

# Microsoft Access

*Module*

Introduction to Access, Tables and  
Data



# Module Outline

## Four parts:

- Part 1: Introduction & Tables
- Part 2: Manipulating and Sorting Tables
- Part 3: External Data
- Part 4: Table Relationships

## Module Hands On

- Students “hands-on”:

- Create a database
- Create 3 tables (w/validation rules and masks)
- Populate tables
- Sort & Manipulate tables
- Create table relationships (permanent links)

# Introduction to Access

*Module Part 1:*

Introduction to Access and Tables

# Access Modes

- **Menu-driven interface** - Interact with a database and its objects using menu commands
- **Program mode** - Lets you store instructions in a VBA program file
- This course concentrates on the menu interface but does cover macros which can be used to “program” a series of actions

# Relational Database Concepts

- Most prominent type of database – Access is a Relational Database
- Based on set theory (Mathematically based)
- A table is a relation between columns and rows
- Each row must be unique
- Each column may contain only one type of data and must have a unique name
- Each data element may contain only one value
- Information from multiple tables can be combined using a column of common information

# Database Terminology

- **Database** - in Access an ".mdb" file in which tables, reports, queries, and other objects are stored
- **Table** - stores facts about one subject (entity)
- **Record** - contains related information about one entity "instance"
- **Field** - contains a fact about an entity

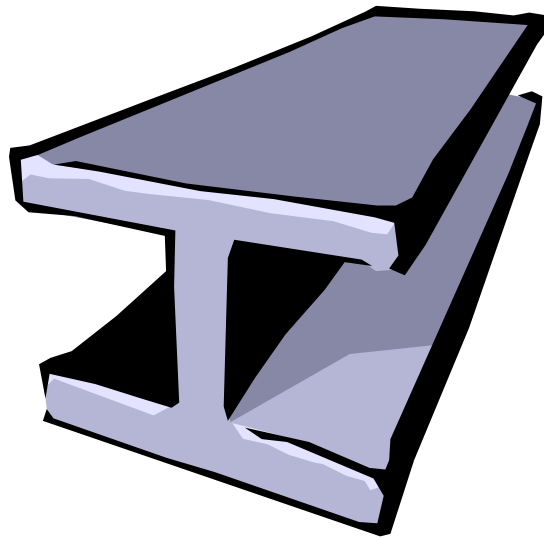
## Database Terminology (cont.)

- **Key** - used to order, identify, and retrieve records in the database
- **Primary key** - unique identifier for a particular record. Only one per table.
- **Secondary key** - allows multiple occurrences of the same value. Can have many per table. Indexes in Access.
- **Table structure** - the arrangement of information within a record, the type of characters, field length, limitations, etc.

## Database Terminology (cont.)

- **Form** - paper-like method of accessing and entering data in a table
- **Query** - retrieves information from Access tables
- **Report** - provides the ability to arrange table data as well as to perform calculations and then print a paper-based report
- **Object** - used in database world as generic term for queries, reports, indexes, tables, etc. Not the same as programming object.

# Sample Application – Factory2000



- Simple cost accounting application
- Employees work on work orders
- Clock labor hours for each work order

# Recording Factory2000 Labor Hours

<u>EmpNo</u>	fName	IName	Rate	<u>Wono</u>	Descr	Hours
12	Bob	Smith	15	A1	Casting	12
13	Mary	Chavez	20	A1	Casting	22
14	Alicia	Parks	25	B3	Ass'ly	15
14	Alicia	Parks	25	C2	Screws	18

This what is called a “flat file”. What problems do you see with this approach?

# Factory2000 Relational Database Structure

<u>EmpNo</u>	fName	lName	Rate
12	Bob	Smith	15
13	Mary	Chavez	20
14	Alicia	Parks	25

*employees*

<u>Wono</u>	Descr	Std
A1	Casting	30
B3	Fitting	50
C2	Screws	70

*Work\_orders*

<u>EmpNo</u>	<u>Wono</u>	Start	End	Hours
12	A1	1/1/01	1/31/01	20
14	A2	2/1/01	2/28/01	42
14	B3	1/1/01	2/28/01	40

*Labor*

# Creating a Database

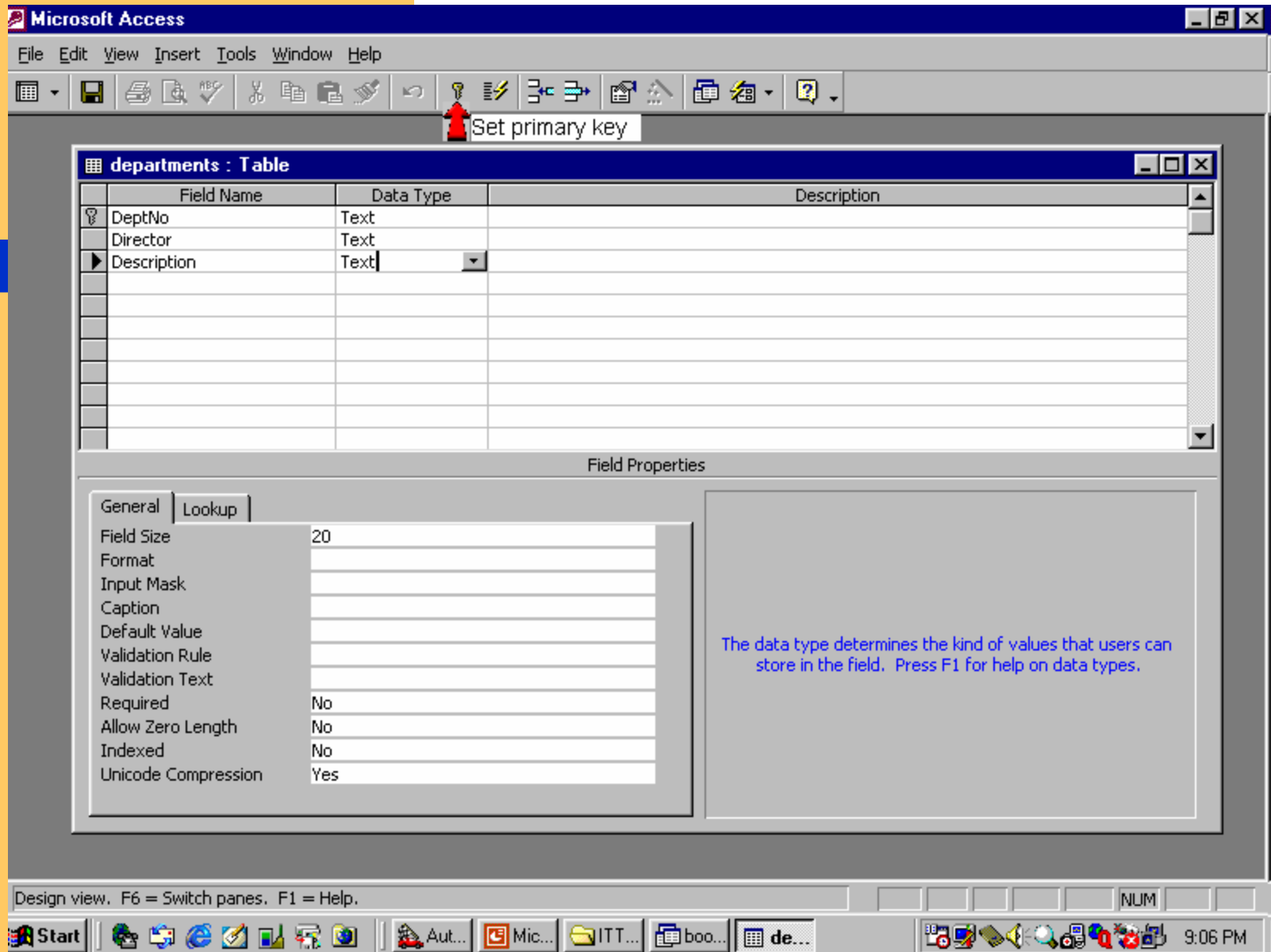
- Ways to create a database
  - Create a database using an Access template or Wizard - (not always recommended)
  - Create a **blank database** and then insert your own objects - we will use this method in this course

# Creating a Table

- Click new from tables tab
- Naming a Table
  - Up to 64 "standard" characters can be used
  - Do not use an extension
  - No leading spaces or control characters, in fact try to avoid spaces altogether
- Add fields one by one
- Set Field Properties in Field Properties box

## Designing Fields

- **Field Type** - text, datetime, number, etc.
- **Field Width** - 10 characters, etc.
- **Caption** - "Column title" for display
- **Format** - Determines how the field is displayed (long date, short date, etc.)
- Click toolbar key symbol to make **primary key**
- Set indexed for secondary keys, required, etc.



# Hands On - Create Table Structures



- Employees
- Work\_Orders
- Labor

# Employees Table Definition



- EmpNo text(2), primary key
- Fname text(10)
- Lname text (15), required
- Rate currency, required
- MgrNo text(2)

## Work\_Orders Table Definition



- WoNo text(2), primary key
- Descr text(15), optional
- StdHrs number(single,2), required
- Accum number(single,2), required

# Labor Table Definition



- EmpNo text(2), primary key
- WoNo text(2), primary key
- Start datetime, required
- End datetime, optional
- Hours number(single,2)

# Field Validation & Masks

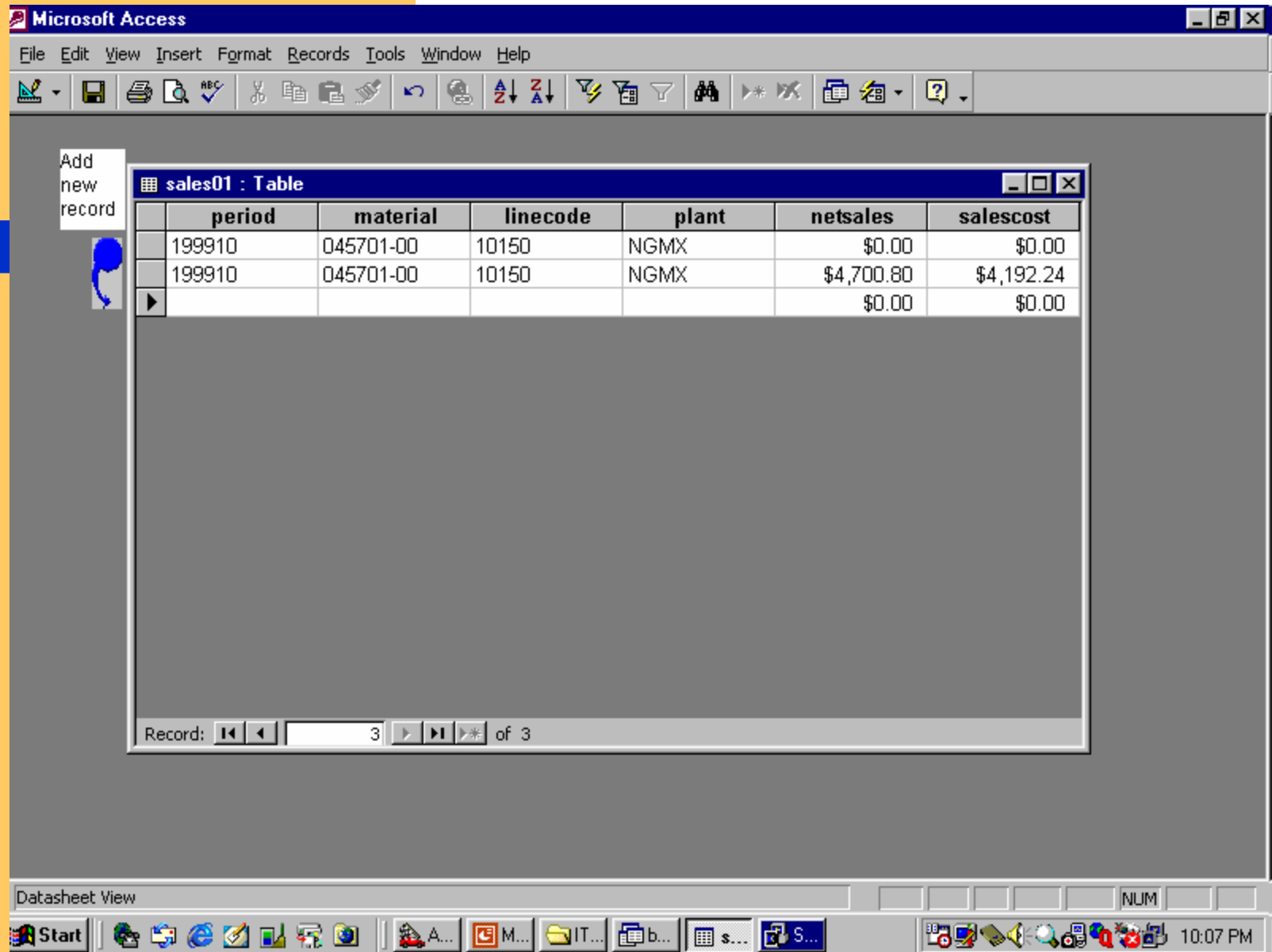


- Add some validations
  - Require start date
  - End  $\geq$  start date
  - Etc.
- Add some input masks & formats

# Datasheets

- **Datasheet window** - displays the contents of a table in a spreadsheet-like format
  - Each row contains a record
  - Each column contains a field
- **Speedbar** - appears at the bottom of the window and is used to navigate through the records in a table

# Datasheet View




# Entering & Editing Records




- Enter table data from the handouts

## Employees Table Data



Employees : Table						
		EmpNo	First Name	Last Name	Hourly Rate	MgrNo
	+	12	Alicia	Parks	\$15.00	13
	+	13	Mary	Chavez	\$20.00	
	+	14	Betty	Smith	\$25.00	12

## Work\_Orders Table Data



Work_Orders : Table					
		Wono	Description	Std Hours	Accum Hrs
▶	+	A1	Casting	30.00	0.0
	+	A2	Screws	70.00	0.0
	+	B3	Fitting	50.00	0.0

# Labor Table Data

We will enter this data after we have set up our table relationships

# Introduction to Access

*Module Part 2:*

Manipulating and Sorting Tables

## Printing a Table

- Access allows you to create “quick and dirty” reports by clicking the toolbar **Print button**
  - A row/column presentation is used
  - Field names appear along the top
  - Records are rows
  - Fields are columns
  - A grid is printed around each field

# Quick Reports

- Report Wizard
  - Module 2 covers reports
  - For now, be aware a quick report can be produced using the report wizard

## Manipulating the Datasheet

- Gridlines - controlled by Cells Effects dialog box
- Can control background color, fonts, etc.
- Fields can be resized and moved
- Also, hidden and locked like a spreadsheet

## Record Pointer

- Record pointer (thick black arrow head) helps you keep track of where you are in a table
- The character is used in the left-hand table cells to indicate the pointer location
- The pointer moves by using keyboard, scrollbar, or speedbar commands
- => Changes are saved when you move to next record

## Find Command

- Use the Edit | Find command sequence or click the Find toolbar button
- Either command activates the Find in field dialog box
- Searches can have "Wildcards" (in fact sophisticated Unix style searches are available)

## One Field Sort

- Select the column to be used in the sort
- Click the desired Sort Ascending or Descending toolbar button

## Multiple Field Sort

- **Filter** - used to sort data or restrict records shown
- Use Records | Filter | Advanced Filter/Sort command sequence
- Activates the filter window
- Specify the fields and sort order
- Execute by clicking the Apply Filter/Sort button of the toolbar

# Introduction to Access

*Module Part 3:*

External Data

# Office Links

- Publish it with MS Word
- Analyze in MS Excel
- Use Tools | Office Links or the Toolbar

## Exporting a table

- Very simple
- Click File|Export (or save as)
- Specify type: Access can export to many types: Excel, Text, etc.

# Exporting tables



- Export Work\_Orders to a text file (use comma delimited)
- Export Employees to Excel – call new file Employees\_xls
- Export Labor to a new table in this database called New\_Labor then delete it. (Note you can also export to another database – a neat feature!)

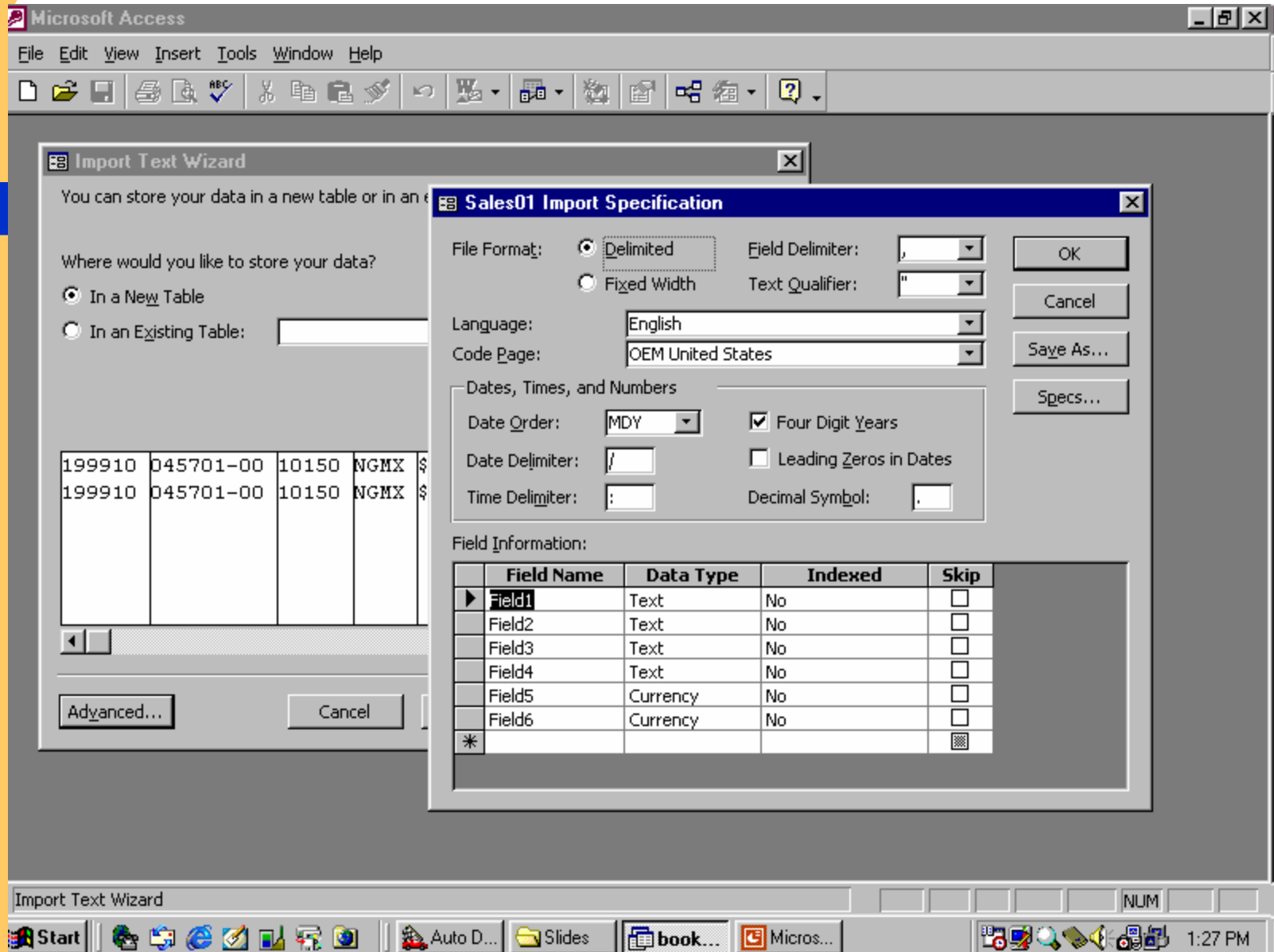
## Importing tables

- Another very important feature
- Start from new table dialog, pick Import Table
- It will start a wizard
- Use advanced to select fields, etc.
- Specifications can be saved for later use
- *Note: imported data is put into an access table. Changes to the table will not change the original data source.*

## Importing Files

- Another very important feature
- Start from new table dialog, pick Import Table
- It will start a wizard
- Use advanced to select fields, etc.
- Specifications can be saved for later use

# Importing a Text File



# Importing from a text file

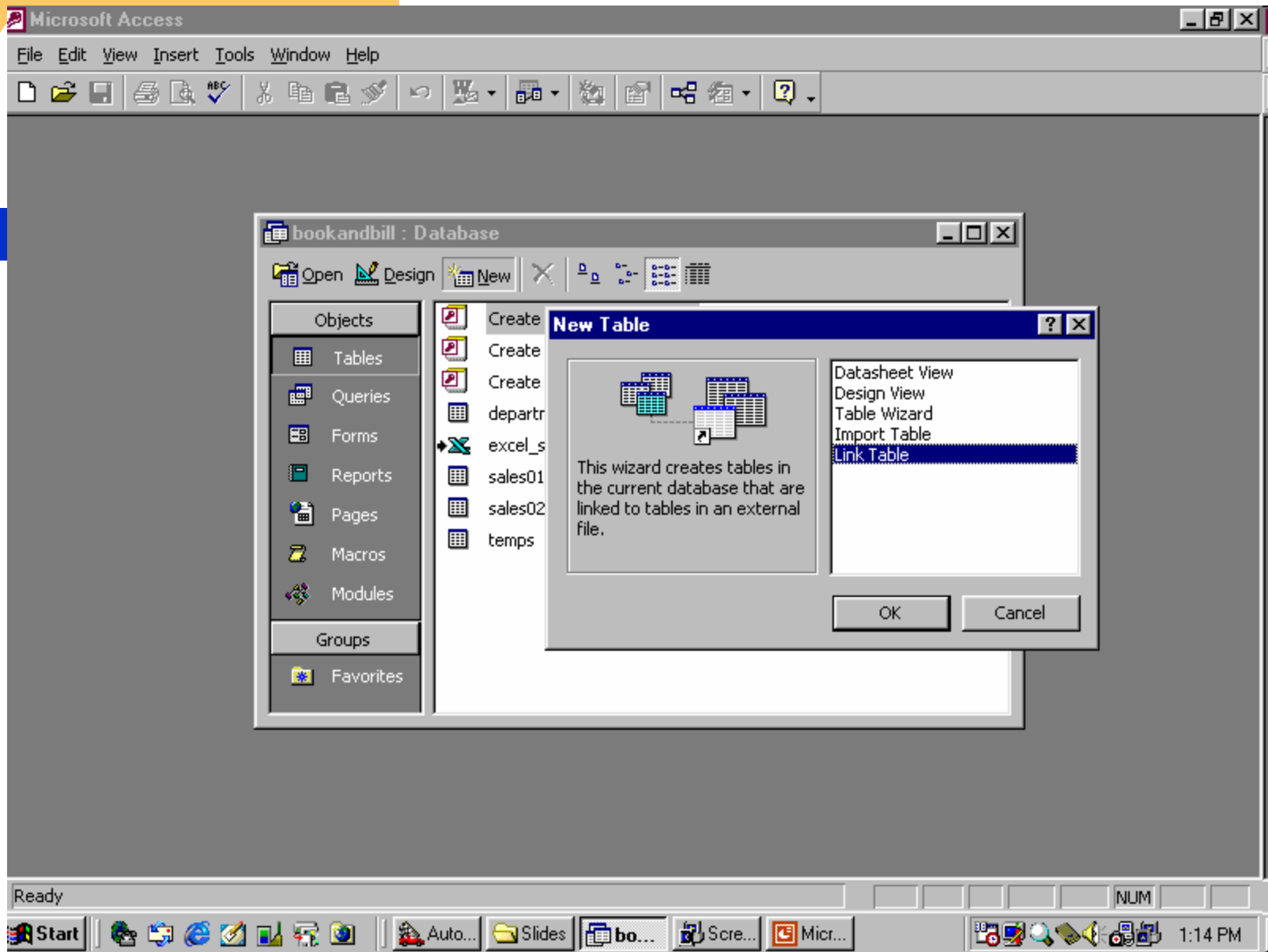


- Import the Work\_Orders you modified above
- Omit Accum
- Save the specification
- Save the new table as Work\_Orders\_Import

## Linking a table

- Use new table dialog
- Select **Link Table**
- This will set up a connection to an external table. It does not become part of the Access database
- Access can link to many types: Excel, ODBC connection, etc.
- *Note: changes to the data in a linked table will change the corresponding data in the data source*

# Linking a Table



## Link a table



- Link the Employees Excel file you just created.
- Give it a name like Employees\_xls

# Introduction to Access

*Module Part 4:*  
Table Relationships

## Relating Tables

- Command sequence - Tools | Relationships
- **Parent table** - table used as the main table for a relationship
- **Child table** - the related table, often has several records for each record in the parent table

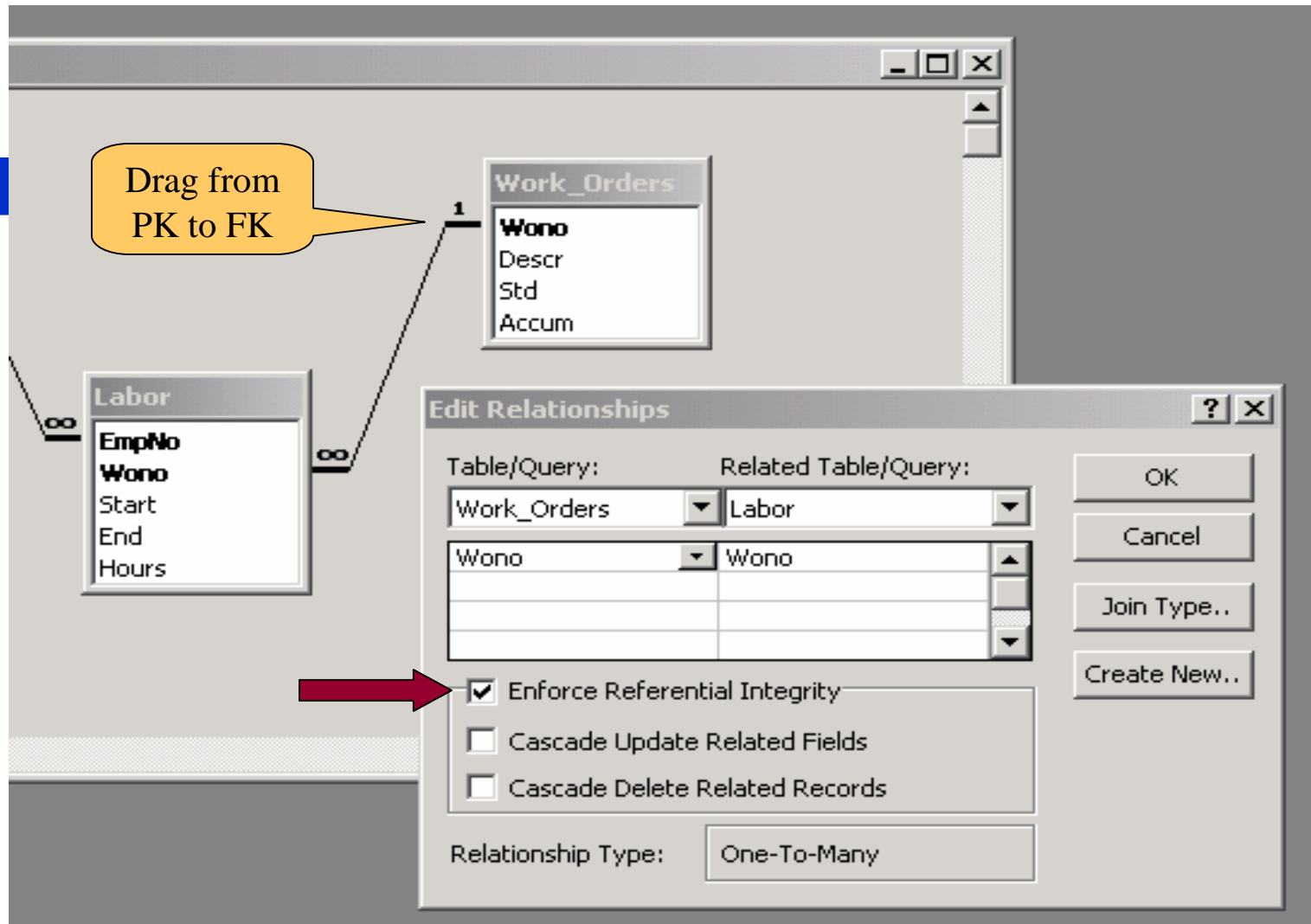
# Referential Integrity

- **Orphan record** - a child record without a corresponding parent record
- **Referential integrity** - makes certain that related records are present

## Table Links

- In this context means relate two or more tables on columns of data
- **Permanent link** -
  - established using the Relationships command
  - is always in effect once defined; the wizards and designers will take advantage of this fact
- **Transient link** - defined using the query-by-example feature of Access. Lasts for the duration of the query.

# Creating a Permanent Link

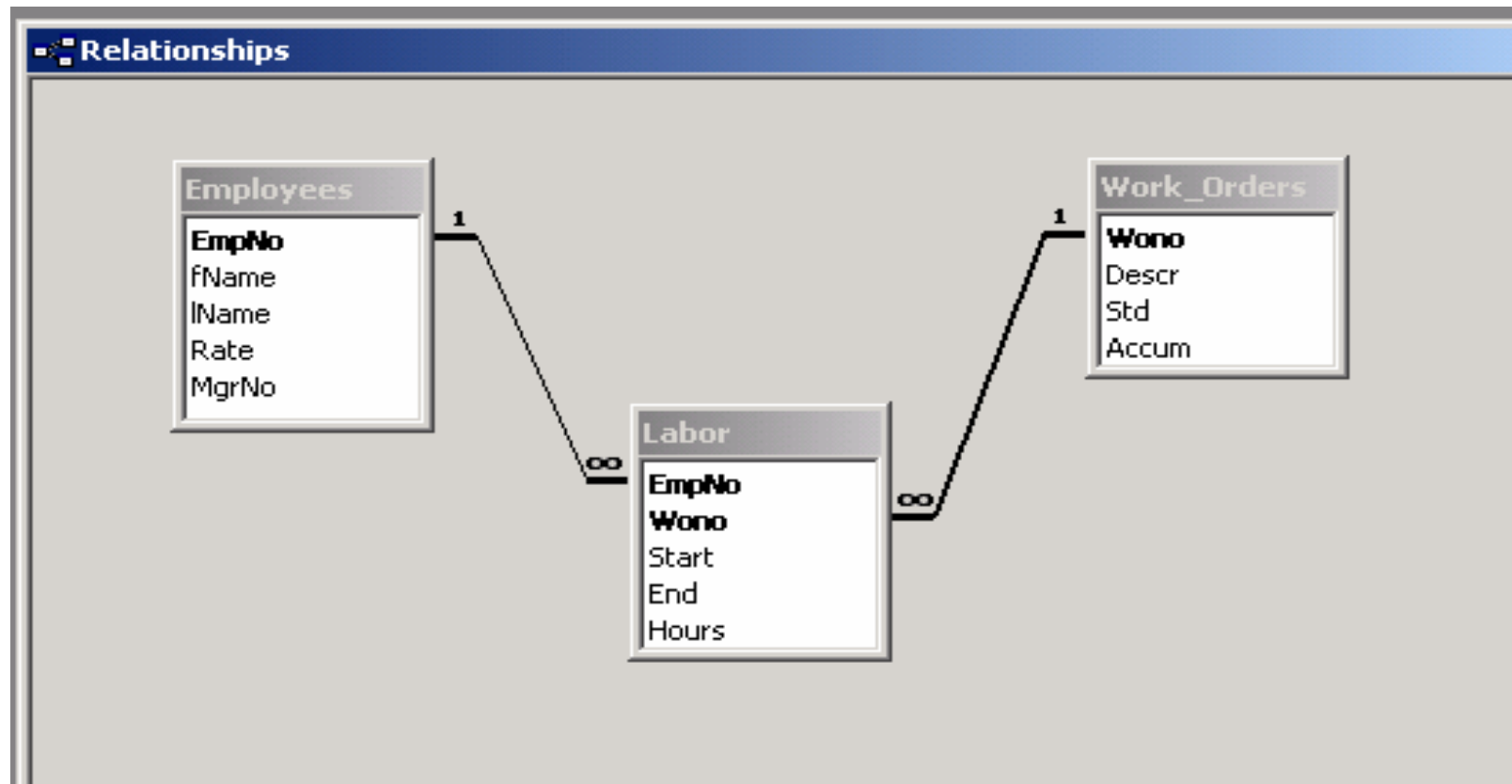


## Create Permanent Links




- Link all Factory2000 tables
- Enforce referential integrity
- Normal, default joins for now

# Permanent Links



# Enter Labor Table Data



	EmpNo	Wono	Start Date	End Date	Hours
▶	12	A1	1/1/2001	1/31/2001	20
	12	A2	11/9/2001	11/9/2001	15
	12	B3	3/18/2002	3/20/2002	20
	13	A1	10/2/2001	10/3/2001	20
	13	A2	10/3/2001	10/4/2001	23
	14	A1	10/10/2001	10/10/2001	11
	14	A2	2/1/2001	2/28/2001	42
	14	B3	1/1/2002	2/28/2002	30

# Introduction to Access

End of Module

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