Metadata

Recall the definition of database: A database is a self-describing collection of integrated records. The records are integrated because, as you just learned, rows can be tied together by their key/foreign key relationship. Relationships among rows are represented in the database. But what does *self-describing* mean?

It means that a database contains, within itself, a description of its contents. Think of a library. A library is a self-describing collection of books and other materials. It is self-describing because the library contains a catalog that describes the library's contents. The same idea also pertains to a database. Databases are self-describing because they contain not only data, but also data about the data in the database.

Metadata are data that describe data. Figure 5-7 shows metadata for the *Email* table. The format of metadata depends on the software product that is processing the database. Figure 5-7 shows the metadata as they appear in Microsoft Access. Each row of the top part of this form describes a column of the *Email* table. The columns of these descriptions are *Field Name*, *Data Type*, and *Description*. *Field Name* contains the name of the column, *Data Type* shows the type of data the column may hold, and *Description* contains notes that explain the source or use of the column. As you can see, there is one row of metadata for each of the four columns of the *Email* table: *EmailNum*, *Date*, *Message*, and *Student Number*.

Metadata makes databases easy to use, for both authorized and unauthorized purposes, as described in the Ethics Guide on pages 150–151.

The bottom part of this form provides more metadata, which Access calls *Field Properties*, for each column. In Figure 5-7, the focus is on the *Date* column (note the light rectangle drawn around the *Date* row). Because the focus is on *Date* in the top pane, the details in the bottom pane pertain to the *Date* column. The Field Properties describe formats, a default value for Access to supply when a new row is created, and the constraint that a value is required for this column. It is not important for you to remember these details. Instead, just understand that metadata are data about data and that such metadata are always a part of a database.

The presence of metadata makes databases much more useful. Because of metadata, no one needs to guess, remember, or even record what is in the database. To find out what a database contains, we just look at the metadata inside the database.

Figure 5-7
Sample Metadata (in Access)

EMAIL

Field Name	Data Type	Description
EmailNum	AutoNumber	Primary key -- values provided by Access
Date	Date/Time	Date and time the message is recorded
Message	Memo	Text of the email
Student Number	Number	Foreign key to row in the Student Table

Field Properties

General | Lookup

Format	Short Date
Input Mask	99/99/0000;0;#
Caption	
Default Value	=Now()
Validation Rule	
Validation Text	
Required	Yes
Indexed	No
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	
Text Align	General
Show Date Picker	For dates

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.