CIS 2010
Introduction to Computer-Based Information Systems

Relational Database Concepts

Basis database structure concepts

- Field – a basic entity or data element
- Record – a complete set of all of the data (fields) about one person, place, idea, etc.
- Table – a collection of records (also known as a *relation*)
- Database – one or more tables and the supporting objects used to import or extract data

What model is Access?

- Access is based on the *relational database model* as formulated in 1970 by Dr. E. F. Codd, then an employee at IBM.
- It is based on concepts from relational algebra and set theory.
- Data are stored in the database in tables, which are formally known as relations.
- This model is quite different from a traditional *flat file* database model.
- The tables are related to each other by use of specific fields which have common data.

Keeping the database truthful

- *Referential integrity* is the set of rules that ensure that data stored in related tables remain consistent as the data are updated.
- When referential integrity is enforced, the use can trust the “threads” running through the database (keys) and “tying” related items together.

Objects in Access

- Access has 6 types of objects
  - Tables
  - Queries
  - Forms
  - Reports
  - Macros
  - Modules

Forms, Queries, and Reports

- A form is an interface that enables you to enter or modify record data in a table.
- A query provides information that answers a question.
- A report presents information in a professional manner.

The “keys” to the database

- The *primary key* is the field that makes each record in the table unique. It ensures that every record in a table is different from every other record and it prevents the occurrence of duplicate records.
- A primary key may be numbers, letters, or a combination of both.

A second set of keys

- A primary key may exist in another table. In this case it is known as a *foreign key*. This can be used to link tables together in queries.

Filtering the data

- A filter lets you find a subset of data meeting your specifications.
- It does not extract or delete data from the table, only changes the data that is displayed.
- You can *filter by selection* where you select only the records that match your criteria.
- You can also *filter by form* which permits selecting criteria from a drop-down list or apply multiple criteria, such as an *inequity* {=, <>, >, <, >=, <=}

When to use Access?

- Need a relational database to store your data
- Have a large amount of data
- Rely on external databases to derive and analyze the data you need
- Need connectivity to a large external database
- Need to perform complex queries
- Multiple people working on same data

When to use Excel?

- Can store your data in a flat view
- Primarily need to do calculations and statistics on your data
- Small (< 15,000 rows) dataset