

Microsoft Access Databases: Database Creation and Data Entry

Unit: Technology

Problem Area: Illustrate Basic Database Management

Lesson: Databases: Database Creation and Data Entry

- **Student Learning Objective.** Instruction in this lesson should result in students achieving the following objective:

Create a database and enter data into it.

- **Resources.** The following resources may be useful in teaching this lesson:

E-unit(s) corresponding to this lesson plan. CAERT, Inc. <http://www.mycaert.com>.

Chapple, Mike. "Databases for Beginners," *Lifewire*. Accessed Jan. 21, 2019. <https://www.lifewire.com/databases-for-beginners-1019643>.

Cook, Ken and Laurie Ulrich Fuller. "How to Build a New Database in Access 2016," *Dummies*. Accessed Jan. 21, 2019. <http://www.dummies.com/software/microsoft-office/access/how-to-build-a-new-database-in-access-2016/>.

"Create a New Database," *Microsoft*. Accessed Jan. 21, 2019. <https://support.office.com/en-us/article/create-a-new-database-32a1ea1c-a155-43d6-aa00-f08cd1a8f01e>.

"Create Database Using Microsoft Access With 6 Amazing Steps," *EDUCBA*. Accessed Jan. 21, 2019. <https://www.educba.com/creating-database-using-microsoft-access/>.



■ **Equipment, Tools, Supplies, and Facilities**

- ✓ Overhead or PowerPoint projector
- ✓ Visual(s) from accompanying master(s)
- ✓ Copies of sample test, lab sheet(s), and/or other items designed for duplication
- ✓ Materials listed on duplicated items
- ✓ Computers with printers and Internet access
- ✓ Classroom resource and reference materials

■ **Key Terms.** The following terms are presented in this lesson (shown in bold italics):

- ▶ blank database
- ▶ data entry
- ▶ database
- ▶ database form
- ▶ database management system (DBMS)
- ▶ Datasheet View
- ▶ New tab
- ▶ relational database
- ▶ template

■ **Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Have students search for the phrase “database management” on a job Web site such as Career Builder at <http://www.careerbuilder.com>. How many pages of job openings exist? View the last page of the results. Notice that there are several job openings that don’t have “database management” in the job title, but it is in the job description. Discuss the need for database management to organize large volumes of data into meaningful reports.

CONTENT SUMMARY AND TEACHING STRATEGIES

Objective: Create a database and enter data into it.

Anticipated Problem: How is a database created using Microsoft Access? How is data entered into a database?

I. Database creation and data entry

A **database** is a large, organized collection of information, usually held in a computer memory for rapid search and retrieval. A **database management system (DBMS)** is software that handles storage, retrieval, and updating of data in a computer system. Microsoft Access is an example of DBMS software. Access is the most commonly used relational database program for students and small businesses. A **relational database (RDB)** is a collection of multiple sets of data, organized into tables that communicate and share information. The data is indexed to make relevant information easier to find.

- A. DATABASE CREATION: Microsoft Access Backstage View is a starting point to create a new or open an existing database. To get to Backstage View, click on the **File** tab. Backstage View displays the **New** tab. The **New tab** is an option that provides two primary ways for an Access user to create a new database. The user can choose to use either a database template, or a blank database.
1. Template: A **template** is a ready-to-use database that contains all the tables, queries, forms, macros, and reports needed to perform a specific task. Microsoft Access templates are available to track issues, manage contacts, or keep a record of expenses. Some templates contain a few sample records to demonstrate their use. In addition to the templates that are included with Access, users can find many more templates on <http://www.Office.com>. To create a database using a template, Microsoft Office Support suggests the following steps:
 - a. Step one: With database software open, on the **File** tab, click **Close**. Backstage view displays the **New** tab.
 - b. Step two: Several sets of templates are now available in the **New** tab, some of which are built-in to Access. Download additional templates from <http://www.Office.com>.
 - c. Step three: Select the desired template.
 - d. Step four: Access suggests a file name for the database in the **File Name** box. The user may change the file name. To save the database in a different folder from the one displayed below the file name box, click the folder image, browse to the desired folder to save it, and then click OK.
 - e. Step five: Click **Create**.

- f. Step six: Access creates a database from the template chosen, and then opens the database. For many templates, a form is displayed for data entry. If the template chosen contains sample data, delete each record of sample data by clicking the record selector (the shaded box or bar just to the left of the record), and then clicking **Delete** in the **Records** group on the **Home** tab.
 - g. Step seven: To begin entering data, click in the first empty cell on the form and begin typing. Then, use the Navigation Pane to browse for other offered forms or reports. Some templates include a navigation form that allows the user to move between the different database objects.
2. Blank Database: An Access **blank database** is a start-from-scratch document in which the user creates unique tables, forms, macros, etc. **Blank database** is the best option if the user has very specific design requirements, or has existing data that must be accommodated or incorporated. To create a database from scratch, the user is required to build tables, forms, reports, and other database objects. This means entering, pasting, or importing data into the table created by the new database. The process must be repeated with any newly created tables. This is accomplished by using the **Table** command on the **Create** tab, or by importing data from other sources and creating new tables in the process. For this process, Microsoft Office Support suggests the following steps:
- a. Step one: On the **File** tab, click **New**. Then, click **Blank Database**.
 - b. Step two: Type a file name in the **File Name** box. To change the location of the file from the default, click **Browse** for a location to house the database; browse to the new location, and then click **OK**.
 - c. Step three: Click **Create**.
 - d. Step four: Microsoft Access creates the database with an empty table named 'Table1,' and then opens Table1 in Datasheet view. The cursor is placed in the first empty cell in the **Click to Add** column.
 - e. Step five: Type to add data or to paste data from another source.
 - f. Step six: Enter data in Datasheet view. **Datasheet View** is a display of the data in the database, arranged in rows and columns. This grid is similar in appearance to an Excel spreadsheet. The process is designed to be very similar to working in an Excel worksheet. The table structure is created while data is entered. When the user adds a new column to the datasheet, a new field is defined in the table. Access automatically sets each field's data type, based on the data entered by the user.
- B. DATA ENTRY: **Data entry** is the process of entering information into a computer or other electronic device. This process can be done manually or automatically by using an electronic or mechanical device (e.g., a keyboard, mouse, stylus, touch screen, or voice recognition software). Computers are often used for automated data entry.
1. Forms: A **database form** is the primary method for computer users to enter data to be stored. Users may enter, update, or delete data. Forms are usually

easy for computer users to navigate. Anyone who has ordered merchandise from a website has completed a database form. An order form calls for information, such as name, address, payment method, etc. Database forms are used to collect data, by phone, by personal face-to-face contact, or by electronic means. Common forms used for databases include sales records/purchase invoices, employee or customer records, and inventory records.

2. **Importance:** As an important aspect of any organization's success, data entry requires attention to detail and accuracy. Business depends upon accurately keyed data for analysis and decision-making. The information, provided through the data entries, helps executives with day-to-day operations and future planning. If information is incorrectly entered into the computer system, the conclusions are skewed and inaccurate. Data entry minimizes administrative burdens, improves productivity and time management, improves business efficiency in general, and saves on costs.
3. **Careers:** Everybody that works in a business, from the lowliest clerk to the Chief Executive Officer, performs data entry. "Data entry" is a broad term that covers a number of occupations. In general, positions advertised as data entry jobs usually require the least skill, and pay the least salary. Those jobs include typists, word processors, transcribers, coders, electronic data processors, and clerks. The most commonly pursued professions in the area of database technology are those of database analysts, database administrators, and database engineers. These positions pay significantly greater money than simple data entry jobs. Other examples of occupations in the database technology field include Database Developer, Research Analyst, Business Intelligence Specialist, Data Modeler, and Big Data Administrator.
4. **Directions:** According to Microsoft Access Support, to enter data in a database involves the following sequential steps:
 - a. **Step one:** Double click the desired table in the Navigation Pane.
 - b. **Step two:** By default, Access opens the table in **Datasheet View** (a grid that resembles an Excel worksheet).
 - c. **Step three:** Click, or otherwise place the focus, on the first field desired to use and enter data.
 - d. **Step four:** Press 'TAB,' then, use the Right or Left arrow keys, or click the cell in the next field, to move to the next field in the same row.
 - e. **Step five:** To move to the next cell in a column, use the Up or Down arrow keys, or click on the desired cell.

Teaching Strategy: Many techniques can be used to help students master this objective. Use VM-A and VM-B to discuss database creation. Use VM-C to review the steps to enter data into a database. Assign LS-A to have students demonstrate the steps to create a simple database.

- **Review/Summary.** Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. If a textbook is being used, questions at the ends of chapters may also be included in the Review/Summary.
- **Application.** Use the included visual master(s) and lab sheet(s) to apply the information presented in the lesson.
- **Evaluation.** Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is provided.

■ **Answers to Sample Test:**

Part One: True/False

1. T
2. F
3. T
4. F
5. F
6. T
7. T
8. T

Part Two: Completion

1. Datasheet View
2. New tab
3. database management system (DBMS)
4. blank database
5. data entry
6. template

Part Three: Short Answer

Business depends upon accurately keyed data for analysis and decision-making. The information, provided through the data entries, helps executives with day-to-day operations and future planning. If information is incorrectly entered into the computer system, the conclusions are skewed and inaccurate. Data entry minimizes administrative burdens, improves productivity and time management, improves business efficiency in general, and saves on costs.

Databases: Data Entry

► Part One: True/False

Instructions: Write *T* for true or *F* for false.

- _____ 1. Microsoft Access Backstage is a starting point to create a new or open an existing database.
- _____ 2. Microsoft Access offers only one database template to perform one specific task.
- _____ 3. Datasheet View is similar in appearance to an Excel spreadsheet.
- _____ 4. When using a template to create a database, a user may not change the file name suggested by Access.
- _____ 5. After Access creates a database from a template, the user must then create a data entry form.
- _____ 6. A blank database is the best option if the user has very specific design requirements, or has existing data that must be accommodated or incorporated.
- _____ 7. A relational database (RDB) is a collection of multiple sets of data, organized into tables that communicate and share information.
- _____ 8. Data entry can be done by using a touch screen.

► Part Two: Completion

Instructions: Provide the word or words to complete the following statements.

1. A display of the data in the database, arranged in rows and columns, is called a/an _____.
2. An option that provides two primary ways for an Access user to create a new database is called _____.



3. Software that handles storage, retrieval, and updating of data in a computer system is a/an _____.
4. The MS Access “start-from-scratch document” in which the user creates unique tables, forms, macros, etc. is called a/an _____.
5. The process of entering information into a computer or other electronic device, is called _____.
6. A ready-to-use database that contains all the tables, queries, forms, macros, and reports needed to perform a specific task is called a/an _____.

► **Part Three: Short Answer**

Instructions: Answer the following.

Describe the importance of accurate data entry in a database.

DBMS

A database management system (DBMS) is software that handles storage, retrieval, and updating of data in a computer system. DBMS software controls the creation, maintenance, and use of a database.



DATABASE CREATION

To create a database using Microsoft Access, the user can choose to use either a database template, or a blank database.



DATA ENTRY

Data entry is the process of entering information into a computer or other electronic device.



Database Creation

Purpose

The purpose of this activity is to create database tables using Microsoft Access

Objectives

1. Create product and supplier database tables using Microsoft Access.
2. Use available tutorials as necessary to assist in the database table creation.

Materials

- ◆ lab sheet
- ◆ pen/pencil
- ◆ device with Internet access and Microsoft Access software

Procedure

1. TASK: Assume a company that sells baseball merchandise has the following products from three different suppliers. The Data Chart contains the product and supplier information. See the Data Types Table for settings information. Use all data to create the following simple database tables:
 - a. Products Table: Design
 - b. Products Table: Data
 - c. Supplier Table: Design
 - d. Supplier Table: Data



Data Chart

Item ID	Description	Units on Hand	Cost	Selling Price	Supplier Code	Supplier Name	Supplier Telephone
5953	Shorts	10	\$14.95	\$19.95	AC	Al's Clothes	616-555-9228
6343	Sweatshirt	9	\$27.45	\$34.95	AC	Al's Clothes	616-555-9228
7810	T-shirt	32	\$9.50	\$14.95	AC	Al's Clothes	616-555-9228
3683	Coasters	12	\$7.45	\$9.00	BH	Beverage Holders	317-555-4747
4563	Coffee Mug	20	\$1.85	\$4.75	BH	Beverage Holders	317-555-4747
4593	Glasses	8	\$8.20	\$10.75	BH	Beverage Holders	317-555-4747
7930	Travel Mug	11	\$2.90	\$3.25	BH	Beverage Holders	317-555-4747
3663	Baseball Cap	30	\$10.15	\$18.95	LG	Logo Goods	517-555-3853
5923	Jacket	12	\$44.75	\$54.95	LG	Logo Goods	517-555-3853
6189	Sports Towel	24	\$3.25	\$6.75	LG	Logo Goods	517-555-3853

Data Types Table

Setting	Data Type	Size
Text	(Default) Text or combinations of text and numbers, as well as numbers that don't require calculations, such as phone numbers.	Up to 255 characters or the length set by the FieldSize property (whichever is less). MS Access reserves no space for unused portions of a text field.
Memo	Lengthy text or combinations of text and numbers.	Up to 65,535 characters. (If the Memo field is manipulated through DAO and only text and numbers [not binary data] will be stored in it, then the size of the Memo field is limited by the size of the database.)
Number	Numeric data used in mathematical calculations. To learn more about setting the specific Number type, see the FieldSize property topic.	1, 2, 4, or 8 bytes (16 bytes if the FieldSize property is set to Replication ID)
Date/Time	Date and time values for the years 100 through 9999.	8 bytes
Currency	Currency values and numeric data used in mathematical calculations involving data with one to four decimal places. Accurate to 15 digits on the left side of the decimal separator and to 4 digits on the right side.	8 bytes
AutoNumber	A unique sequential (incremented by 1) number or random number assigned by MS Access whenever a new record is added to a table. AutoNumber fields can't be updated. To learn more, see the NewValues property topic.	4 bytes (16 bytes if the FieldSize property is set to Replication ID)
Yes/No	Yes and No values and fields that contain only one of two values (Yes/No, True/False, On/Off).	1 bit

2. Divide the Data Chart information into two tables: Products and Suppliers.
3. Start Access.
4. From the New File task pane, click 'New Database.'
5. Name your new database "baseball" (in the folder in which you normally save your work).
6. Select 'Create table' in Design View.
7. In Design View, enter the field names, select a data type, and enter a description for each field. (Refer to the following page for design and data information.) Entering a description makes the database more understandable to another person who will be using this database.
8. In the Field Properties area, enter the field length for each of the text type fields. Use Help to view other available field properties.
9. While the Item ID field is selected, click the 'Primary Key button' to designate that field as the primary key. At least one field must be the 'primary key.' This is the field that will contain unique information for that record. [NOTE: In the Projects table, no two products have the same Item ID, so this would be a good choice for the primary key. Likewise, no supplier has the same Supplier ID, so that would be the primary key for the supplier table.]
10. Click the 'View button' to toggle between the Design and the Datasheet views. In Datasheet view, enter the data.
11. Enter a new record in the products table. (Be sure to use one of the three supplier codes.)
12. Save your work.
13. Share your database tables with your instructor as directed.

Database Creation

Products Table: Design

Field Name	Data Type	Field Length	Primary Key?
Item ID	Text	4	Yes
Description	Text	15	
Units on Hand	Number		
Cost	Currency		
Selling Price	Currency		
Supplier Code	Text	2	

Products Table: Data

Item ID	Description	Units on Hand	Cost	Selling Price	Supplier Code
5953	Shorts	10	\$14.95	\$19.95	AC
6343	Sweatshirt	9	\$27.45	\$34.95	AC
7810	T-shirt	32	\$9.50	\$14.95	AC
3683	Coasters	12	\$7.45	\$9.00	BH
4563	Coffee Mug	20	\$1.85	\$4.75	BH
4593	Glasses	8	\$8.20	\$10.75	BH
7930	Travel Mug	11	\$2.90	\$3.25	BH
3663	Baseball Cap	30	\$10.15	\$18.95	LG
5923	Jacket	12	\$44.75	\$54.95	LG
6189	Sports Towel	24	\$3.25	\$6.75	LG

Supplier Table: Design

Field Name	Data Type	Field Length	Primary Key?
Supplier Code	Text	2	Yes
Supplier Name	Text	20	
Supplier Telephone	Text	12	

Supplier Table: Data

Supplier Code	Supplier Name	Supplier Telephone
AC	Al's Clothes	616-555-9228
BH	Beverage Holders	317-555-4747
LG	Logo Goods	517-555-3853