CHAPTER 2: *Database Concepts and Applications in Human Resource Information Systems*

ANSWERS TO DISCUSSION QUESTIONS

1. Explain the differences between data, information and knowledge.

- Data represent the **"facts"** of transactions that occur on a daily basis. A transaction can be thought of as an event of consequence, such as hiring a new employee for a particular position for a specified salary.
- Information on the other hand is the **interpretation** of these data. An interpretation of data always has some goal and context such as making a hiring decision for a particular department or understanding of the performance of the company to make an improvement.
- Knowledge is different from data and information. While information refers to data that have been given structure, knowledge is information that has been given **meaning** (Whitehill, 1997). For example, in HRIS, facts about age, gender, and education are the data. When these data are transformed into average age, gender ratio, and number and types of graduates at the unit level, they become information. More than what and why, knowledge is about how. It is procedural and mostly hidden in the minds of individuals and groups in the organization.

2. What are the main functions of a database management system and how is it different from a database?

DBMS and their associated databases electronically allow organizations to effectively manage data. DBMS turn data into an organizational resource. A database is a component of a DBMS. Need to add purpose of the database here.

A database management system is a set of software applications (i.e., programs) combined with a database. The main functions of a DBMS are to create the database, insert, read, update, and delete database data, maintain data integrity (i.e., making sure that the data are correct) and security (i.e., making sure that only the right people have access to the data), and prevent data from being lost by providing backup and recovery capabilities.

3. What were the shortcomings of early file-oriented database structures?

Early DBMS were simply data-processing systems that performed record-keeping functions
that mimicked existing manual procedures. These traditional file-oriented data structures had a number of shortcomings, including (1)data redundancy—an employee's name and address could be stored in many different files; (2) poor data control—if you had access to the file you had access to all the data in the file, which may not be desirable because you may want to restrict the data viewed by a particular user; (3) inadequate data manipulation capabilities—it was very difficult to combine

the data across files and to easily update and to add new data; and (4) excessive programming effort—any change in the data required extensive changes in the programming that accessed the data.

4. What are the three types of data sharing?

- The three types of data sharing are: (1) data sharing between functional units, (2) data sharing between management levels, and (3) data sharing across geographically dispersed locations.

5. Define the key terms in a relational database.

- **Entities** are things such as employees, jobs, promotion transactions, positions in company, and so on. It includes both physical things such as desks and conceptual things such as bank accounts. A company must analyze its business operations and identify all the entities that it believes are important.
- Each of these entities is made up of "attributes**.**" An **attribute** is a characteristic of the entity. For example, an employee has a name, address, phone number, education, and so on.
- **Tables** are used to store information about entities. Each table in a database contains rows. Rows are also referred to as records and represent an "instance" of the entity.
- A **query** is a question that you ask about the data stored in a database. Queries retrieve specific data in a particular order, but it is important to note that queries **do not** store data! All data are stored in tables. Queries only report on data currently in the table.
- A **form** is an object in a database that you can use to maintain, view, and print records in a database in a more "structured" manner. Although you can perform these same functions with tables and queries, forms can present data in many customized and useful ways.
- A **report** is a formatted presentation of data from a table, multiple tables, or queries that is created as a printout or to be viewed on screen.

6. What is the difference between a primary key and a foreign key?

A primary key is the attribute of an entity which uniquely identifies a specific instance of the data (e.g. the specific employee). In a relational DBMS, relationships are created by having the same attribute in each table with the value of the attribute being the same in each table. Most often this is done by taking the "primary key" of one table and including it in the related table. When a primary key from one table is stored as an attribute of another table, that attribute is called a "foreign key."

7. What are the three types of queries?

- A select query allows you to ask a question based on one or more tables in a database. This is the most commonly used query.

- An action query performs an action on the table on which it is based. Actions include updating data in the table (e.g., increasing the base salary of all employees who were rated above average in the latest performance rating), deleting records from the table (e.g., removing employees from the employees table if they no longer work at the company), or inserting records (e.g., the query may add a new set of benefits to the benefits table).
- A cross-tab query performs calculations on the values in a field and displays the results in a datasheet. The reason it is called "cross-tab" is that it tabulates the data for a set of descriptor attributes, contrasting them or crossing them in a table format.
- Select queries and cross-tab queries provide the information that managers and executives expect from IT. These queries can serve as the foundation for MRS and DSS information and decision making. Action queries, on the other hand, improve the operational efficiency of managing and maintaining database. These tasks are important to the operational staff but of less interest to HR managers and executives.

8. How are forms and reports similar, and how are they different?

Forms and reports are similar in that they are both components of a relational database and can be customized to the needs of the user. Forms and reports differ in that a form is an object in a database while a report is a formatted presentation of data. You can print data that appears in forms but reports provide you with the greatest flexibility for formatting printed output.

9. Take the list of HR database common fields and group them into tables.

This could be a good project by having students work in teams of 2-3 students to develop the tables and then present their rationale to the class.

10. What are the differences between data warehouses, BI, and data mining?

- A data warehouse is a special type of database that is optimized for reporting and analysis and is the raw material for management's decision support system.
- BI is a broad category of business applications and technologies for creating data warehouses and for analyzing and providing access to these specialized data to help enterprise users make better business decisions.
- Patterns in large data sets are identified through data mining, which involves statistically analyzing large data sets to identify recurring relationships.

11. Can knowledge be turned into a database?

- Knowledge can be turned into a database when an employee or manager knows what questions need to be answered to meet HR objectives and the data needed to answer these questions. A database can then be designed to capture and store this data.

Case Study Questions

1. You have been asked to create an applicant database for a small recruiting firm that specializes in recruiting HR professionals for small to medium firms. Describe the process that you would use to design this database. Use MS Access to develop a prototype of the database that you could show your manager.

In general, the database design process can be broken down into several steps that are somewhat sequential but oftentimes have to be repeated until the database meets the users' needs:

- Determine what the users want from the database: what questions need to be answered, what information needs to be tracked, what reports are produced, and what data are needed to provide the basis for those results.
- Identify the data fields needed to produce the required information; in doing so, identity rules that define the integrity of the data.
- Group related fields into tables (entities).
- Determine each table's primary key.
- Normalize the data: Make sure the data for an entity are really associated with only that entity.
- Determine how the tables are related to one another and include common keys.
- Create the relationships among the different entities.
- Create queries to define data needs that are not handled by only looking at individual tables.
- Create reports to provide a structured view of the data.
- Create forms, and in doing so, identify a common design for the forms.
- Enter test data to verify the quality/accuracy of the system design.
- Test the system.
- Enter or populate the database.

A good project might be to have students work in teams of 2-3 students to develop the prototype of the database. Then have each group report on what their experience was in using MS Access.