



Databases

Chapters 17 - 19

Storing and organizing data

Databases are used by:

- Schools
- Banks
- Utility Companies
- Governments
- Stores (inventory, prices, customer lists)
- Nature Conservancy
- Anyone who has large amounts of data to store & organize



Benefits of databases

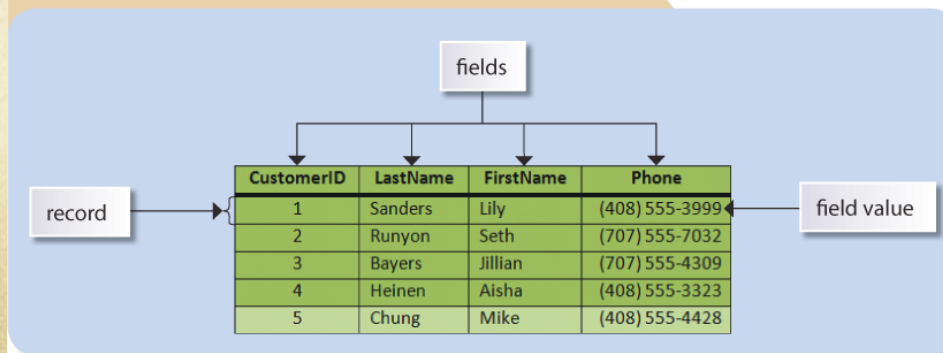
- reduce data redundancy
- modify only one file
- share data
- saves space



Understanding Database Concepts

- A database is an organized collection of related information.
- Each piece of data in a database is stored in a **field**.
- Related fields are grouped into **tables**.
- A **record** is a row in a table; all the fields in a table about a single person, object, event, or idea.

Exhibit 17-1 A database table



Fields

Data Type

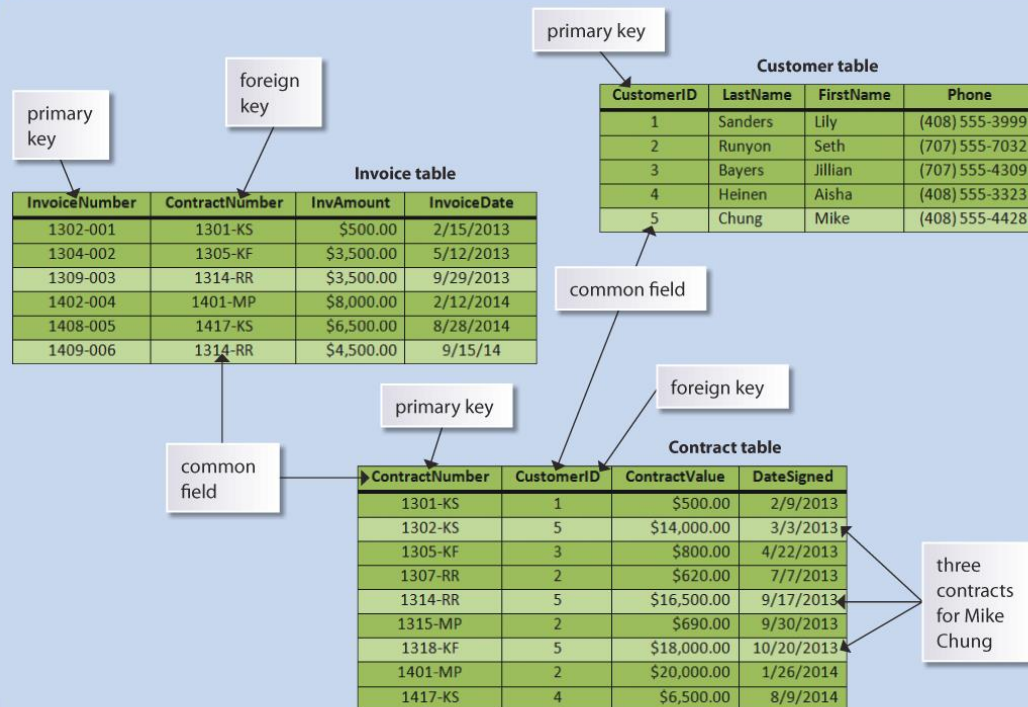
- text
- memo
- number
- currency
- date/time
- Autonumber

Field Name

- ≤ 64 characters
- can contain letters, numbers, spaces and many punctuation marks
- cannot contain periods, commas, exclamation points or square brackets

- A database that contains more than one related table is a relational database.
- Common field is a field that appears in more than one table.
- Primary key is a field, or a collection of fields, whose values uniquely identify each record in a table.

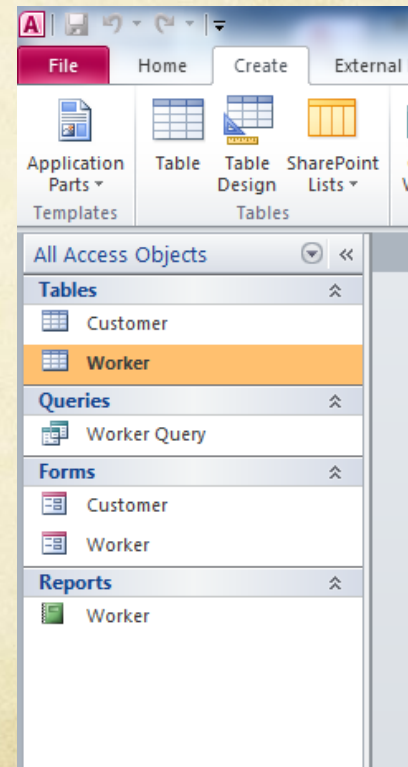
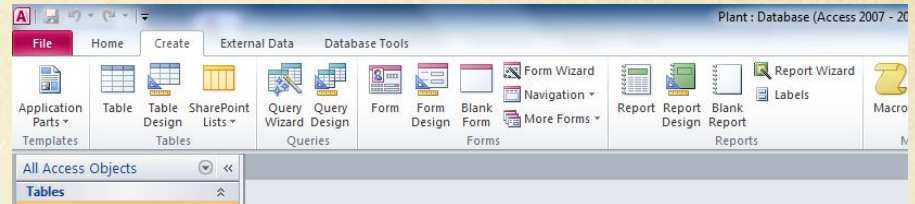
Exhibit 17-2 Database relationship between tables



Access Key Terms:

Parts of an Access Database:

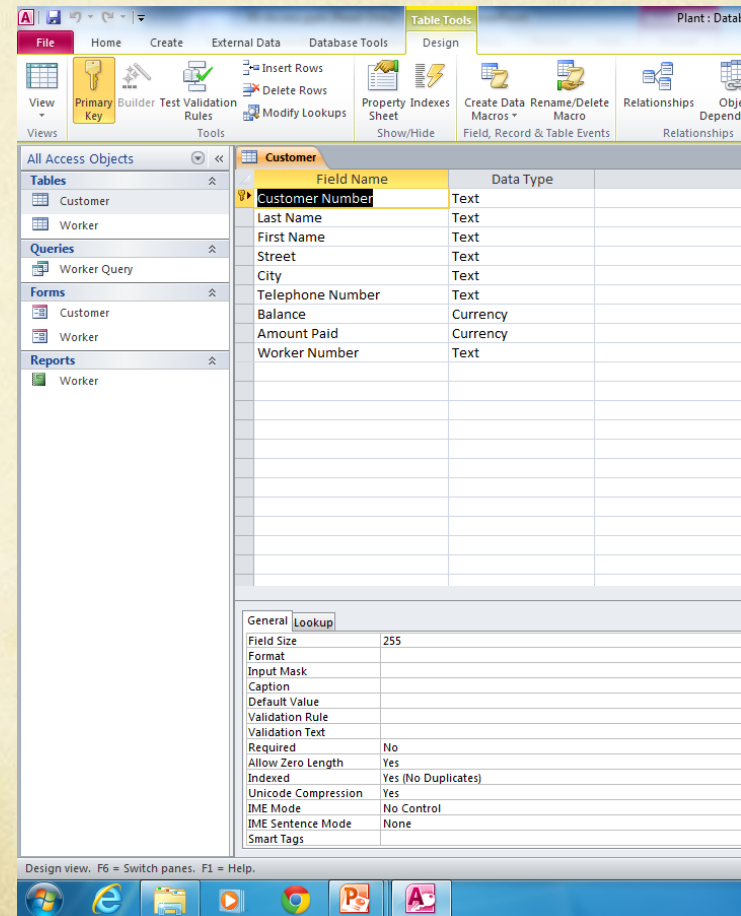
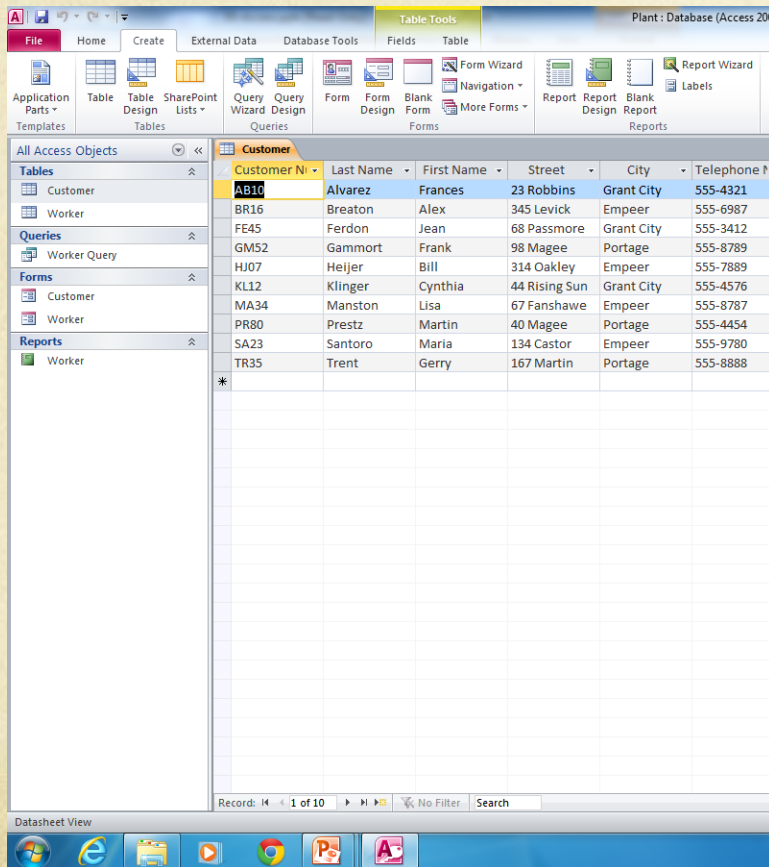
- Table – holds the data
- Form – see one record at a time
- Query – ask question/manipulate data
- Report – get info out (looking good)
- Primary key – uniquely identify a record
- Relationship – ties tables together



Two Views

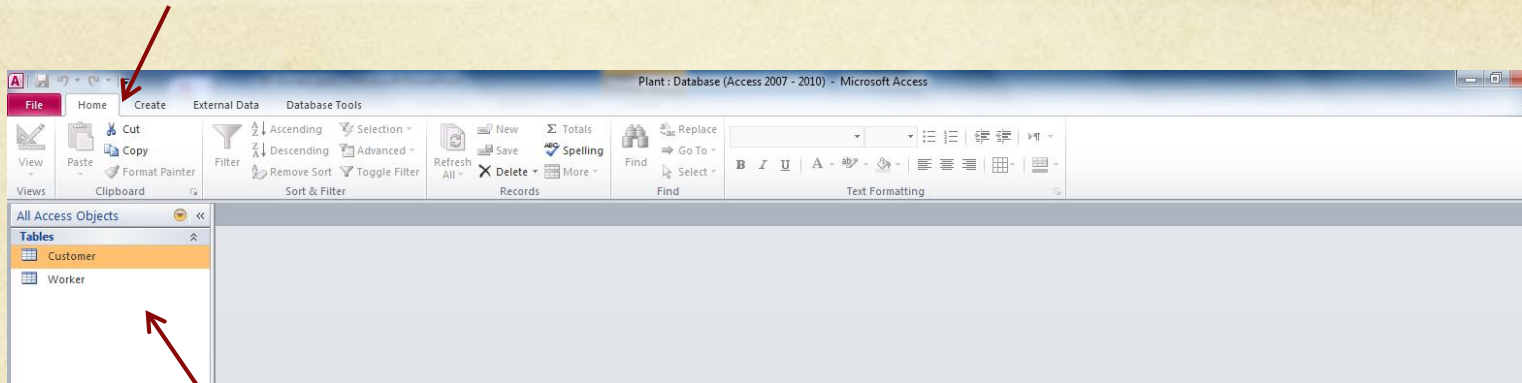
Datasheet view –
shows contents

Design View –
shows structure



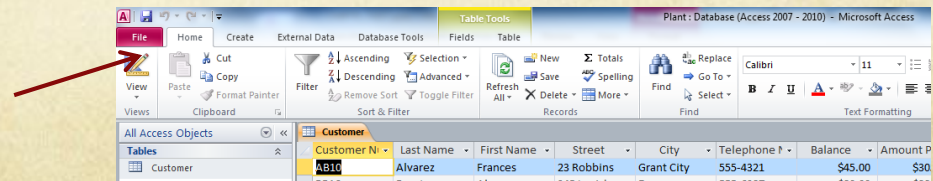
Microsoft Access

Ribbons



Navigation Pane - shows objects (tables, forms, reports and queries that are part of the database

Button to Change from Datasheet to Design View is on the Home ribbon



You Can Create a Table in Datasheet View

Exhibit 17-6 Datasheet with field

The screenshot shows the Microsoft Access interface in Datasheet View. The ribbon is set to 'Table Tools' with the 'Fields' tab selected. The 'All Access Objects' pane on the left shows 'Table1' selected. The main area displays a table with columns 'ID', 'FirstName', and 'Click to Add'. A context menu is open for the 'Click to Add' field, listing various data types. Annotations include a callout 'field name' pointing to the 'FirstName' column header, and two callouts: 'you can click a data type to select it' pointing to the 'Click to Add' dropdown, and 'list of data types' pointing to the list of data types in the context menu.

field name

you can click a data type to select it

list of data types

ID	FirstName	Click to Add
*	(New)	AB Text 12 Number Currency Date & Time Yes/No Lookup & Relationship Rich Text AB Memo Attachment Hyperlink Calculated Field Paste as Fields

Or You Can Create a Table in Design View (my recommendation)

Exhibit 17-9 Table in Design view

The screenshot shows the Microsoft Access interface in Design View for a table named 'Customer'. The ribbon includes 'Table Tools' and 'Design'. The 'All Access Objects' pane on the left shows the 'Customer' table. The main area is a table design grid with columns for 'Field Name', 'Data Type', and 'Description'. The fields listed are CustomerID (AutoNumber), FirstName (Text), LastName (Text), and CustomerSince (Date/Time). Below the grid is the 'Field Properties' pane, which is currently showing the 'General' tab for the selected 'CustomerID' field. The 'Field Size' property is set to 'Long Integer'. A red arrow points from the text on the left to the 'Field Size' property. The 'Help box' is visible in the bottom right corner, containing text about field name length. The 'Design View button' and 'Datasheet View button' are located in the bottom right corner of the window.

Field Name	Data Type	Description
CustomerID	AutoNumber	
FirstName	Text	
LastName	Text	
CustomerSince	Date/Time	

Property	Value
Field Size	Long Integer
New Values	Increment
Format	
Caption	
Indexed	Yes (No Duplicates)
Smart Tags	
Text Align	General

Design view. F6 = Switch panes. F1 = Help.

Change the size of a **text** field from 255 (default) to something reasonable to save bytes

Enter Data into a Table using Datasheet View

Exhibit 17-8 First field value entered

The screenshot displays the Microsoft Access interface for a table named 'Customer'. The ribbon includes 'File', 'Home', 'Create', 'External Data', 'Database Tools', and 'Table Tools'. The 'Table Tools' ribbon is active, showing 'Fields' and 'Table' tabs. The 'Fields' tab includes options like 'View', 'Text', 'Number', 'Currency', 'Date & Time', 'Yes/No', 'More Fields', 'Delete', 'Name & Caption', 'Default Value', 'Field Size', 'Properties', 'Modify Lookups', 'Modify Expression', and 'Memo Settings'. The 'Table' tab includes 'fx' and 'ab' icons. The 'All Access Objects' pane shows 'Customer' under 'Tables'. The 'Customer' table is open in Datasheet View, showing columns: 'CustomerID', 'FirstName', 'LastName', and 'CustomerSince'. The first record is '1 Lily' under 'CustomerID', with '(New)' below it. The 'LastName' field is highlighted with a yellow background and a pencil symbol. The 'CustomerID' field is highlighted with a yellow background and a star symbol. Callouts identify the star symbol as the primary key value for the first record, the pencil symbol as the first field value entered, and the insertion point as the insertion point.

CustomerID	FirstName	LastName	CustomerSince
1	Lily		

star symbol

pencil symbol

primary key value for first record

first field value entered

insertion point

Or Enter Data by Using a Form

Forms allow you to view one record at a time for easier data entry or retrieval.

You can create a form for a table using the form wizard.

Or with the table selected that you want to create a form for, select the Create tab and chose the Form option.

You can also create forms in design view, but it is easier to let the wizard do the work for you. You can always modify the form in Design view later.

Forms

Exhibit 17-23 Form created by the Form tool

new tab for form

Invoice Number	1302-001
Contract Number	1301-KS
Invoice Date	2/18/2013
Amount	\$500.00
Paid?	<input checked="" type="checkbox"/>

field values for the first record

form displayed in Layout view

first record

Record: 1 of 82

depending on your computer's settings, your field value boxes might be a different width

Goodies

These properties can make data entry easier and less error prone:

(These properties are found in design view)

Note: Only the Input Mask is in the book

Input Mask – forces a format,
for example a phone number : (xxx) xxx-xxxx

Lookup Wizard – creates a pull-down menu for easier and more error free data entry. (found under data types)

Validation Rule – makes sure the data entered meets a specific criteria. An error message is displayed if the data does not meet the criteria.

Required Skills

You should know how to

- Create a new **database**
- Design an Access **table**
- Create a table in a database
- Define **fields** in a table
- Understand the rules for naming tables and fields
- Determine **data types** for fields
- Modify field properties
- Determine the field that will be the **primary key**
- Add, delete or modify fields in a table
- Change from **design view** to **datasheet view** (and vice versa)
- Enter data into a **record**
- Add additional records to a table
- Change data in a table
- Use a **form** to view a record
- Save a table
- Understand the terms used when working with an Access database

Homework/Labs



- Review Chapters 17 – 19 in the CMPTR book
Make sure that you can:
- Build a table in datasheet view or design view.
- Enter records into an Access table.
- Add new records, modify or delete existing records.
- Create a form using the form button or form wizard.
- Use a form to add, modify or delete records.

If you are not comfortable with these skills, re-do the in-class lab on your own or work with the exercises in the book.