

Microsoft Access 2016

Module 2: Building a Database and Defining Table Relationships

A Guide to this Instructor's Manual:

We have designed this Instructor's Manual to supplement and enhance your teaching experience through classroom activities and a cohesive module summary.

This document is organized chronologically, using the same headings in **blue** that you see in the textbook. Under each heading you will find (in order): Lecture Notes that summarize the section, Teacher Tips, Classroom Activities, and Lab Activities. Pay special attention to teaching tips and activities geared towards quizzing your students, enhancing their critical thinking skills, and encouraging experimentation within the software.

In addition to this Instructor's Manual, our Instructor's Resources also contains PowerPoint Presentations, Test Banks, and other supplements to aid in your teaching experience.

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Module Objectives

Students will have mastered the material in this module when they can:

Session 2.1

- Learn the guidelines for designing databases and setting field properties
- Create a table in Design view
- Define fields, set field properties, and specify a table's primary key
- Modify the structure of a table
- Change the order of fields in Design view
- Add new fields in Design view

- Change the Format property for a field in Datasheet view
- Modify field properties in Design view

Session 2.2

- Import data from an Excel worksheet
- Import an existing table structure
- Add fields to a table with the Data Type gallery

- Delete and rename fields
- Change the data type for a field in Design view
- Set the Default Value property for a field
- Import a text file
- Define a relationship between two tables

Guidelines for Designing Databases

LECTURE NOTES

- Discuss the guidelines for designing databases.

TEACHER TIP

Encourage students to spend adequate time designing their databases; it will save them valuable time later.

The first step in designing a database is to think of all the fields of data you might want to store. Explain to students that for a large database, this step is often done by a group who will “brainstorm” all the data items that will be needed in a database. The next step is to group the fields into tables. Each table will contain a group of related fields. A field will be selected in each table to become the primary key for that table.

The primary key is a field in the table that can uniquely identify a record in the table. When tables will be related to one another, you need to include a common field in the two tables that will be used to form the relationship. For each field, you will need to specify the properties for that field. Field properties include their data type, field sizes, and an optional description of the field.

CLASSROOM ACTIVITIES

1. Classroom Discussion:

What fields would you identify when creating a database of students who attend your school?
(Answer: Identify all the fields needed to produce the required information. For example, information about age, majors, full time, part time, etc.)

2. Quick Quiz:

- The _____ uniquely identifies each record in a table. (Answer: D)
 - A. composite key
 - B. customer ID
 - C. first field
 - D. primary key
- When you store the same data in more than one place, _____ occurs. (Answer: data redundancy)

Guidelines for Setting Field Properties

LECTURE NOTES

- Discuss how to name fields and objects.

- Discuss the assignment of field data types.
- Discuss how to set field sizes.

TEACHER TIP

When selecting a field size, students should make sure the field is big enough to hold the largest piece of data to be stored there. However, the field should not be larger than necessary because this will result in wasted space.

Point out that database design is a very complicated and intricate process. It takes much practice and experience to become a good database designer. The concepts presented in the book are meant to get the student to start thinking about design issues. However, students should know that there is much more to learn about database design.

CLASSROOM ACTIVITIES**1. Quick Quiz:**

- True or False: The Field Size property defines a field value's maximum storage size for Text, Number, and AutoNumber fields only. (Answer: True)
- True or False: The primary key determines what field values you can enter for the field and what other properties the field will have. (Answer: False)
- When would you use the Text data type? (Answer: Use the Text data type for names, addresses, descriptions, and fields containing digits that are not used in calculations.)
- When would you use the Memo data type? (Answer: Use the Memo data type for long comments and explanations.)
- When would you use the Number data type? (Answer: Use the Number data type for fields that will be used in calculations, except those involving money; use the Currency data type for money.)

2. Group Activity:

Divide students into groups of five (larger groups allow for more brainstorming). Tell the students they need to set up a database for a softball league. Have students consider that they will need to maintain information about each player and also about each team. Allow students to brainstorm about what fields of information will be needed for each player and for each team. As they consider the required fields, have students also determine each field's properties. Finally, have students determine how these two tables will be related, what type of relationship (e.g., one-to-many) they will have, the common field(s) that form the relationship, and any other specifications that might be important. Have the groups draw out their design similar to Figure 2-2. When they are all finished, have the groups swap their design with another group. Now have each group critique the design that has been passed to them by another group.

Creating a Table in Design View**LECTURE NOTES**

- Demonstrate how to create a table.
- Show how to define a field.
- Show how to specify the primary key.
- Demonstrate how to save the table structure.

TEACHER TIP

When students create a table, they will name the fields and define the properties for the fields. They will also specify the primary key for each table and save the table structure. The table structure is set up and modified in Design view. When all the fields have been defined, they will then specify which field(s) will be the primary key. When the table has been fully defined, they will save the table structure.

Use Figure 2-6 through 2-13 to discuss the elements in the Table window in Design view. Although it is not required to enter a description for the fields, it is advisable to do so. Students should always select a field(s) as the primary key. Although Access does not require that you do so, there are several advantages to selecting a primary key.

CLASSROOM ACTIVITIES**1. Class Discussion:**

In general, what are the steps in creating a table? (Answer: When students create a table, they will name the fields and define the properties for the fields. They will also specify the primary key for each table and save the table structure. The table structure is set up and modified in Design view. When all the fields have been defined, they will then specify which field(s) will be the primary key. When the table has been fully defined, they will save the table structure.)

2. Quick Quiz:

- If you make a typing error, what should you do? (Answer: Click to position the insertion point where the error is located and use either the Backspace key or the Delete key.)
- What data type should you select if you want to display cents and dollar signs? (Answer: Currency)

LAB ACTIVITIES

Divide students into the groups that designed the database for a softball league. Have students create a table based on their group's design.

Modifying the Structure of an Access Table**LECTURE NOTES**

- Demonstrate how to move a field.
- Show how to add a field.

TEACHER TIP

Whenever a database object, such as a table, is modified, Access will ask if you want to save the modification. It is only the structure of the table that must be saved. Records, on the other hand, are automatically stored as they are entered.

When viewing the Relationships window, if the student sees field lists for system tables (beginning with "MSys" in their names), then Access is set to display system tables. To change this setting, click the File tab, click Current Database, click the Navigation Options button, and then clear the "Show Hidden Objects" and "Show System Objects" check boxes. Click the OK button to close the dialog boxes, and then close and reopen the database. (This setting applies to each database and is not a global Access setting.)

CLASSROOM ACTIVITIES

1. Quick Quiz:

- True or False: An Access table cannot be modified once it is created. (Answer: False)
- Text fields have a default field size of _____. (Answer: 255)

2. Class Discussion:

What are the steps to add a field between two fields? (Answer: In the Table window in Design view, select the row for the field above where you want to add a new field. In the Tools group on the Table Tools Design tab, click the Insert Rows button. Define the new field by entering the field name, data type, optional description, and any property specifications.) Why might you want to add a field between two fields?

Modifying Field Properties

LECTURE NOTES

- Demonstrate how to change the Format Property in Datasheet View.
- Demonstrate changing Properties in Design View.

TEACHER TIP

You can make some changes to properties in Datasheet view; for others, you'll work in Design view.

CLASSROOM ACTIVITIES

1. Quick Quiz:

- True or False: When formatting a field, you do not change the actual values stored in the table. (Answer: True)
- Property changes are more easily done in _____ view. (Answer: Design)

2. Class Discussion:

Why should you reduce the size of fields that are too large for the data they will hold?

Adding Records to a New Table

LECTURE NOTES

Show how to add a record to a table.

TEACHER TIP

When a table is created, the table structure is established. Once the table has been created, students will then need to add records to the table. As students enter records, they will be placed in the table in the order in which they were entered. However, when students close the table and open it again, the records will be ordered according to the primary key order.

CLASSROOM ACTIVITIES

1. Creative Thinking Activity:

Refer to Figure 2-21. Where would you most likely find the information contained in the table?
(Many times when students are given the information, they can enter it into the table, but locating or researching the information can be difficult.)

2. Quick Quiz:

- Use the _____ to open a table in Datasheet view. (Answer: Navigation Pane)
- To insert a check mark in the Yes/No value, press the _____. (Answer: spacebar)

Importing Data from an Excel Worksheet

LECTURE NOTES

- Show how to import a worksheet into a table.

TEACHER TIP

Students often do not realize that information created in one type of software can be imported into another type of software. There are various ways to import this information.

CLASSROOM ACTIVITIES

1. Quick Quiz:

- True or False: Importing data is a process that allows you to copy the data from a source without having to open the source file. (Answer: True)
- True or False: You cannot import a spreadsheet from Excel. (Answer: False)

2. Class Discussion:

What are the first three steps for importing a worksheet into a table? (Answer: 1. Click the Close button on the table window bar to close any open tables. 2. Save the table. 3. Click the External Data tab on the Ribbon.)

Creating a Table by Importing an Existing Table Structure

LECTURE NOTES

- Show how to create a table by importing the structure of another table.

TEACHER TIP

Explain that if another Access database contains a table—or even just the design, or structure, of a table—that you want to include in your database, you can easily import the table and any records it contains or import only the table structure into your database.

When copying records from one table to another, it is very important to first determine that the two tables have the exact same data structure. If the two data structures differ in any way, the copy will cause an error. However, when you import, you are importing an entire table including its data and its structure. This is a good way to include a table in your database that was previously designed in a different database.

CLASSROOM ACTIVITIES

1. Class Discussion:

Discuss that in a corporate setting, there may be several people working on a database at one time. The ability to copy records into a table or import an entire table allows for the transfer of data in a collaborative effort. Of course, someone within the corporation must maintain the integrity of the data.

2. Group Activity:

In groups of two or three, have students consider the following situation: An organization has several departments; up to this point, each department has been creating and maintaining its own database that pertains to its particular needs. However, the organization has decided that it could reduce redundancy and improve data integrity by pulling all the data into a single database. Have students discuss how this process might be done and what kinds of problems could arise. Ask students to consider that each department had maintained a customer database. Now that the data will be pulled

together, what will happen if the table structures don't match? How will they import all this data and end up with a single customer database?

[Adding Fields to a Table Using the Data Type Gallery](#)

LECTURE NOTES

- Demonstrate how to add fields using the Data Type gallery.

TEACHER TIP

Explain that this feature allows you to add a group of related fields to a table at the same time, rather than adding each field to the table individually, thus saving time.

CLASSROOM ACTIVITIES

1. Quick Quiz:

- How do you make a field active? (Answer: by clicking in it)
- What section provides options that will add multiple, related fields to the table at one time? (Answer: the Quick Start)

2. Class Discussion:

Consider that a large organization has a very large database of information. What kinds of controls do you think will need to be in place for data entry? Do you think anyone in the corporation should be able to update data? Why or why not?

[Modifying the Imported Table](#)

- Show how to delete a field from a table structure and in Design view.
- Show how to rename a field in Design view.
- Show how to change the data type for a field in Design view.

TEACHER TIP

It is important to be able to modify an imported table. Remind students that although they can move fields in Datasheet view by dragging a field's column heading to a new location, doing so rearranges only the display of the table's fields; the table structure is not changed.

CLASSROOM ACTIVITIES

1. Quick Quiz:

- True or False: You can delete fields from an imported table structure. (Answer: True)
- You can change a field's data type in _____ view? (Answer: Design or Datasheet)

2. Class Discussion:

What is the difference between the Description and the Caption property values? Why do you need both?

[Setting the Default Value Property for a Field](#)

LECTURE NOTES

- Demonstrate how to set the Default Value property for a field.

TEACHER TIP

The Default Value property for a field specifies what value will appear, by default, for the field in each new record you add to a table. This makes it quicker and more accurate to enter fields that may repeat in most records such as the state code and area code.

CLASSROOM ACTIVITIES**1. Quick Quiz:**

- True or False: A text entry in the Default Value property must be enclosed within quotation marks. (Answer: True)
- True or False: Leaving the quotation marks off will result in an error. (Answer: False, they will be added automatically if left off)

2. Class Discussion:

Consider that a large organization has a very large database of information. What kinds of fields might be defined as having default values?

Adding Data to a Table by Importing a Text File**LECTURE NOTES**

- Demonstrate how to import data contained in a text file.

TEACHER TIP

Spend some time discussing a delimited text file (one in which fields of data are separated by a character such as a comma or a tab). Refer to Figure 2-38.

CLASSROOM ACTIVITIES**1. Quick Quiz:**

- True or False: Click the Append button to copy the records of a text file. (Answer: True)
- True or False: A delimited text file is one in which fields of data are separated by a character such as a comma or a tab. (Answer: True)

2. Class Discussion:

Consider that a large organization has a very large database of information. What kinds of controls do you think will need to be in place for data entry? Do you think anyone in the corporation should be able to update data? Why or why not?

Defining Table Relationships**LECTURE NOTES**

- Discuss one-to-many relationships.
- Discuss referential integrity.
- Discuss how to define a relationship between two tables.

TEACHER TIP

Discuss the terminology covered in this section (one-to-many relationships, primary table, related table, orphaned record, and referential integrity). This is a basis for understanding how to define a relationship between two tables.

CLASSROOM ACTIVITIES

1. Quick Quiz:

- True or False: Referential integrity is a set of rules that Access enforces to maintain consistency between related tables when you update data in a database. (Answer: True)
- The _____ connects the fields that are common to two tables. (Answer: join line)

2. Class Discussion:

What is the difference between a primary table and a related table? (Answer: The primary table is the “one” table in a one-to-many relationship; in Figure 2-40, the Animaltable is the primary table because there is only one animal for each visit. The related table is the “many” table; in Figure 2-40, the Visit table is the related table because an animal can have zero, one, or many visits.)

LAB ACTIVITIES

Divide the class back into the softball database discussion groups. Have them consider the process of determining a primary key for a table. Have them look at their databases. Do any of these fields represent a unique value that could serve as the primary key? If not, what could they do to provide a field that has a unique value for each record? If they decide to create a field, how will it be done? What will be the data type of the primary key? Who will assign the value? How will you make sure that there are no duplicates in this field? Once they have answered these questions, have them go to their databases and modify and create/delete fields to insert a primary key.

TEACHER TIP

In this module, students learn how to add fields using the Data Type gallery. Students add the fields using a Quick Start Selection, which is a sort of template that inserts a group of related fields in a table. In Access, there is a certain degree of unpredictability when using any templates (database templates, table templates, Quick Start Selections, etc.). The end results are not always what you want or intend. For example, you might want to delete one or more of the fields inserted with the Quick Start Selection. When you delete the field in Datasheet view or Design view, the deletion might not be permanent or visible when you switch views, causing the deleted fields to reappear. If students encounter these types of problems, closing and reopening the table might help, but students might also need to close the database, reopen it, and compact and repair it before the deleted fields will remain deleted from the table.

End of Module Material

- **Review Assignments:** Review Assignments provide students with additional practice of the skills they learned in the module using the same module case, with which they are already familiar. These assignments are designed as straight practice and do not include anything of an exploratory nature.
- **Case Problems:** A typical NP module has four Case Problems following the Review Assignments. Short modules can have fewer Case Problems (or none at all); other modules may have five Case Problems. The Case Problems provide further hands-on assessment of the skills and topics presented in the module, but with new case scenarios. There are five types of Case Problems:
 - **Apply.** In this type of Case Problem, students apply the skills that they have learned in the module to solve a new problem.
 - **Create.** In a Create Case Problem, students are either shown the end result (such as a finished Word document) and asked to create the document based on the figure provided, or, students are asked to create something from scratch in a more free-form manner.

- **Challenge.** A Challenge Case Problem involves one or more Explore steps. These steps challenge students by having them go beyond what was covered in the module, either with guidance in the step or by using online Help as directed.
- **Research.** A Research Case Problem requires students to find information on the Internet to help solve a problem or to include in the file they are creating.
- **Troubleshoot.** In this type of Case Problem, certain steps of the exercise require students to identify and correct errors that are intentionally placed in the files. Completing these steps helps to promote problem solving and critical thinking.

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