Scroll down and click "Respond" to post your reply to the Discussion topics. Please review the Discussion Board Participation grading rubric on your course Syllabus.

The Discussion Board Participation grading rubric contains important information that will ensure that you earn maximum points. Your postings should be qualitative and provide substantive depth that advances the discussion.

Topic 1 Discussion Topic: Modern Database Usage

It is amazing how rapidly database technology has evolved and how pervasive database use has become. Please identify a modern business in which databases are used and provide examples on how these databases are used. For example, in healthcare databases are used to track the typical human resource areas such as salaries and benefits; to track patient from registration all patient activity during visit or stay; analyze activity at the hospital and many more. For each of these areas different databases are used.

Databases and the University — Edward Jackson — 5/10/2014 12:25:17 PM

In an era of information explosion, there is only one right way to store information for easy access, and that is through implementing databases. I work in the education sector, and we use databases for a myriad of different applications, storing student and employee information, and even for IT support. For example, our HR department has a SQL database just for storing employee information. Information such as start date, all past and current salaries, as well as past, current, and future required training and professional develop are stored in the database.

Another database we use is for students. This is a massive SQL database that houses a student's academic profile, past, present, and future classes, financial aid and accounting information, and other student related-information.

Yet another database we use (one that I'm involved with) is SQL in LANDesk. LANDesk is an enterprise server and desktop management information system. From LANDesk, we are able to build packages, deploy software, send out fixes and critical updates, and manage computer and server inventories. All this information is contained within the SQL database. The greatest and most practical component of LANDesk using SQL is inventory. Not only does the database store all our workstations and servers stats, it allows us to run queries that return specific information in report form. This permits us to query for machines that have a certain application, or perhaps need a particular update. Using SQL queries in LANDesk provides a powerful way to manage a network of

some 30,000+ computers.

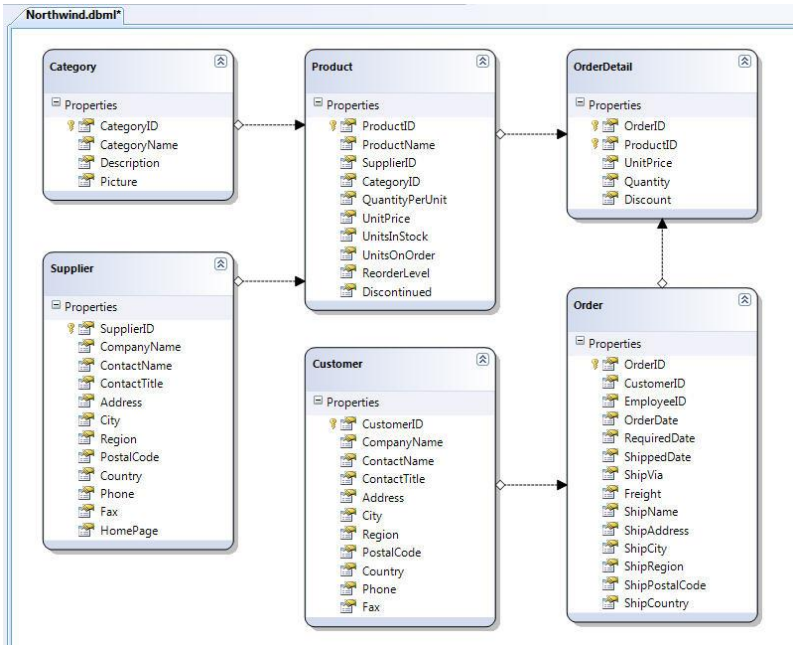
If we review the academic side of what a database is, specifically SQL, SQL stands for structured query language and is a relational database management system (Oppel & Sheldon, 2009). Which means that it is a collection of stored items where relationships can shifted around without redesigning the whole database; the reason this is important because other database types such as network and hierarchical have severe limitations when it comes to modifying structure and the respective relationships. Relational databases such as SQL are independent of the application, which allows for complex relationships to be made and to be changed without a redesign. The basic concept of SQL is that it operates on tables (King & Jamsa, 2002). These tables allow information to be stored in common columns, and then the tables are linked to other tables to create a relationship. It really is an amazing concept, and has become the best way to store and retrieve information.

References

King, K., & Jamsa, K. A. (2002). *SQL Tips and Techniques.* [Indianapolis, IN]: Premier Press.

Oppel, A. J., & Sheldon, R. (2009). *SQL : A Beginner's Guide.* New York: McGraw-Hill.

Example of tables



http://www.lemonthemovie.com/sql-database-example-16.jpg

RE: Databases and the University	Edward Jackson	5/10/2014 1:00:30 PM

Thanks for the response (glad to see you again!). Yeah, I have also used SCCM. I actually started back in the SMS days. The common denominator has always been a database. Most of these management systems use WMI (Windows Management Instrumentation) to query desktops and servers for machine information. The returned results are then stored in the database. It's all extremely practical. I can remember the days before SQL was so prevalent. We stored inventory information in a spreadsheet...and before that...on paper. I can't even imagine going back to either one now.

Topic 2 Discussion Topic: Database Usage

The relational data model was first developed by Dr. E.F. Codd at IBM researcher in 1970. Dr. Codd published a list of 12 rules defining the ideal relational database in 1985. Please perform an Internet search on the rules and define how these rules play a role in current relational databases. The summary without the references should be at least 200 words and include a citation and list the reference in APA format.

It's all relational	Edward Jackson	5/10/2014 3:06:26 PM

Dr. Codd, who introduced the relational data model in 1970, and then later (in 1985) defined 12 rules for relational database management systems (RDBMS). The 12 rules are (Olap.com, n.d.):

- Multidimensional conceptual view
- Transparency
- Accessibility
- Consistent reporting performance
- Client/server architecture
- Generic Dimensionality
- Dynamic sparse matrix handling
- Multi-user support

- Unrestricted cross-dimensional operations
- Intuitive data manipulation
- Flexible reporting
- Unlimited Dimensions and aggregation levels.

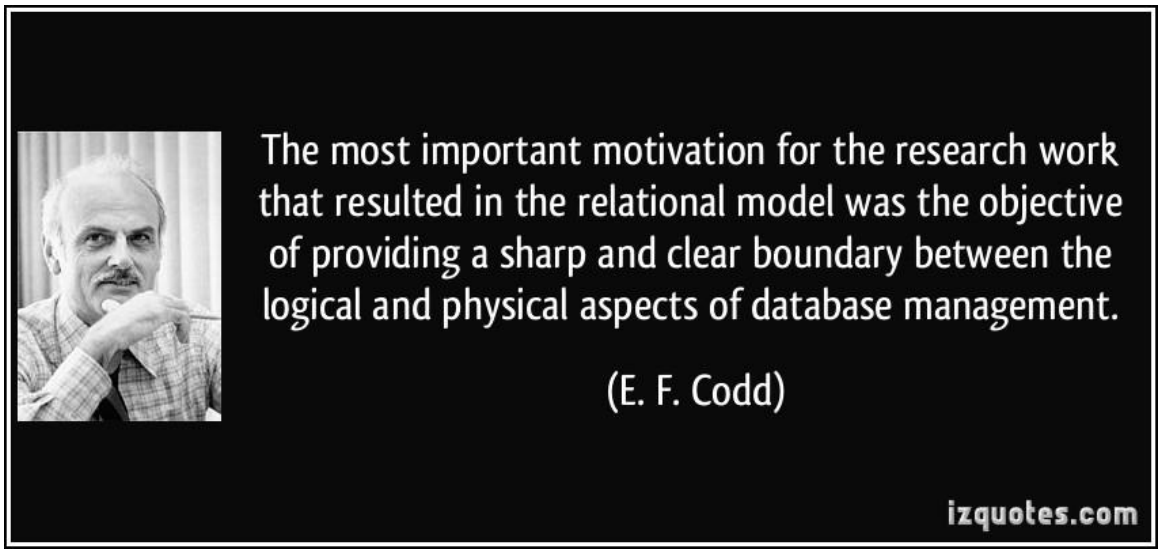
If we assess just how Codd's 12 Rules has affected the databases of today, the continued integration and adoption of the 12 rules can be observed. Originally, many of the rules seemed far-fetched, or really just down-right unachievable with the technology and understanding of the era. However, as time has passed, database technology has also progressed…with Codd's rules never really forgotten. Actually, Codd's rules have become the criteria of what a relational database management is or should be. These rules are associated with the concept of *foundation principle*, meaning the capabilities of a RDBMS must be able to manage the system completely (Sumathi & Esakkirajan, 2007).

So, how have Codd's Rules affected the databases of today? The rules have set the standard for relational databases (set very high actually). If we assess just a couple of the rules, we can observe the range of complexity of Codd's ideas. Rule number one is *The Information Rule*. The Information Rule is about how information is represented. The rule states that information must be "represented explicitly at the logical level", and must also be represented "in exactly one way…in tables" (Sumathi & Esakkirajan, 2007, p. 66). Of course that is only the beginning, another rule is rule number 10. Rule number ten is Integrity Independence. Integrity Independence refers to making a relational database as independent as possible (independent from applications). This works by placing the integrity constraints related to the database in a catalog (versus being stored in applications).

References

Olap.com. (n.d.). Codd's Paper. Codd's 12 Rules for Relational Database. Retrieved from Managementhttp://olap.com/learn-bi-olap/codds-paper/

Sumathi, S. & Esakkirajan, S. (2007). Fundamentals of Relational Database Management Systems. *Springer-Verlag Berlin Heidelberg.*



RE: Sarah Walters Initial Post — Edward Jackson — 5/11/2014 11:34:31 AM

Databases are definitely useful in the school system...and you have provided some great examples of the uses. I can remember when I was in school, we moved from a paper library book system to an electronic (database) system. It really did make tracking books with students so much easier. We basically attached a bar code to each book, and then the book information was entered into the database. I know all about this because I worked at the library. It's pretty interesting I should start there because I ended up working at my college library, and then later on at the local county library (all of which were using databases by that time).

RE: Unit 1: - Discussion 1 — Edward Jackson — 5/11/2014 11:50:00 AM

You made all great points about the many uses of databases. It's interesting you should mention pharmacies though...I worked in healthcare IT for 9+ years, and we used a system called Meditech to store pharmacy and patient-related information. Meditech

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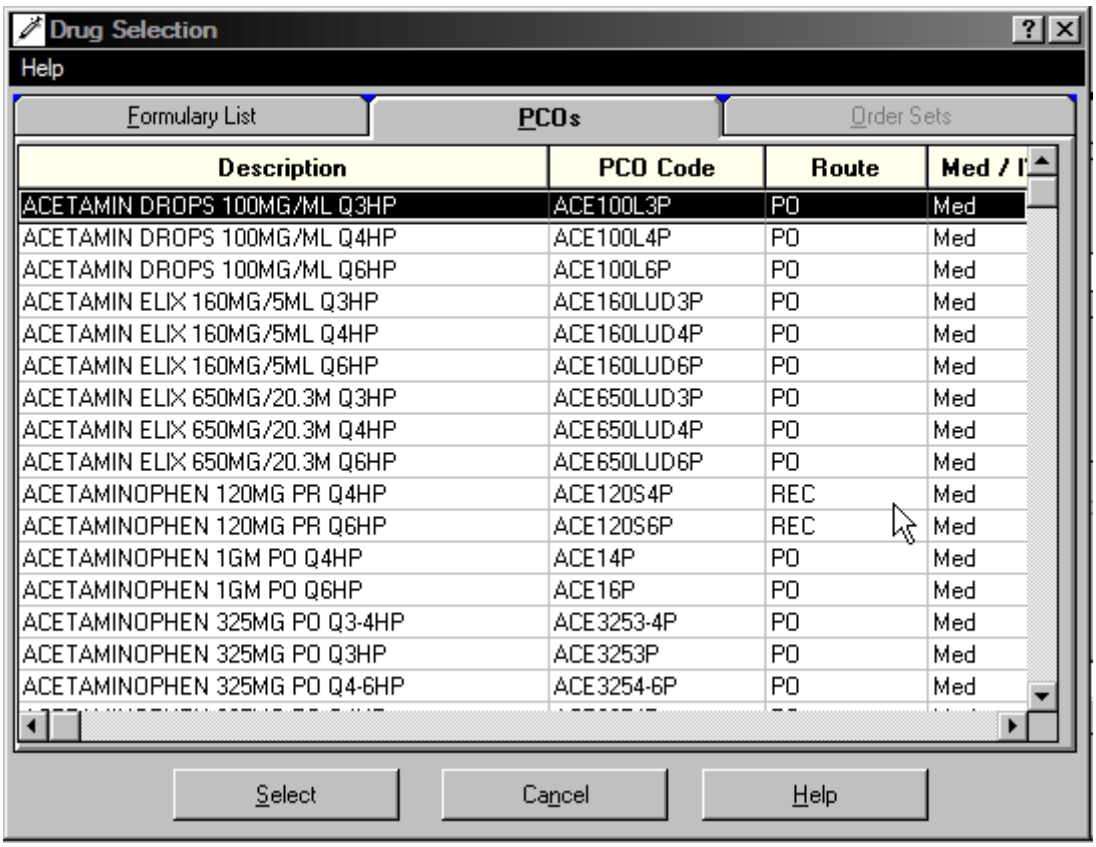
was actually a modular based database system that interacted (or where relationships could be formed) with each additionally purchased module. Using Meditech definitely made it much easier to track and dispense medications to patients.

http://eddiejackson.net

From Meditech



RE: Rule 1 of Codd's	**Prof Collins**	5/8/2014 11:48:09 AM

Rules

Q: With respect to rule 1, what normalization form does Codd's rule one apply to? Again, anyone is welcome to reply to this post and answer this question.

Dr. C.

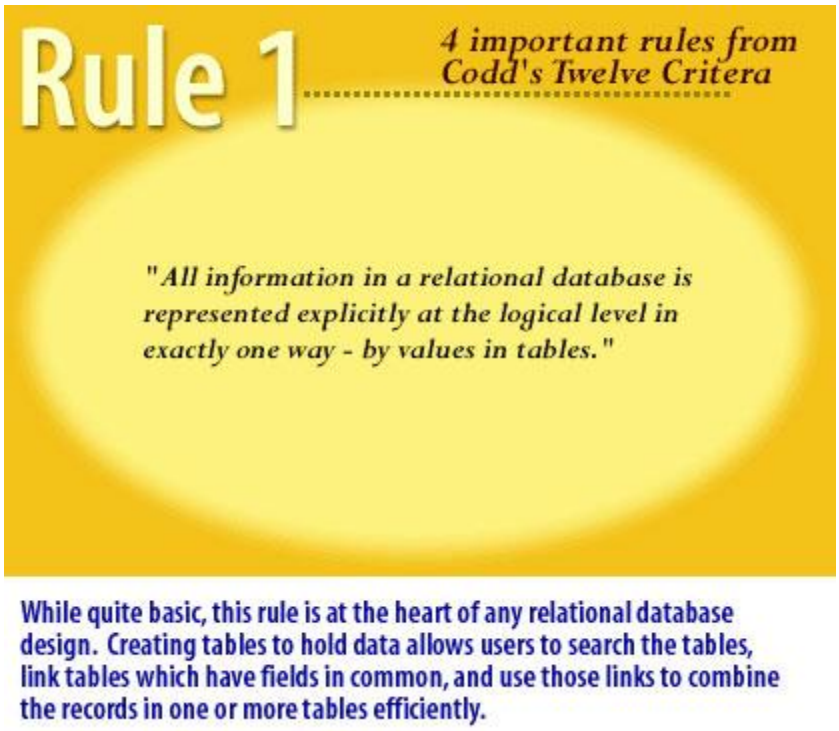
Respond

RE: Rule 1 of Codd's Rules — Edward Jackson — 5/10/2014 5:42:06 PM

Hmmm...would this pertain to a table containing no repeatable groups? For example, the only field that would be replicated would be a primary key of the table...which would become a foreign key in the next table. This has to do with reducing redundancies throughout the database.

RE: Topic 2 - Relational Databases — Edward Jackson — 5/11/2014 12:40:56 PM

> It is interesting that Codd could develop something with such a long-lasting, wide-ranging set of standards. I think many of the rules may seem simple (in theory) but are much harder to implement in their entirety. I think that is why we are still trying to integrate the rules as our knowledge and technology evolves in the database world.



http://www.relationaldbdesign.com/relational-database-analysis/module4/images/rule1.jpg

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Database Systems and Database Development

Unit 1 starts with the introduction of the difference between data and information and the evolution of file systems to the modern database and then reviews the main components of a database system and the functions of a database management system. This unit then introduces the basic concepts and definitions of the software and database development life cycles and their impacts on good database design.

Outcomes

After completing this unit, you should be able to:

- Describe the main components of a system.
- Describe the main components of a database.

- Describe the main functions of a database management system (DBMS).
- Define the importance and components of the Software Development Life Cycle (SDLC).
- Define the importance and components of Database Development Models.
- Identify components of the building blocks of a database.

Course outcome(s) practiced in this unit:

IT525-1: Review database design methodologies.

IT525-5: Analyze advanced database concepts.

What do you have to do in this unit?

- Introduce yourself to your classmates and professor.
- Complete the assigned Reading.
- Participate in the Seminar or complete the Alternative Assignment.
- Participate in the Discussion Board.
- Complete the unit Assignment.

Additional Resources

Information System Review

A system is an organized set of components designed to meet a set of objectives. Examples of information systems include a patient billing system, a customer service tracking system, an electronic ordering system used by a company to process web orders, a laboratory information system for tracking patient laboratory tests and a university course registration system. The information system is the big picture and within this picture the data, process and environment interaction must be defined with guidelines and control functions.

A dynamic information system processes inputted data into information. The components of a dynamic information system are defined as:

- Input: Elements required to create the product.
- Processing: Steps necessary to convert input into desired output.

- Output: Final product.

A cybernetic information system adds feedback and control components to a dynamic system.

- Feedback: Alerts and messages pertaining to the performance of the system.
- Control: Monitoring and evaluation of feedback to determine if the system is working successfully and the output meets its specifications. Based on control activities, the input, and processing components may be adjusted.

A system is comprised of:

- People
- Hardware
- Software
- Procedures
- Data

<u>People</u>

- Data Manager
- End Users: People who use the information system or the information it produces.
  - Data Entry Staff, Customers
  - Accountants, Salespersons
  - Engineers, Managers
- IS Specialists: People who develop, maintain, and operate the information system.
  - System and Database Analysts
  - System and Database Administrators
  - Application and Database Developers
  - System Operators

<u>Hardware</u>

- Computer Systems: The computer system itself.
  - Database Server

- Application Server
- Client Workstation

- Computer Peripherals: Devices used to input data and to display data.
  - Keyboard, mouse, and barcode reader
  - Printers
  - Monitors
- Computer Storage: Devices used to store the data, applications, and system software.
  - SAN/NAS

Software

- System Software: The operating system and supporting programs which controls and supports the computer system.
- Application Software: Programs used for a specific use.

Procedures

- Operating structures for people using the information system.
- Instructions that guide the use of the database and the application that supports the application.

Data Resources: Raw and processed data

- Data Formats: Text (alphanumeric) image, video, and animation.
- Organized Data:
  - Databases: Used to organize and store data that is available to programs to be processed into meaningful information.
  - Knowledge Bases: Used to organize data into rules, facts and cases to share knowledge or provide advice. The goal of the database development process is to build an operational database for an information system.

- Chapter 1 introduces the basic concepts and definitions of databases and data modeling techniques. As part of the data modeling review the entity-relationship model reviewing the basic concepts reviewing the concepts of entities, attributes, and relationships.
- Chapter 9 presents the systems development life cycle and the role of database development as well as a description of the prototyping methodology and its impact on database development and an updated description of the well-known three-schema architecture and uses it to summarize the various deliverables of

database development. The chapter continues to emphasize the information engineering methodology in database development, including the role of the enterprise data model.

- **Data:** Raw facts that have little meaning unless organized in a logical manner.
- **File:** A named collection of related records.
- **Information:** Data that have been processed in such a way as to increase the knowledge of the person who uses it.
- **Knowledge:** The body of information and facts about a specific subject. Knowledge involves awareness and understanding of information.
- **Database:** An organized collection of logically related data.
- **Database Management System:** A software system that is used to create, maintain, and provide controlled access to user databases.
- **Database Application:** An application program (or set of related programs) that is used to perform a series of database activities (create, read, update, and delete) on behalf of database users.
- **Enterprise Data Model:** The first step in database development, in which the scope and general contents of organizational databases are specified.
- **Systems Development Life Cycle (SDLC):** The development process of a system that includes database design and application design.
- **Database Life Cycle (DBLC):** The database life cycle is divided into six phases: initial study, design, implementation and loading, testing and evaluation, operation and maintenance, and evolution.
- **Conceptual Data Model (or Schema):** A detailed, technology-independent specification of the overall structure of organizational data.
- **Logical Data Model (or Schema):** The representation of data for a particular data management technology (such as the relational model). In the case of a relational data model, elements include tables, columns, rows, primary and foreign keys, as well as constraints.
- **Physical Data Model (or Schema):** A set of specifications that detail how data from a logical data model (or schema) are stored in a computer's secondary memory for a specific database management system. There is one physical data model (or schema) for each logical data model.
- **Top-Down Database Design:** A database design approach that starts by defining the entities, relationships, and then the attributes of entities.

- **Bottom-Up Database Design:** A database design approach that begins with defining attributes and then defining the groupings of these attributes.

Project 1

Outcomes addressed in this activity:

Course Outcomes:

IT525-1: Review database design methodologies.

IT525-5: Analyze advanced database concepts.

Project Instructions:

Written work should be free of spelling, grammar or APA errors. Points deducted from grade for each writing, spelling or grammar error are at your instructor's discretion.

Please be sure to download the file "Writing Center Resources" from Document Sharing to assist you with meeting APA expectations.

There is one Assignment which includes a written component and a practical component.

Question 1: Write a 300–400 word response reviewing the Software Development Life Cycle (SDLC) and Database Development and how Database Development fits within the SDLC. Please provide references to support your response. The items below should be addressed.

1. Define the term SDLC.
2. Define the term Database Life Cycle .
3. Define how the Database Life Cycle fits within the SDLC .

Question 2: Select a Database Career Role (i.e., database developer, database designer, database administrator, database analyst, database architect, database consultant, database security officer, or data manager). Write a 300–400 word summary defining this role. Please provide at least two good references to support your response. The items below should be addressed.

1. Define the role within an organization (i.e., who does this role report to, who does this role oversee).

2. Define the tasks that this role performs.
3. Provide a job advertisement for this role.

See the grading rubric on the next page.

Review the grading rubric below before beginning this activity.

50 point project grading rubric

Project Requirements/criterion	Points Possible	Points earned by student
1. Response demonstrates that the student understand the Software and Database Development Processes	0-25	
2. Response demonstrates that the student understands the chosen database career role and what constitutes a good reference.	0-25	
Total (Sum of all points)		
Points deducted for spelling, grammar, and/or APA errors.		
Adjusted total points		

Attending live Seminars is important to your academic success, and attendance is highly recommended. The Seminar allows you to review the important concepts presented in each unit, discuss work issues in your lives that pertain to these concepts, ask your instructor questions, and allow you to come together in real time with your fellow classmates. There will be a graded Seminar in Units 1 through 5 in this course. You must either attend the live Seminar or you must complete the Seminar alternative assignment in order to earn points for this part of the class.

Option 1

Topics reviewed in the Seminar will include:

1. The importance of database systems.
2. The attributes of database systems.
3. The purpose of database design.
4. The components of data models.

Option 2- Alternative Assignment:

You will benefit most from attending the graded Seminar as an active participant. However, if you are unable to attend you have the opportunity to make up the points by completing the alternative assignment.

Please review the Seminar. Provide a 200 word summary of the Seminar. Follow APA format. Include at least two references and two citations.

Format:

- One inch margins (top, bottom, sides), Times New Roman or Arial 12 point font.
- Double spaced.
- Running header with title, name, and page numbers.
- References and citations follow APA Format. Do not use more than 5 words directly from a source without quotation marks to avoid plagiarism.

Rubric:

1. Two hundred words. 5 points.
2. Compliance with APA format. At least two reference and citations. 5 points
3. Writing ability (Grammar, Spelling, Flow). 5 points
4. Mastery of database design concepts. 10 points

Your paper should be in APA format and cite all references used. Submit to the Seminar Dropbox.