CIS 2010
Introduction to Computer-Based Information Systems

Table Design and Multi-Table Queries

Why should we care about table design?

- Y2K bug is a good example of failing to anticipate the on-going needs for storing and accessing data.

Things to consider when designing tables

- Make the field big enough to accommodate all the data (4 digit year, not 2 digit) [field size property]

- Include *validation rules* to check the authenticity and accuracy of the data entered in a field (don't use capital "O" instead of zero)

- Store data in the smallest part feasible. This increases the flexibility of use (last and first names; city, state, and ZIP).

Things to consider when designing tables

- Don't store duplicate data in multiple tables. Make sure each table has a unique purpose. Link tables together by use of primary keys to create complete views, or *schemas*.

- Duplicating data in several tables is known as *data redundancy*.

Types of data to store in tables

- Number
- Text
- Memo
- Date/Time
- Currency
- Yes/No (Boolean)
- AutoNumber
- Hyperlink

What are the properties of a field?

- A *property* is a characteristic or attribute of an object that determines how the object looks and behaves.

- Every Access object has a set of properties.

Property types in Access

- Field size
- Format (does not affect stored value)
- Input Mask (uses characters not stored with the value; can enforce data validation)
- Default value

Relationships among tables

- Tables can be related to each other by using the primary and foreign keys.

- Relationships can be:
  - One-to-One
  - One-to-Many
  - Many-to-Many

One-to-One Relationship

- In this relationship type, two tables use the same primary key. In each table the key is primary so there are no duplicate records in either table. A record in one table matches to one, and only one, record in the other table.

One-to-Many Relationship

- This relationship is between a primary key in the first table and a foreign key in the second table.

- The first table must have unique records.

- The foreign key in the second table may have multiple recurrent values.

Many-to-Many Relationship

- An artificially constructed relationship giving many matching records in each direction between tables.