# **Chapter 2 Lecture Terms / Questions**

1. Database
   1. In simplest terms, a **database** is a collection of information
2. Table
   1. This collection is stored in one or more well-defined **tables**, or matrices.
3. Records
   1. The **rows** in a database table are used to describe similar items. The rows are referred to as database **records**. In general, no two rows in a database table will be alike.
4. Field
   1. The **columns** in a database table provide characteristics of the records. These characteristics are called database **fields**
5. Data Type
   1. Boolean
      1. True or False
   2. Double
      1. Decimal number
   3. Integer
      1. Whole Number
   4. Text
      1. String
6. Indexes
   1. Most databases use **indexes** to allow faster access to the information in the database. Indexes are sorted lists that point to a particular row in a table.
7. Flat database
   1. A database using a single table is called a **flat database**. Early database software worked only with flat databases. And, for simple applications, flat databases may be adequate.
8. Relational databases
   1. The referral of one table to another via a common field is called a **relation**. Such groupings of tables are called **relational databases**.
9. One-to-one relation
   1. When one record in one table is linked to only one record in another table, we say there is a **one-to-one** relation
10. One-to-many relation
    1. When one record in one table links to many records in another table, we say there is a **one-to-many** relation.
11. Many-to-many relation
    1. And, when many records in one table are linked to many records in another table, we say there is a **many-to-many** relation.
12. List the fields in Authors table
    1. AU\_ID, Author Name, and Year\_Born
13. How many records in Authors table
    1. 6,246
14. List the fields in Publishers table
    1. PubID, Name, Company\_Name, Address, City, State, Zip, Telephone, Fax and Comments
15. How many records in Publishers table
    1. 727
16. List the fields in Titles table
    1. Title, Year\_Published, ISBN, PubID, Description, Notes, Subject, and Comments
17. How many records in Titles table
    1. 8,569
18. List the fields in Title\_Author table
    1. ISBN and Au\_ID
19. How many records in Title\_Author table
    1. 16,056
20. What is the purpose of the Title\_Author table
    1. The **Title\_Author** table contains information relating book titles to authors within the database
21. Why are there more records in the Title\_Author table than the Titles table
    1. The answer is that many books have more than one author and this table lists all the authors for each title.
22. On page 2-11, the relationships between tables are shown. List the pairs of tables that have relationships and the fields in each table that are linked. Also, for each relationship, tell if it is a 1-to-1 or 1-to-many. (Look for the 1’s and ∞’s. If neither are shown, it’s a 1 to 1.)
    1. 1 to many Publisher to titles
    2. 1 to 1 Titles to Title\_Author
    3. Many to 1 Title\_Author to Authors
23. In those tables the key symbol is beside the primary key for each table. List each table with the field that is its primary key.
    1. Publisher PubID
    2. Titles ISBN
    3. Title\_Author ISBN & Au\_ID
    4. Authors Au\_ID

Each table has 2 different types of information: source data and relational data.

1. Source data
   1. Source data is actual information, such as names, phone numbers, and addresses.
2. Relational data
   1. Relational data are references to data in other tables via **keys**, such as **PubID**, **ISBN**, and **Au\_ID**.
3. Primary key
   1. A **primary** key defines a unique record. **PubID** in the **Publishers** table, **ISBN** in the **Titles** Table, and **Au\_ID** in the **Authors** table are primary keys. They identify a unique entry in their respective table.
4. Foreign key
   1. A **foreign** key is a piece of relational information in one table that links to information in another table. In the **Titles** table, **PubID** is a foreign key. Using a PubID from this table in conjunction with the PubID primary key in the **Publishers** table will provide us with complete information about a particular publisher. In the **Title\_Author** table, **ISBN** and **Au\_ID** are foreign keys.
5. Virtual table
   1. What we essentially have done is formed one huge table with a single record and many, many fields. This new view of the data in the database is called a **virtual database** **table**
6. Query
   1. Making a **query** of the database created a virtual table above. We asked the database to tell us everything it knew about the book “1-2-3 Database Techniques.” The database responded (well, we really did the work) with all information from its four tables. This is a very common task in database management systems and one we will be doing often in this course, **querying the database**. With each query of the database, we form a virtual table that contains the results of our query. Our queries will not be as comprehensive as the one made here (show me everything!). Usually, the query will ask for all records that meet some particular criteria. As an example, we might like to query the books database to show us all books published by a specific company. The results of this query would be returned in a virtual table.
7. SQL
   1. Database queries are made with a specific language named **SQL** (structured query language).