

## Database Uses in Business

- I. **Database Use and Purpose** – A **database** is a tool used to organize, store, retrieve, and communicate groups of related information.
  - A. Examples of databases and database uses in business and society:
    1. a phone book
    2. online library card catalog
    3. payroll data including employee names, social security numbers, pay rates, exemptions, etc.
    4. eBay and other online businesses use databases to maintain inventory and keep track of customers, products, vendors, pay pal accounts
  - B. **Tables** are the building blocks of all databases. They are used to group and organize the information within a database.
    1. A **table** is an arrangement of columns and rows. It is the fundamental building block of all databases.
      - a. Example 1: a database for an airline may contain several tables
        - i. Table 1 – Airplane Inventory
          - (a) Airplane identification numbers
          - (b) Dates of service and repair calls
          - (c) Seating capacity
        - ii. Table 2 – Flight Staff
          - (a) Pilot names
          - (b) Contact information
          - (c) License number
      - b. Example 2: an online store's database might contain several tables
        - i. Table 1 contains products
        - ii. Table 2 contains prices
        - iii. Table 3 contains manufacturer information
        - iv. Table 4 contains purchase orders
    2. An **entry** is a single piece of data in a database table. Examples of cell entries in a music store database may include the price of a CD, artist's name, or the number the category of music in which the CD is classified.
    3. A **field**, is a grouping or category of similar information contained in a table

- a. Fields are unique identifiers for categories of information
  - b. In the Airplane inventory example, Plane ID, Service date, and Seats Available are examples of possible field names
4. A **record** is a complete description of all of the fields related to one item in a table.
- a. A record is another level of organization in database tables
  - b. In the Airplane inventory example, one record would consist of the Plane ID, Service date, and Seats Available for one plane

## II. Data Types, Field Properties, Data Entry, and Printing

- A. Before a database can be built, the user must first define its purpose and determine how the data will be organized into fields.
1. Fields should be formatted in accordance with the data they contain so that the database can be searched, used in calculations, and sorted as needed for communicating.
  2. A field name should be short and descriptive
- B. **Text-based data types and field properties** – used for data that will be sorted in alphabetical order or listed randomly, but will not be used in mathematical calculations. For example, in a music store database, the user may wish to sort the database in alphabetical order by artist, CD title, song title, or genre.
1. **Yes/No** – a data type in toggle format that allows a user to select a yes or no value in a database cell
    - a. For example, the music store manager may include a field in the database that requires a yes or no response for in stock items
    - b. The default setting is No
  2. **Caption** – a field property used for column naming that allows a more user-friendly and properly formatted field name than that stored in the database design
  3. **Lookup Wizard** – a data type used to define preset values for database entries.
    - a. For example, the music store database might include a lookup wizard which provides a drop down list for the genres of music.
    - b. This feature increases productivity and accuracy by reducing the amount of data entry required.
  4. **Memo** – a data type used for lengthy entries that allows combinations of text and numbers

5. **Input Mask** – a template-like field property that regulates how data is entered in a cell. For example, if the phone number input mask is used, the user will be prompted to input data in a specific format, such as (919) 555-5555.
- C. **Number-based data types and field properties** – used for data that may be calculated, sorted, or filtered. For example, a music store database may be queried for any quantity on hand that is less than ten so that the store manager can reorder the CDs that the store is running out of.
1. **Decimal places** – field property used to format numbers for one or more decimal points.
    - a. For example, in a music store database, the store manager may wish to filter the database for all CDs that cost 17.99.
    - b. Without the decimal format, the prices of the CDs would be rounded off.
  2. **Currency** – data type used to format numbers as decimal values with a dollar sign.
    - a. For example, in a music store database, the store manager may wish for the database to print a receipt to each customer which includes the total price of the CD plus tax formatted in currency
    - b. The default format for currency is two decimal places
  3. **Date** – data type used to arrange and sort data chronologically
    - a. For example, the music store manager may wish to view the sales for March only in the database
    - b. Often used with the input mask field property
  4. **Time** – data type used to arrange and sort data chronologically
    - a. For example, the music store manager may want to compare the sales figures for after 5:00 pm against the figures before 12:00 pm.
    - b. Often used with input mask field property
  5. **Auto Number** – used to automatically assign a number to each record and to assist in preventing duplication of data.
    - a. For example, the music store manager used the auto number feature when setting up the database and is notified when a duplicate record is added
    - b. Often used with/as a primary key
  6. **Primary Key** – used to format each record in a database as a unique entity

- a. For example, the music store manager formatted the auto number field as the primary key
  - b. Primary keys allow database tables to communicate
- D. **Editing and Printing** – Procedures to add and delete records and fields, edit field names, rearrange fields in a database and print.

**III. Database Management** – The effectiveness of a database can be measured by the user's ability to retrieve useful information.

- An effective database is one that contains timely information and thus requires continuous maintenance.
  - Consider the telephone directory and the amount of information that must be gathered, edited, and processed to provide customers with accurate information.
  - Many tools are available to assist in the retrieval, processing, and manipulation of database information.
- A. **Filters** allow for the retrieval of information that meets specific criteria.
  - B. **Sorts** allow for information to be arranged in a specific order such as alphabetical, chronological, ascending, or descending.
  - C. **Database Relationships** – a link between two or more tables in a database
    - The relationship is developed when common fields in the tables are linked, such as the Customer ID field in a Customer Address table and the Customer ID field in a Purchases table.
    - The relationship enhances the power of the database by allowing retrieval of data from both sources and eliminating the need for data duplication among tables.
1. **Three types of relationships:**
    - a. **One-to-One** – when only one record is linked to a record in another table.
    - b. **One-to-Many** – when a record in one table is linked to more than one record in another table.
    - c. **Many-to-Many** – when multiple records from both (or more) tables are linked. A Many-to-many relationship is actually two one-to-many tables that are connected by a **junction table**.
  2. **Primary key** – a field in a database table that is of the same data type and size as a related field in a linked table
  3. **Foreign key** – when tables are linked by the primary key, the related field in the second table is known as the foreign key

4. **Join line** – a graphical representation of the link between two or more tables
5. **Referential integrity** protects related data that is stored in multiple tables.  
  
Referential integrity would prevent a customer in a customers table from being deleted if the customer's ID also appears in the order table
6. **Junction table** – a table used to join primary key fields from multiple tables

**IV. Raw Data Import** - A useful and practical method for obtaining information from other sources and creating database tables. Eliminates the need for repetitive data entry and assists in the protection of the data's integrity.

- A. Must be formatted as text
- B. Must be separated at field and record breaks with a separator, such as a comma (delimited)