Tutorial 1
Creating a Database

Microsoft® Access® 2013
Objectives

• Session 1.1
  – Learn basic database concepts and terms
  – Start and exit Access
  – Explore the Microsoft Access window and Backstage view
  – Create a blank database
  – Create and save a table in Datasheet view
  – Enter field names and records in a table datasheet
  – Open a table using the Navigation Pane
Objectives (Cont.)

• Session 1.2
  – Open an Access database
  – Copy and paste records from another Access database
  – Navigate a table datasheet
  – Create and navigate a simple query
  – Create and navigate a simple form
  – Create, preview, navigate, and print a simple report
  – Use Help in Access
  – Learn how to compact, back up, and restore a database
Creating a Database

• Case - *Chatham Community Health Services*
  – All Tutorials use this Case
  – A nonprofit health clinic located in Hartford, Connecticut, specializes in the areas of pulmonology, cardiac care, and chronic disease management
  – Cindi Rodriguez, the office manager for Chatham Community Health Services, oversees a small staff and is responsible for maintaining the medical records of the clinic’s patients
Creating a Database (Cont.)

• Case - *Chatham Community Health Services*
  – Cindi and her staff rely on electronic medical records for patient information, billing, inventory control, purchasing, and accounts payable
  – The clinic recently upgraded to *Microsoft Access 2013* (or simply *Access*)
  – Using the software to enter, maintain, and retrieve related data in a format known as a database
Creating a Database (Cont.)

STARTING DATA FILES

- Access1
  - Cindi.accdb

- Tutorial
  - Company.accdb

- Review
  - Program.accdb

- Case2
  - Consulting.accdb

- Case3
  - Animal.accdb

- Case4
  - Tour.accdb
Creating a Database (Cont.)

- The Quick Access Toolbar provides one-click access to commonly used commands, such as Save.
- The Shutter Bar allows you to close and open the Navigation Pane; you might want to close the pane so that you have more room on the screen to view the object’s contents.
- Access assigns the default name “Table1” to the first new table you create. When you save the table, you can give it a more meaningful name.
- By default, Access creates the ID field as the primary key field for all new tables.
- The Add & Delete group contains options for removing different types of field values, including Text and Number, from a table.
- The Fields tab contains options for adding, removing, and formatting the fields in a table.
- The Add & Delete group also contains options for adding different types of fields, including Text and Number, to a table.
- The ribbon provides the main Access commands organized by task and groups.
- The title bar displays the name of the open file and the program.
- The status bar provides information about the program or open file, as well as buttons for working with the file. At the far left, the status bar indicates the current view; in this case, Datasheet view.
- A datasheet displays the table’s contents in rows and columns, similar to a table that you create in a Word document or an Excel spreadsheet. Each row will be a separate record in the table, and each column will contain the field values for one field in the table.
Introduction to Database Concepts

• Organizing Data
  – A **field** is a single characteristic or attribute of a person, place, object, event, or idea
    • Patient ID, first name, last name, address, phone number, visit date, reason for visit, and invoice amount
  – Related fields are grouped together into a **table**
    • A collection of fields that describes a person, place, object, event, or idea
    • The specific content of a field is called the **field value**
      – his set of field values is called a **record**
Figure 1-1  Data organization for a table of patients

- **Patient table**
- **Fields**
  - PatientID
  - FirstName
  - LastName
  - Phone
- **Records**
  - 22501 Edward Darcy 860-305-3985
  - 22504 Lilian Aguilar 860-374-5724
  - 22510 Thomas Booker 860-661-2539
  - 22512 Lisa Chang 860-226-6034
  - 22529 Robert Goldberg 860-552-2873
  - 22537 Amrita Mehta 860-552-0375

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Databases and Relationships

- A relational database is a collection of related tables.
- Records in the separate tables are connected through a common field.
- A primary key is a field, or a collection of fields, that uniquely identify each record in a table.
- Including the primary key from one table as a field in a second table to form a relationship between the two tables, it is called a foreign key in the second table.

![Database relationship between tables for patients and visits](image)

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>First Name</th>
<th>Last Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>22501</td>
<td>Edward</td>
<td>Darcy</td>
<td>860-305-3985</td>
</tr>
<tr>
<td>22504</td>
<td>Lilian</td>
<td>Aguilar</td>
<td>860-374-5724</td>
</tr>
<tr>
<td>22510</td>
<td>Thomas</td>
<td>Booker</td>
<td>860-661-2539</td>
</tr>
<tr>
<td>22512</td>
<td>Lisa</td>
<td>Chang</td>
<td>860-226-6034</td>
</tr>
<tr>
<td>22529</td>
<td>Robert</td>
<td>Goldberg</td>
<td>860-552-2873</td>
</tr>
<tr>
<td>22537</td>
<td>Anirita</td>
<td>Mehta</td>
<td>860-552-0375</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visit ID</th>
<th>PatientID</th>
<th>Visit Date</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1539</td>
<td>22504</td>
<td>11/18/2015</td>
<td>Annual wellness visit</td>
</tr>
<tr>
<td>1549</td>
<td>22501</td>
<td>11/30/2015</td>
<td>Influenza</td>
</tr>
<tr>
<td>1564</td>
<td>22512</td>
<td>1/5/2016</td>
<td>Annual wellness visit</td>
</tr>
<tr>
<td>1610</td>
<td>22529</td>
<td>2/9/2016</td>
<td>Sinusitis</td>
</tr>
<tr>
<td>1613</td>
<td>22510</td>
<td>2/11/2016</td>
<td>Hypertension</td>
</tr>
<tr>
<td>1688</td>
<td>22529</td>
<td>4/12/2016</td>
<td>Annual wellness visit</td>
</tr>
<tr>
<td>1690</td>
<td>22537</td>
<td>4/13/2016</td>
<td>Varicella</td>
</tr>
</tbody>
</table>
Relational Database Management Systems

• A **database management system (DBMS)** is a software program that lets you create databases and then manipulate the data they contain.

• In a **relational database management system**, data is organized as a collection of tables. A relational DBMS controls the storage of databases and facilitates the creation, manipulation, and reporting of data.
Relational Database Management Systems

- A relational DBMS provides the following functions:
  - Allows you to create database structures containing fields, tables, and table relationships
  - Lets you easily add new records, change field values in existing records, and delete records
  - Contains a built-in query language, which lets you obtain immediate answers to the questions (or queries) you ask about your data
  - Contains a built-in report generator, which lets you produce professional-looking, formatted reports from your data
  - Protects databases through security, control, and recovery facilities
Starting Access and Creating a Database

Figure 1-4  Recent screen in Backstage view

- option for searching for a template online
- option for creating a new, blank database
- a list of recently opened databases might appear here
- option for opening an existing database
- options for creating a new database using a template
Starting Access and Creating a Database (Cont.)

• When you start Access, the first screen that appears is **Backstage view** which contains commands that allow you to manage Access files and options
  – The Recent screen in Backstage view provides options for you to create a new database or open an existing database
  – To create a new database that does not contain any data or objects, you use the Blank desktop database option
  – Use a **template** (a predesigned database that includes professionally designed tables, reports, and other database objects) If the database contains objects that match those found in common databases, such as databases that store data about contacts or tasks
Working in Touch Mode

• If you are working on a touch device, such as a tablet, you can switch to Touch Mode in Access to make it easier for you to tap buttons on the ribbon and perform other touch actions.

• To switch to Touch Mode:
  – On the Quick Access Toolbar, click the Customize Quick Access Toolbar button and make sure the Touch/Mouse Mode is selected (shaded red to indicate that it is selected). The display switches to Touch Mode with more space between the commands and buttons on the ribbon.

Figure 1-5 Ribbon displayed in Touch Mode
Creating a Table in Datasheet View

- On the ribbon, click the CREATE tab
- In the Tables group, click the Table button
- Rename the default ID primary key field and change its data type, if necessary; or accept the default ID field with the AutoNumber data type
- In the Add & Delete group on the FIELDS tab, click the button for the type of field you want to add to the table and then type the field name; Repeat this step to add all the necessary fields to the table
- In the first row below the field names, enter the value for each field in the first record, pressing the Tab or Enter key to move from one field to the next
- After entering the value for the last field in the first record, press the Tab or Enter key to move to the next row, and then enter the values for the next record.
- On the Quick Access Toolbar, click the Save button, enter a name for the table, and then click the OK button
Creating a Table in Datasheet View

(Cont.)

![Figure 1-6](image)

**Plan for the Visit table**

<table>
<thead>
<tr>
<th>Field</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>VisitID</td>
<td>Unique number assigned to each visit; will serve as the table’s primary key</td>
</tr>
<tr>
<td>PatientID</td>
<td>Unique number assigned to each patient; common field that will be a foreign key to connect to the Patient table</td>
</tr>
<tr>
<td>VisitDate</td>
<td>Date on which the patient visited the clinic</td>
</tr>
<tr>
<td>Reason</td>
<td>Reason/diagnosis for the patient visit</td>
</tr>
<tr>
<td>WalkIn</td>
<td>Whether the patient visit was a walk-in or a scheduled appointment</td>
</tr>
</tbody>
</table>

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Creating a Table in Datasheet View

(Cont.)

Decision Making: Naming Fields in Access Tables

One of the most important tasks in creating a table is deciding what names to specify for the table’s fields. Keep the following guidelines in mind when you assign field names:

• A field name can consist of up to 64 characters, including letters, numbers, spaces, and special characters, except for the period (.), exclamation mark (!), grave accent (’), and square brackets ([ ])
• A field name cannot begin with a space
• Capitalize the first letter of each word in a field name that combines multiple words, for example VisitDate
• Use concise field names that are easy to remember and reference, and that won’t take up a lot of space in the table datasheet
• Use standard abbreviations, such as Num for Number, Amt for Amount, and Qty for Quantity, and use them consistently throughout the database.
  • For example, if you use Num for Number in one field name, do not use the number sign (#) for Number in another
• Give fields descriptive names so that you can easily identify them when you view or edit records
Renaming the Default Primary Key Field

To rename the ID field to the VisitID field:

1. Right-click the ID column heading to open the shortcut menu, and then click Rename Field. The column heading ID is selected, so that whatever text you type next will replace it.

2. Type VisitID and then click the row below the heading. The column heading changes to VisitID, and the insertion point moves to the row below the heading.

   • Notice that the TABLE TOOLS tab is active on the ribbon. This is a contextual tab, which appears and provides options for working with objects selected.

Figure 1-7  ID field renamed to VisitID
Creating a Table in Datasheet View

(Cont.)

Changing the Data Type of the Default Primary Key Field

• Notice the Formatting group on the FIELDS tab (One of the options available in this group is the Data Type option)
• Each field in an Access table must be assigned a data type
• The data type determines what field values you can enter for the field
  • The AutoNumber data type automatically inserts a unique key for every record, beginning with the number 1 for the first record, the number 2 for the second, etc.

![Figure 1-8](Image)

Short Text data type assigned to the VisitID field

Options for adding new fields to the table

Unique check box selected

Short Text data type selected
Creating a Table in Datasheet View

(Cont.)

Adding New Fields

• When you create a table in Datasheet view, you can use the options in the Add & Delete group on the FIELDS tab to add fields to your table.

• You can also use the Click to Add column in the table datasheet to add new fields.
Creating a Table in Datasheet View

(Cont.)

• Datasheet view shows a table’s contents in rows (records) and columns (fields)
  • Each column is headed by a field name inside a field selector
  • Each row has a record selector to its left
• Clicking a **field selector** or a **record selector** selects that entire column or row (respectively)
  • A field selector is also called a **column selector**
  • A record selector is also called a **row selector**
Creating a Table in Datasheet View

(Cont.)

• Entering Records

<table>
<thead>
<tr>
<th>VisitID</th>
<th>PatientID</th>
<th>VisitDate</th>
<th>Reason</th>
<th>WalkIn</th>
</tr>
</thead>
<tbody>
<tr>
<td>1550</td>
<td>22549</td>
<td>12/1/2015</td>
<td>Influenza</td>
<td>Yes</td>
</tr>
<tr>
<td>1527</td>
<td>22522</td>
<td>11/9/2015</td>
<td>Allergies - environmental</td>
<td>Yes</td>
</tr>
<tr>
<td>1555</td>
<td>22520</td>
<td>12/7/2015</td>
<td>Annual wellness visit</td>
<td>No</td>
</tr>
<tr>
<td>1542</td>
<td>22537</td>
<td>11/24/2015</td>
<td>Influenza</td>
<td>Yes</td>
</tr>
<tr>
<td>1530</td>
<td>22510</td>
<td>11/10/2015</td>
<td>Seborrheic dermatitis</td>
<td>No</td>
</tr>
<tr>
<td>1564</td>
<td>22512</td>
<td>1/5/2016</td>
<td>Annual wellness visit</td>
<td>No</td>
</tr>
<tr>
<td>1575</td>
<td>22513</td>
<td>1/13/2016</td>
<td>Broken leg</td>
<td>Yes</td>
</tr>
<tr>
<td>1538</td>
<td>22500</td>
<td>11/17/2015</td>
<td>Migraine</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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New Perspectives on Microsoft Access 2013
Creating a Table in Datasheet View

Figure 1-13  Datasheet with first record entered

- next row available for a new record
- field values for the first record entered

Figure 1-14  Datasheet with eight records entered

- Navigation Pane is closed
- field values are completely visible
- value displayed with a four-digit year

New Perspectives on Microsoft Access 2013
Creating a Table in Datasheet View

(Cont.)

• Saving a Table
  • Records you enter are immediately stored in the database as soon as you enter them
  • However, the table’s design—the field names and characteristics of the fields themselves, plus any layout changes to the datasheet—are not saved until you save the table
  • When you save a new table for the first time, you should give it a name that best identifies the information it contains
    • Like a field name, a table name can contain up to 64 characters, including spaces
Creating a Table in Datasheet View (Cont.)

- Entering Additional Records

![Entering a new record](image1)
- HOME tab displayed
- Option for entering a new record
- New record will be entered in row 9

![Datasheet with additional records entered](image2)
- Button for closing the Visit table
- Two new records added at the end of the table
Creating a Table in Datasheet View

(Cont.)

• Opening a Table
  • The tables in a database are listed in the Navigation Pane. You open a table, or any Access object, by double-clicking the object name in the Navigation Pane.

![Figure 1-17](table.png)
Closing a Table and Exiting Access

• Close a table by clicking its Close button on the object tab, as you did earlier
  • If you want to close the Access program as well, you can click the program’s Close button
    • When you do, any open tables are closed, the active database is closed, and you exit the Access Program
  • If you want to close a table without exiting Access, click the FILE tab to display Backstage view, and then click Close
Creating a Database (Cont.)

The CREATE tab provides options for creating various database objects, including tables, forms, and reports. The options appear on the tab grouped by object type.

The Query Wizard button opens a dialog box with different types of wizards that guide you through the steps to create a query. One of these, the Simple Query Wizard, allows you to select records and fields quickly to display in the query results.

You use the options in the Tables group to create a table in Datasheet view or in Design view.

The Queries group contains options for creating a query, which is a question you ask about the data stored in a database. In response to a query, Access displays the specific records and fields that answer your question.

The Forms group contains options for creating a form, which is a database object you use to enter, edit, and view records in a database.

The Form tool quickly creates a form containing all the fields in the table (or query) on which you’re basing the form.

The Form Wizard guides you through the process of creating a form.

The Reports group contains options for creating a report, which is a formatted printout (or screen display) of the contents of one or more tables (or queries) in a database.

The Report tool places all the fields from a selected table (or query) on a report, making it the quickest way to create a report.

The Report Wizard guides you through the process of creating a report.

The Popular searches section provides links to commonly searched Access Help topics.

Because the Access online Help system is a dynamic environment and subject to change, your Help screen might look slightly different from this one.
Copying Records from Another Access Database

- There are many ways to enter records in a table, including copying and pasting records from a table into the same database or into a different database.
- The two tables must have the same structure—that is, the tables must contain the same fields, with the same design, in the same order.
- Cindi has already created a table named Appointment that contains additional records with visit data.
- The Appointment table is contained in a database named Cindi located in the Access1 Tutorial folder included with your Data Files.
- The Appointment table has the same table structure as the Visit table you created.
Copying Records from Another Access Database (Cont.)

**Figure 1-18** Appointment table in the Cindi database

- Table contains a total of 76 records
- Click the datasheet selector to select all the records in the table
- Same fields as in the Visit table
Copying Records from Another Access Database (Cont.)

Figure 1-19 Visit table after copying and pasting records

- Table now contains 86 records
- Original records (10)
- Pasted records (76)
- Navigation buttons
- Scroll box
- Scroll bars
Navigating a Dataset

• **Navigation buttons** provide another way to move vertically through the records
• The Current Record box appears between the two sets of navigation buttons
  • Displays the number of the current record as well as the total number of records in the table
• The New (blank) record button works in the same way as the New button on the HOME tab

<table>
<thead>
<tr>
<th>Figure 1-20 Navigation buttons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigation Button</td>
</tr>
<tr>
<td>❯</td>
</tr>
<tr>
<td>◀</td>
</tr>
<tr>
<td>➤</td>
</tr>
</tbody>
</table>

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New Perspectives on Microsoft Access 2013
Creating a Simple Query (Cont.)

Figure 1-22 Query results

- Only the three selected fields are displayed in the query datasheet.
- All 86 records are included in the results.
Creating a Simple Form

• Forms display one record at a time
  • Provide another view of the data that is stored in the table
  • Allowing you to focus on the values for one record
• Access displays the field values for the first record in the table
• Each field appears on a separate line
• As indicated in the status bar, the form is displayed in Layout view
  • In Layout view, you can make design changes to the form while it is displaying data, so that you can see the effects of the changes you make immediately
Creating a Simple Form (Cont.)

- Use a form to enter, edit, and view records in a database
  - Although you can perform these same functions with tables and queries, forms can present data in many customized and useful ways
Creating a Simple Report

- A report is a formatted printout (or screen display) of the contents of one or more tables or queries
- Reports show each field in a column, with the field values for each record in a row, similar to a table or query datasheet
- Reports offers a more visually appealing format for the data, with the column headings in a different color, borders around each field value, a graphic of a report at the top left, and the current day, date, and time at the top right
Creating a Simple Report (Cont.)

Figure 1-24  Report created by the Report tool

- Column headings appear in a different font color.
- Current day, date, and time displayed (yours might differ).
- Dashed lines show the page edges.
- Borders around field values.
- Report displayed in Layout view.
- Report graphic.
Creating a Simple Report (Cont.)

Figure 1-25 Report after resizing the VisitID column

- Field values and borders are now within the area marked by the dashed lines.
- Column is now narrower.

Figure 1-26 Report page number selected

- Text to the right of this dashed line would print on its own page.
- Text is selected and can be moved to the left.
- Shows total number of records in the report.
Creating a Simple Report (Cont.)

Figure 1-27 First page of the report in Print Preview
Printing a Report
• Print reports to distribute to others who need to view the report’s contents
• STEPS
  • Open the report in any view, or select the report in the Navigation Pane
  • Click the FILE tab to display Backstage view, click Print, and then click Quick Print to print the report with the default print settings

or

• Open the report in any view, or select the report in the Navigation Pane
• Click the FILE tab, click Print, and then click Print (or, if the report is displayed in Print Preview, click the Print button in the Print group on the PRINT PREVIEW tab). The Print dialog box opens, in which you can select the options you want for printing the report
Viewing Objects in the Navigation Pane

- The Navigation Pane currently displays the default category, **All Access Objects**, which lists all the database objects in the pane.
- Each object type (Tables, Queries, Forms, and Reports) appears in its own group.

![Chatham database objects displayed in the Navigation Pane](image)

- **Table icon**: specifies that all objects in the database are displayed.
- **Query icon**: displays a menu with options for grouping objects in the Navigation Pane.
- **Form icon**: enter text here to find objects in the database containing the search text.
- **Report icon**:
Start Help by clicking the Microsoft Access Help button in the top right of the Access window, or by pressing the F1 key.
Managing a Database

• Activities involved in database management include compacting and repairing a database and backing up and restoring a Database.

• **Compacting and Repairing a Database**
  • Rearranges the data and objects in a database to decrease its file size, thereby making more storage space available and enhancing the performance of the database.
Managing a Database  (Cont.)

Backing Up and Restoring a Database

• The process of making a copy of the database file to protect your database against loss or damage

• The Back Up Database command enables you to back up your database file from within the Access program, while you are working

• Steps:
  • Click the FILE tab to display the Info screen in Backstage view
  • Click Save As in the navigation bar
  • Click Back Up Database in the Advanced section of the Save Database As pane
  • Click the Save As button
Ask the following questions

1. Do you need to store data in separate tables that are related to each other?
2. Do you have a very large amount of data to store?
3. Will more than one person need to access the data at the same time?
   • If you answer “yes” to any of these questions, an Access database is most likely the appropriate application to use.