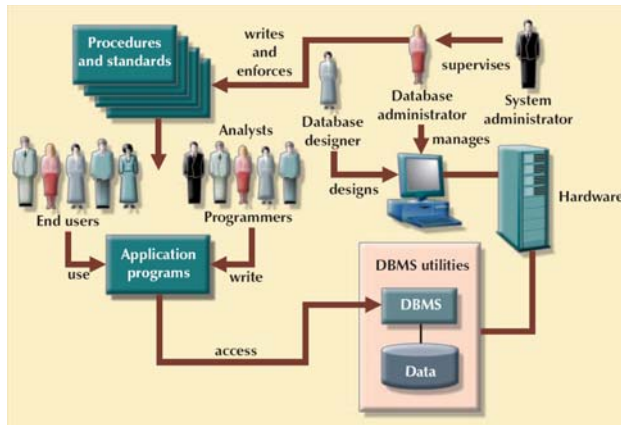
Central Location

Databases

- + Reduce Redundancy
- + Integrated Data
- + Integrity

- Expensive
- Access
- Excess

The Database System Environment



Elements of Database Systems

People

- Database Administrators
- Information Analysts
- Database Analysts

Hardware and Software

- Storage
- Speed
- Database Management System

Elements of Database Systems

- Database Planning and Design
- Information Requirements
- Logical Design
- Physical Design

Information Systems

- Transaction Processing
- Management Information
- Decision Support

Database Management Systems

Data Dictionary

Data Storage

Data Transformation

Security

Database Management Systems

Multi-User Access

Backup and Recovery

Data Integrity

Query Language

Effective and Efficient Systems

Effective System

"Doing the right thing"

Correct / Accurate / Expensive

Efficient System

"Doing the thing right"

Reasonable

Close enough for government work