



# Implementing a Database in MS Access



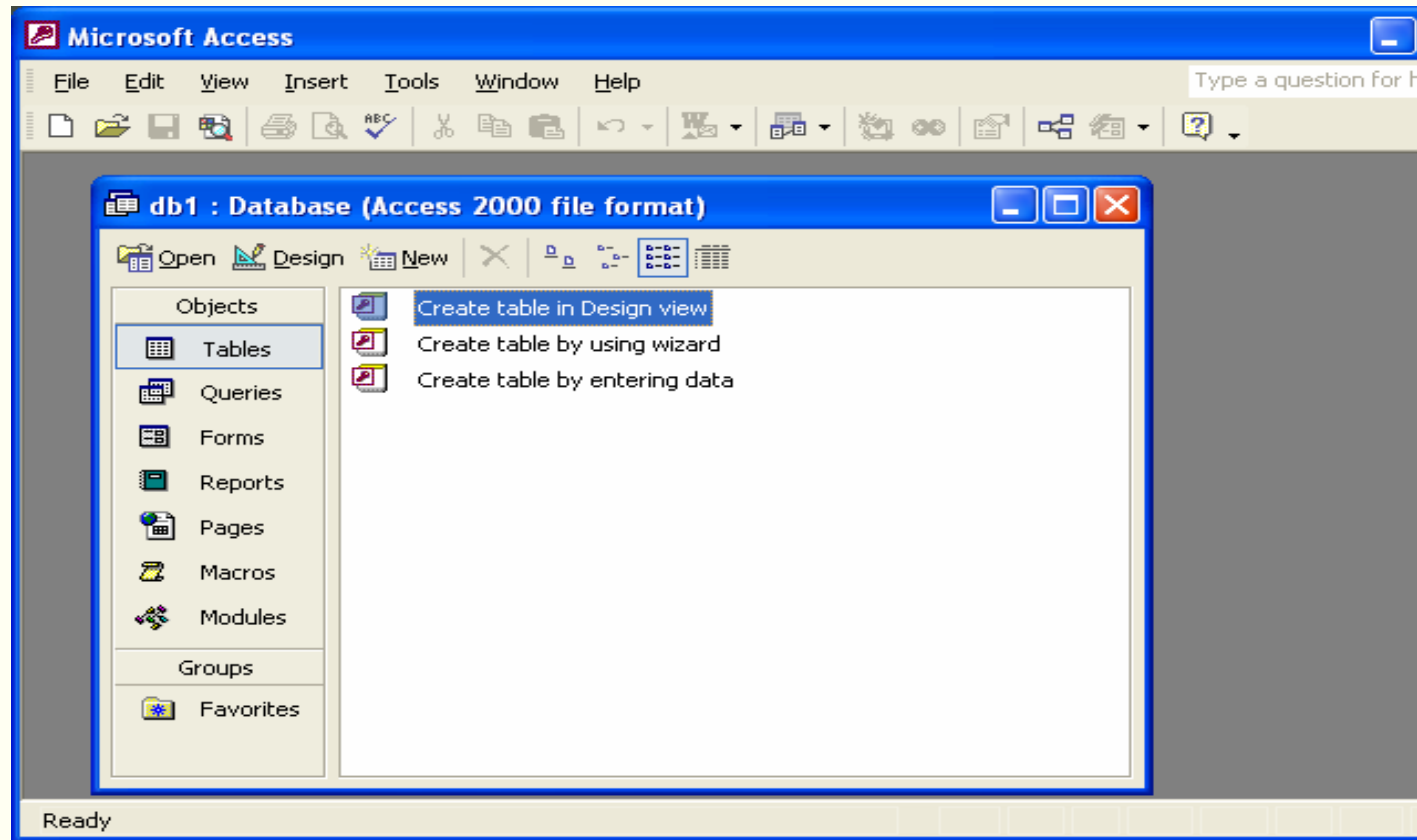


- ❑ Open Access
- ❑ Go to File ... New ... blank database
- ❑ Save as NPP.mdb



# Defining tables

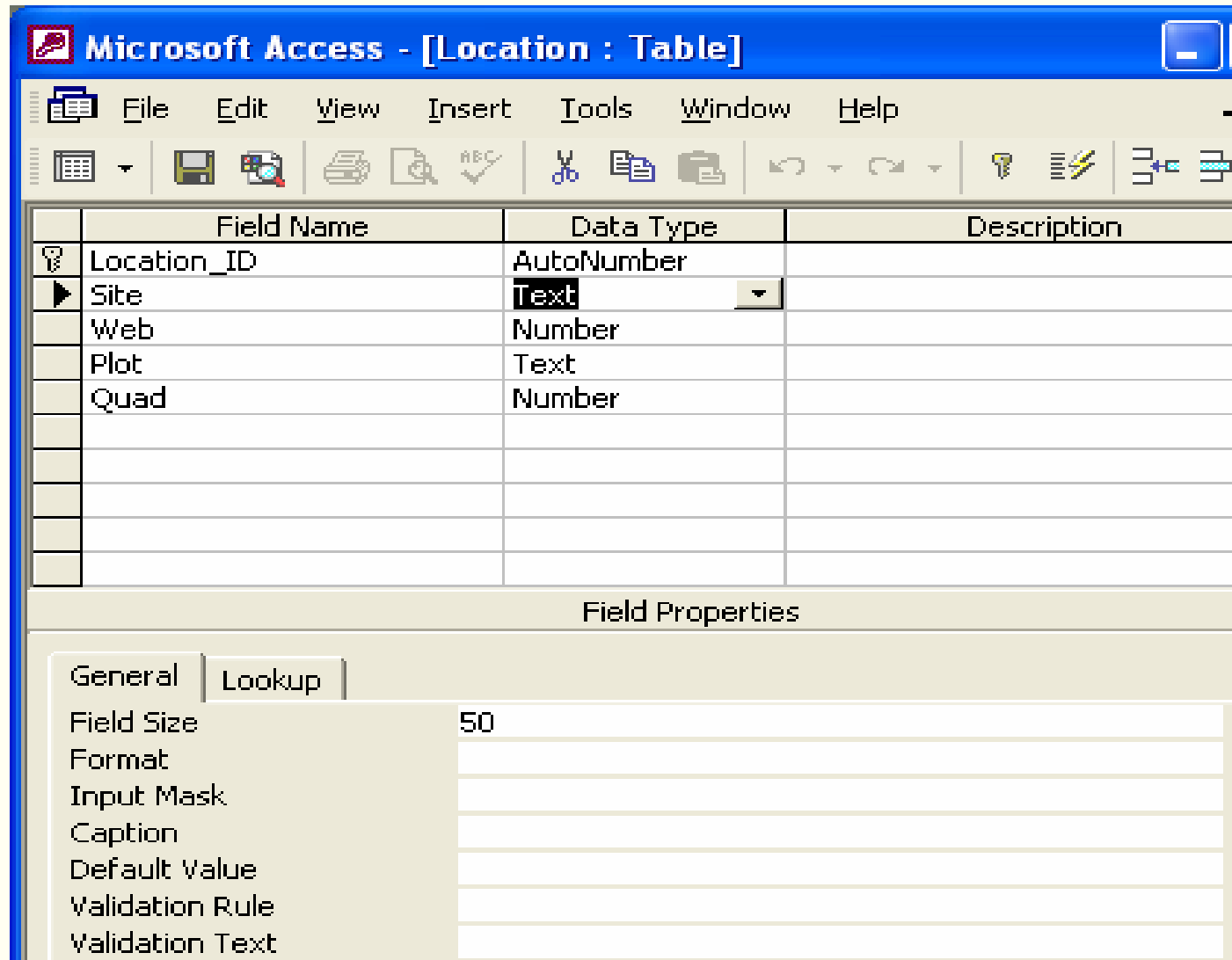
- Select “Tables” in the Objects column in the Database Window
- Select “Create table in Design View”





# Define location table

- Enter variable names and select the data types as shown
- Note that field size and other properties can be changed in the “Field Properties” area
- Right click on the box to the left of Location\_ID and select Primary Key





# Define Visit table

- Make Visit\_ID the primary key

Microsoft Access - [visit : Table]

File Edit View Insert Tools Window Help

Type a question for help

	Field Name	Data Type	Description
Key	Visit_ID	AutoNumber	
	crew	Text	
	Location_id	Number	
	date	Date/Time	

Field Properties

General Lookup

Field Size: Long Integer

New Values: Increment

Format:

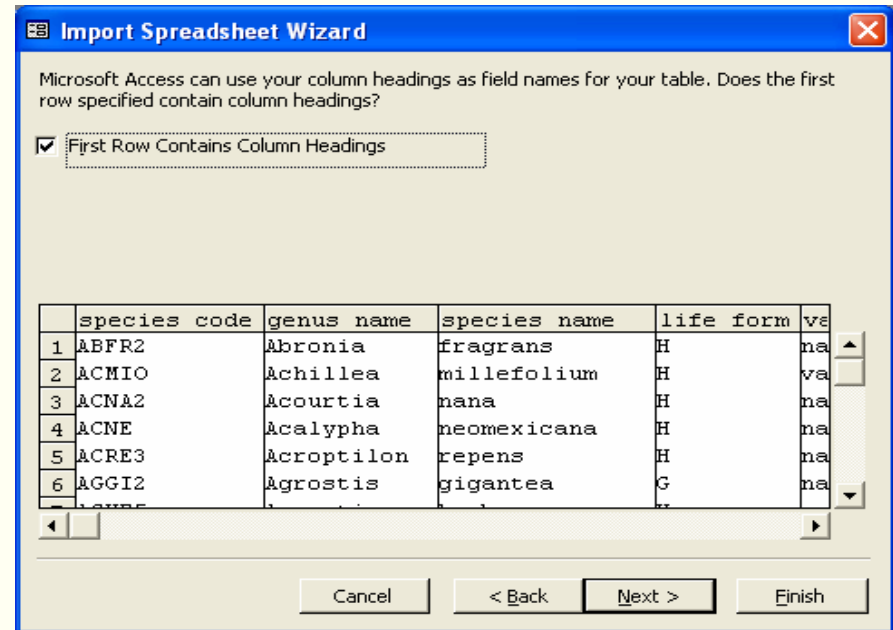
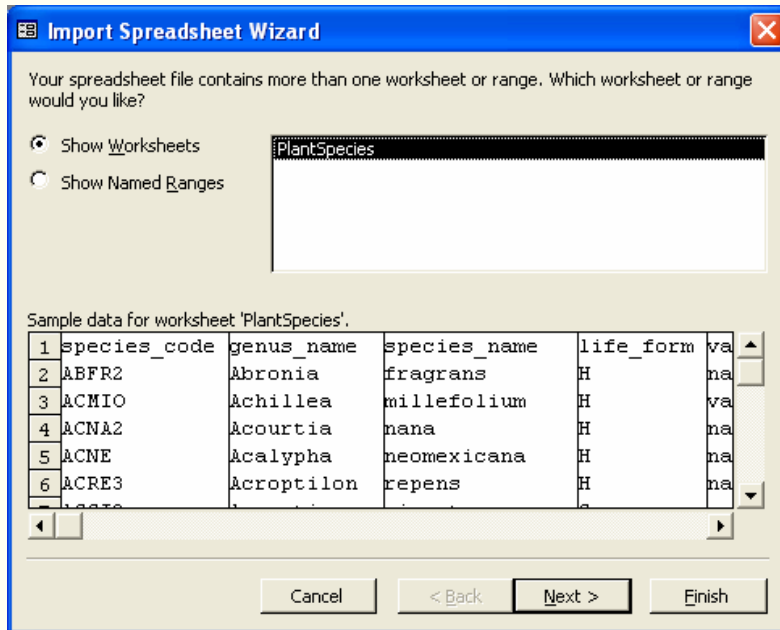
Caption:

Indexed: Yes (No Duplicates)



# Import PlantSpecies table

- Go to File ... Get External Data ... Import...  
//tundra/traininglab/AccessExercise/PlantSpecies.xls



- Import the first three columns: species\_code, genus, and species
- Sort ascending by species\_code





# Import PlantSpecies table

**Import Spreadsheet Wizard**

You can specify information about each of the fields you are importing. Select fields in the area below. You can then modify field information in the 'Field Options' area.

Field Options

Field Name:  Data Type:

Indexed:  ☐ Do not import field (Skip)

	species code	genus name	species name	life form	va
1	ABFR2	Abronia	fragrans	H	na
2	ACMIO	Achillea	millefolium	H	va
3	ACNA2	Acourtia	nana	H	na
4	ACNE	Acalypha	neomexicana	H	na
5	ACRE3	Acroptilon	repens	H	na
6	AGGI2	Agrostis	gigantea	G	na

Cancel < Back Next > Finish



**Import Spreadsheet Wizard**

You can store your data in a new table or in an existing table.

Where would you like to store your data?

☒ In a New Table

☐ In an Existing Table:

	species code	genus name	species name	life form	va
1	ABFR2	Abronia	fragrans	H	na
2	ACMIO	Achillea	millefolium	H	va
3	ACNA2	Acourtia	nana	H	na
4	ACNE	Acalypha	neomexicana	H	na
5	ACRE3	Acroptilon	repens	H	na
6	AGGI2	Agrostis	gigantea	G	na

Cancel < Back Next > Finish

- For species\_code you can specify Indexed with no duplicates, because this will be the primary key



# Finish Importing PlantSpecies Table

**Import Spreadsheet Wizard**

Microsoft Access recommends that you define a primary key for your new table. A primary key is used to uniquely identify each record in your table. It allows you to retrieve data more quickly.

☐ Let Access add primary key.

☒ Choose my own primary key.

☐ No primary key.

	species code	genus name	species name	life form	va
1	ABFR2	Abronia	fragrans	H	na
2	ACMIO	Achillea	millefolium	H	va
3	ACNA2	Acourtia	nana	H	na
4	ACNE	Acalypha	neomexicana	H	na
5	ACRE3	Acroptilon	repens	H	na
6	AGGI2	Agrostis	gigantea	G	na

Cancel < Back Next > Finish

**Import Spreadsheet Wizard**

That's all the information the wizard needs to import your data.

Import to Table:

☐ Display Help after the wizard is finished.

Cancel < Back Next > Finish

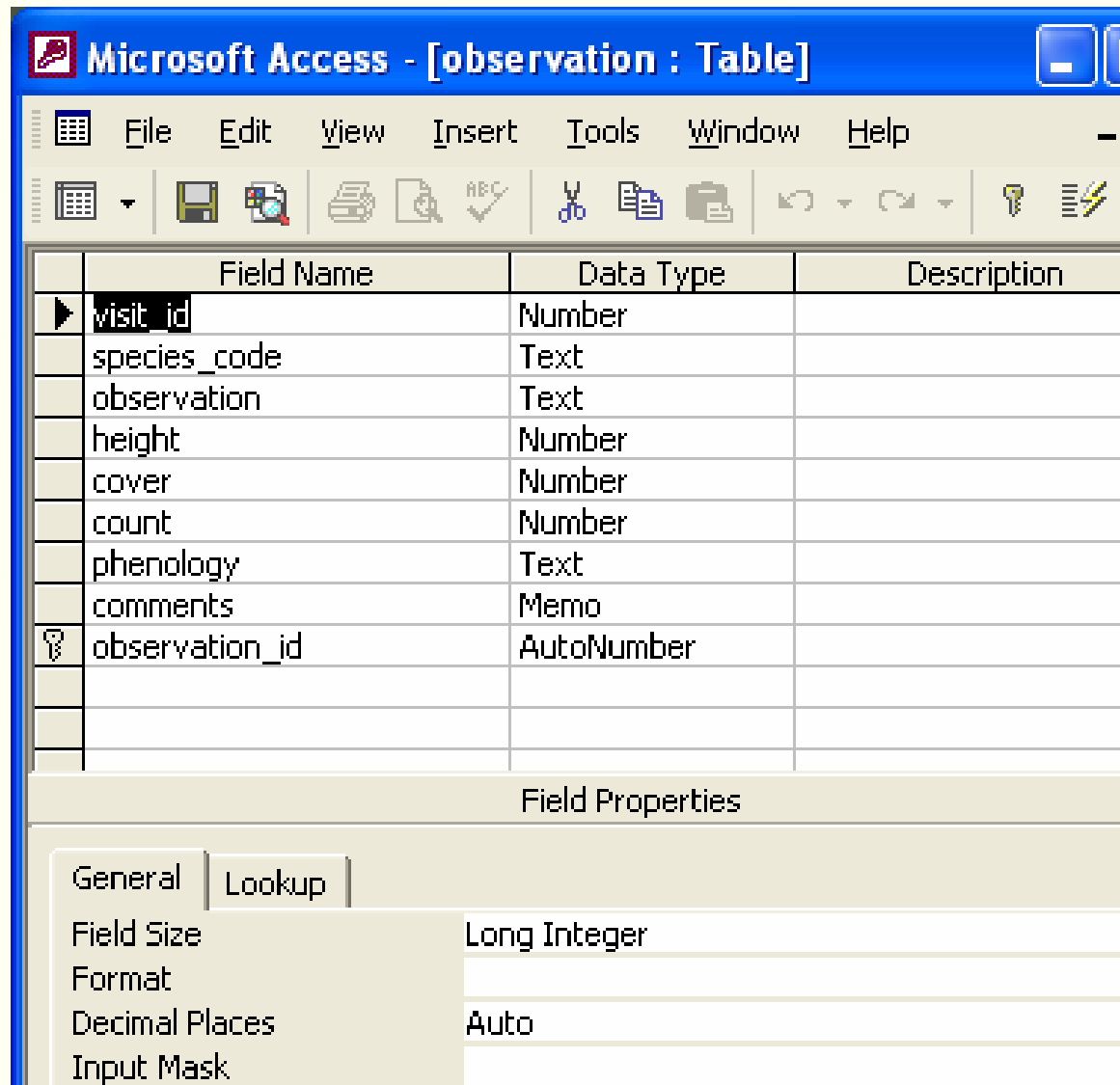


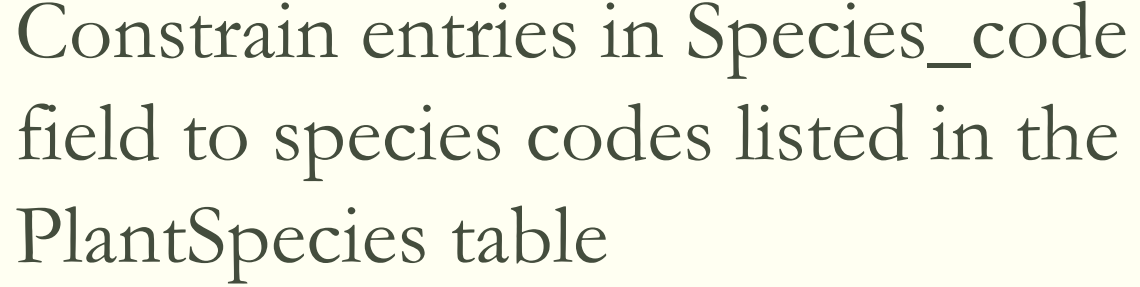




# Define Observation Table

- Make observation\_id the primary key





- 
- Microsoft Access - [observation : Table]
- File Edit View Insert Tools Window Help
- Field Name Data Type Description
- | Field Name     | Data Type        | Description |
|----------------|------------------|-------------|
| visit_id       | Number           |             |
| species_code   | Text             |             |
| observation    | Text             |             |
| height         | Memo             |             |
| cover          | Number           |             |
| count          | Date/Time        |             |
| phenology      | Currency         |             |
| comments       | AutoNumber       |             |
| observation_id | Yes/No           |             |
|                | OLE Object       |             |
|                | Hyperlink        |             |
|                | Lookup Wizard... |             |
- General Lookup
- |                     |                     |
|---------------------|---------------------|
| Field Size          | 50                  |
| Format              |                     |
| Input Mask          |                     |
| Caption             |                     |
| Default Value       |                     |
| Validation Rule     |                     |
| Validation Text     |                     |
| Required            | No                  |
| Allow Zero Length   | Yes                 |
| Indexed             | Yes (Duplicates OK) |
| Unicode Compression | Yes                 |
| IME Mode            | No Control          |
| IME Sentence Mode   | None                |
- Design view. F6 = Switch





# Using the lookup wizard ...

**Lookup Wizard**

This wizard creates a lookup column, which displays a list of values you can choose from. How do you want your lookup column to get its values?

☒ I want the lookup column to look up the values in a table or query.

☐ I will type in the values that I want.

Cancel < Back Next > Finish

**Lookup Wizard**

Which table or query should provide the values for your lookup column?

Table: Location  
Table: PlantSpecies  
Table: visit

View  
☒ Tables ☐ Queries ☐ Both

Cancel < Back Next > Finish

**Lookup Wizard**

How wide would you like the columns in your lookup column?

To adjust the width of a column, drag its right edge to the width you want, or double-click the right edge of the column heading to get the best fit.

☐ Hide key column (recommended)

species_code	genus_name	species_name
ABFR2	Abronia	fragrans
ACMIO	Achillea	millefolium
ACNA2	Acourtia	nana
ACNE	Acalypha	neomexicana
ACRE3	Acroptilon	repens
AGGI2	Agrostis	gigantea
AGHE5	Ageratina	herbacea

Cancel < Back Next > Finish

**Lookup Wizard**

When you select a row in the lookup column, you can store a value from that row in your database, or you can use the value later to perform an action. Choose a field that uniquely identifies the row. Which column in your lookup column contains the value you want to store or use in your database?

Available Fields:

species\_code  
genus\_name  
species\_name

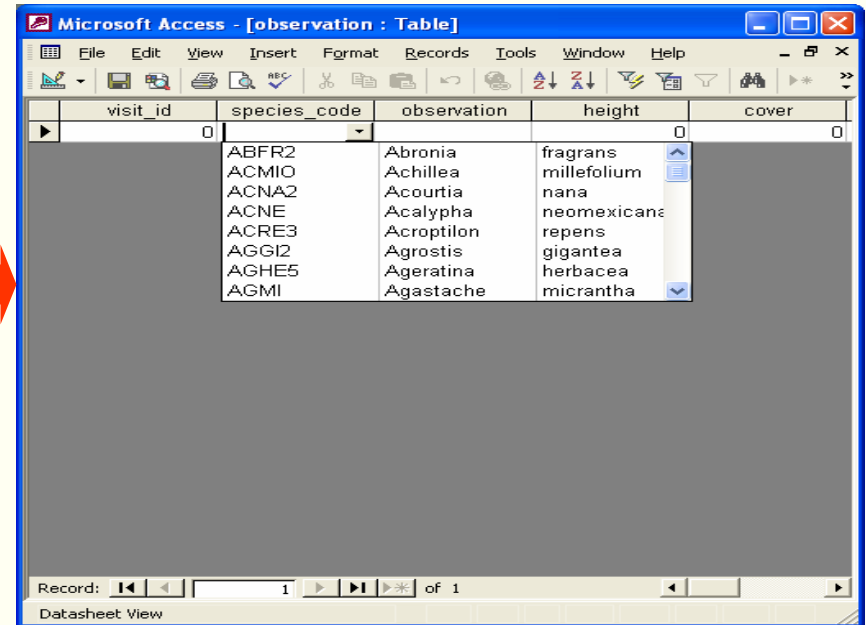
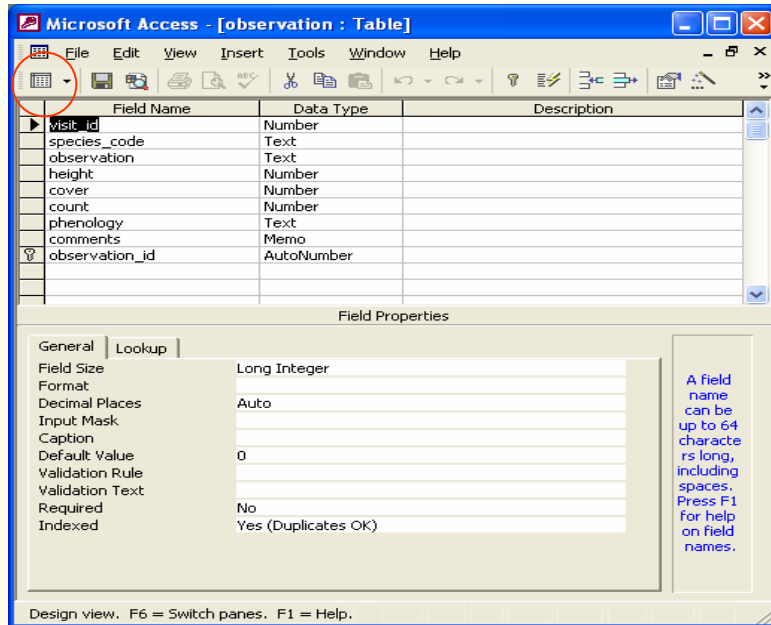
Cancel < Back Next > Finish

- In the last window, name the column the default of species\_code





# Switch between design and table view



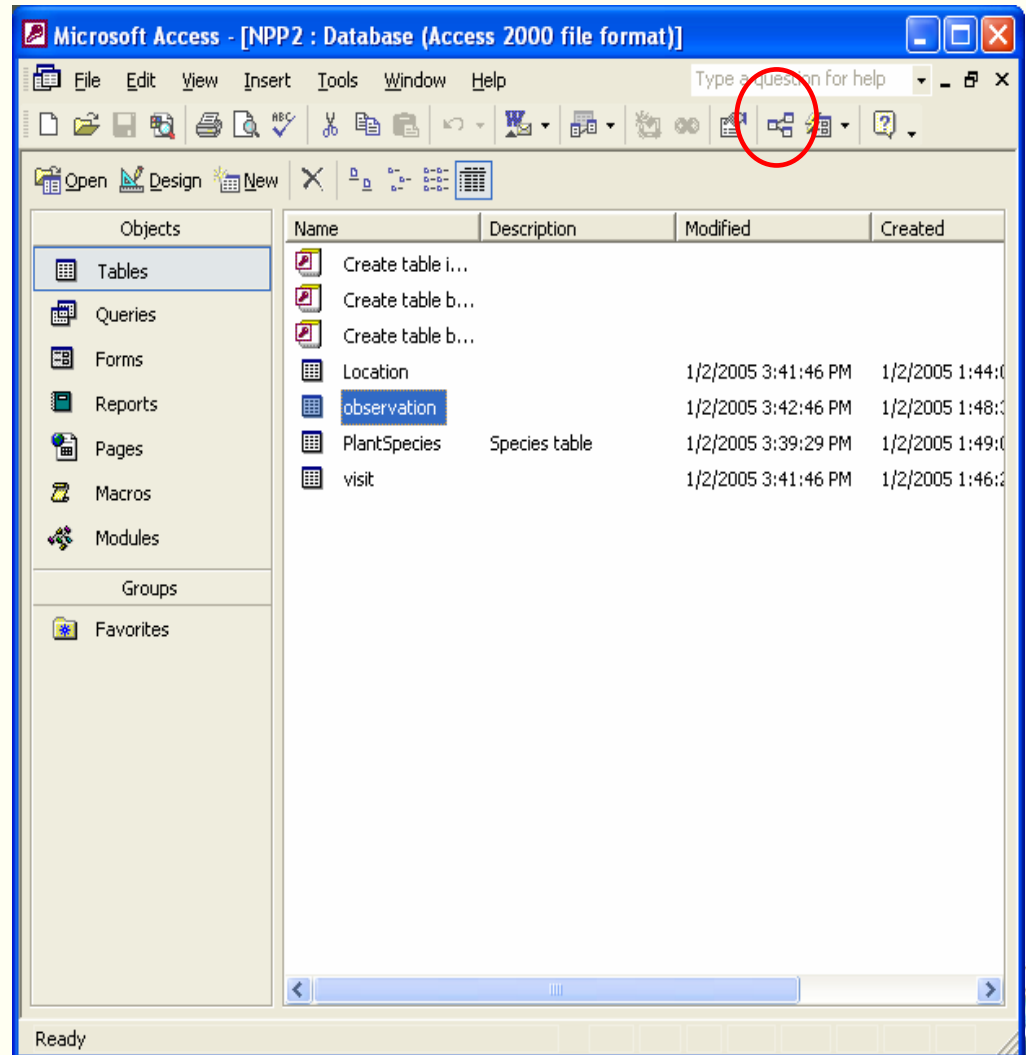
- ❑ Click on View button in upper left-hand corner to switch from "design view" to "table view"
- ❑ Click in the species\_code field to see the drop-down list





# Define relationships between tables

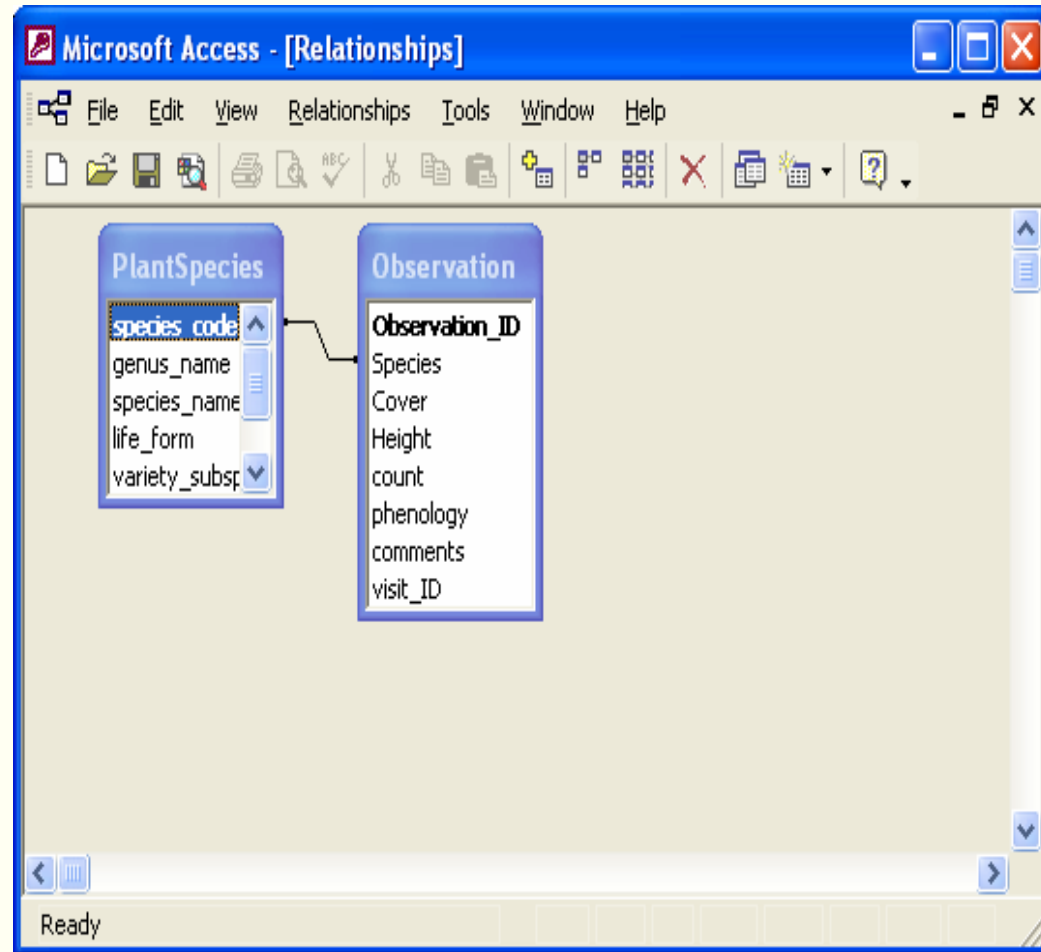
- Click on “relationships” icon in the database window





## Define relationships: add tables to the relationships window

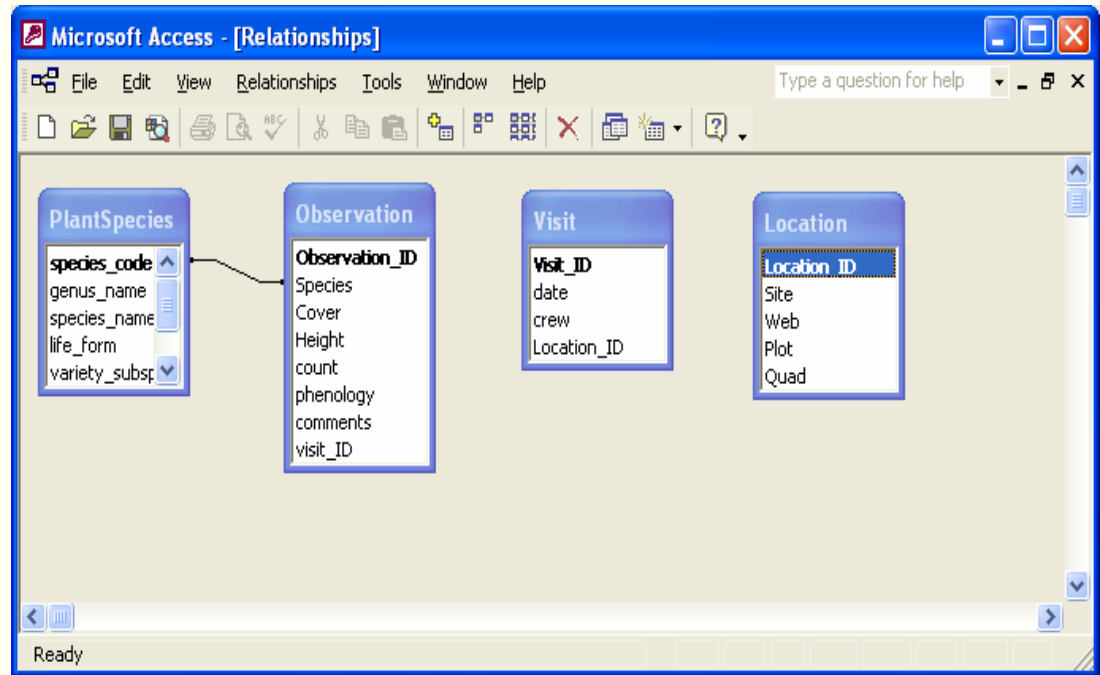
- PlantSpecies and Observation are already shown in the relationships window because a relationship was defined with the Lookup wizard
- Right click in the window and choose "Show table" to add the Location and Visit tables





# Create relationship between Location and visit tables

- right-click on Location\_ID in the Location table and drag the icon overtop of Location\_ID in the visit table





# Edit relationships

- Enforce referential Integrity
- Note that the relationship being created is One-to-Many
- Click on "Create"

**Edit Relationships**

Table/Query: Location    Related Table/Query: visit

Location_ID	Location_id

☒ Enforce Referential Integrity

☐ Cascade Update Related Fields

☐ Cascade Delete Related Records

Relationship Type: One-To-Many

Buttons: Create, Cancel, Join Type..., Create New...

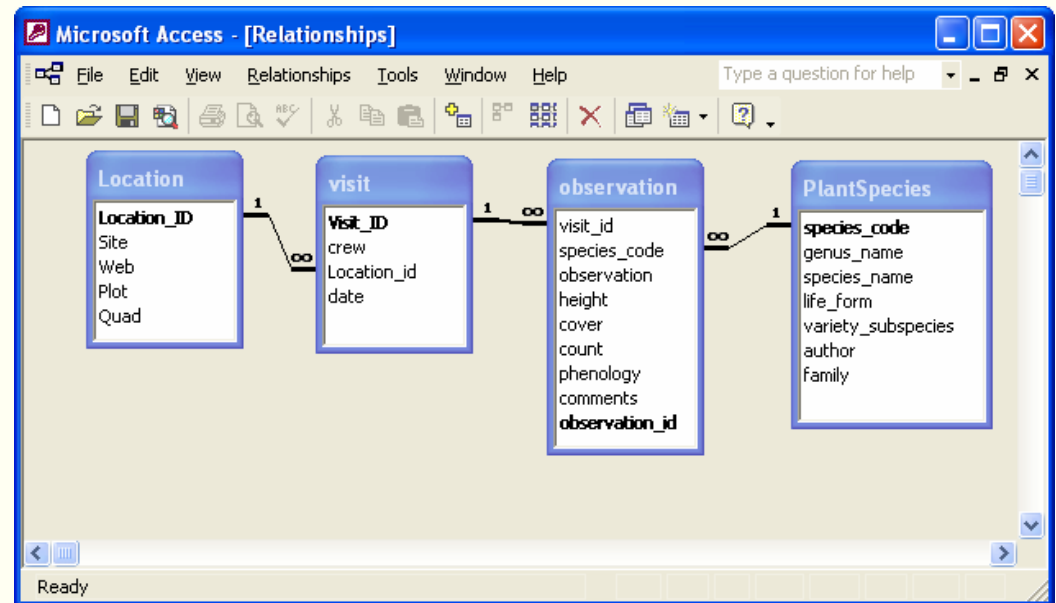


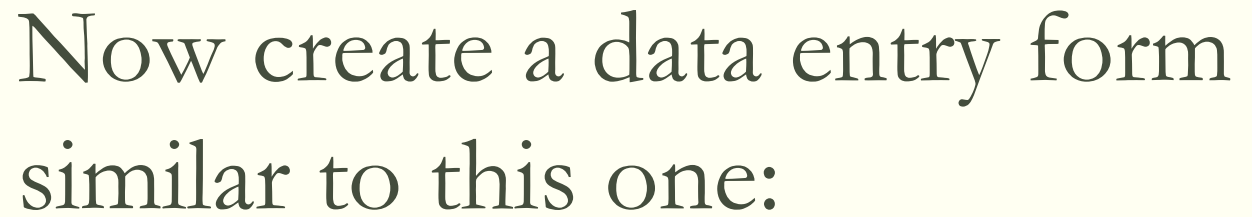




# Finish defining relationships

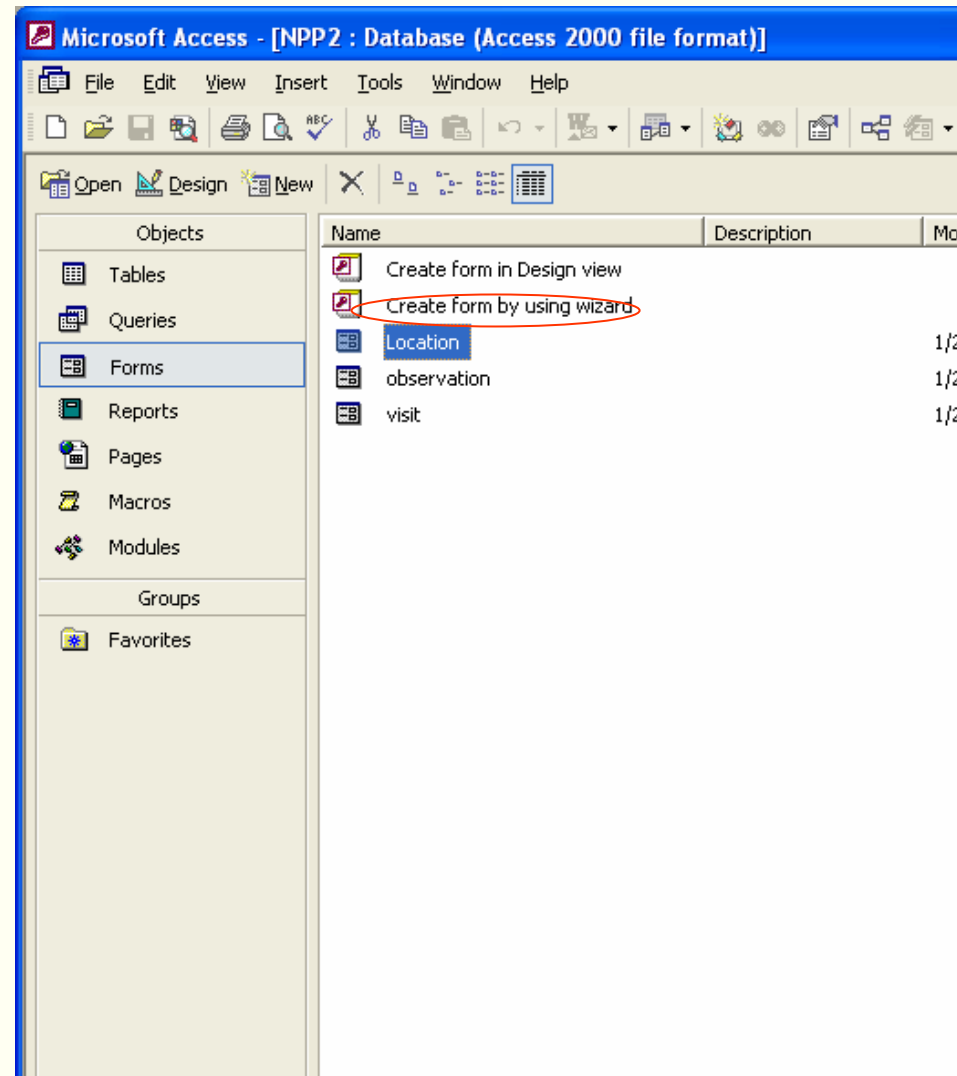
- Right click on Visit\_ID in Visit table and drag the icon overtop of Visit\_ID in the Observation table; enforce referential integrity







- ❑ Click on Forms in the database window
- ❑ Then click on “Create form by using wizard”





# Choose fields from the Location table to display in the form

**Form Wizard**

Which fields do you want on your form?  
You can choose from more than one table or query.

Tables/Queries  
Table: Location

Available Fields:

Location_ID
Site
Web
Plot
Quad

> >> < <<

Selected Fields:


Cancel < Back Next > Finish



**Form Wizard**

Which fields do you want on your form?  
You can choose from more than one table or query.

Tables/Queries  
Table: Location

Available Fields:


> >> < <<

Selected Fields:

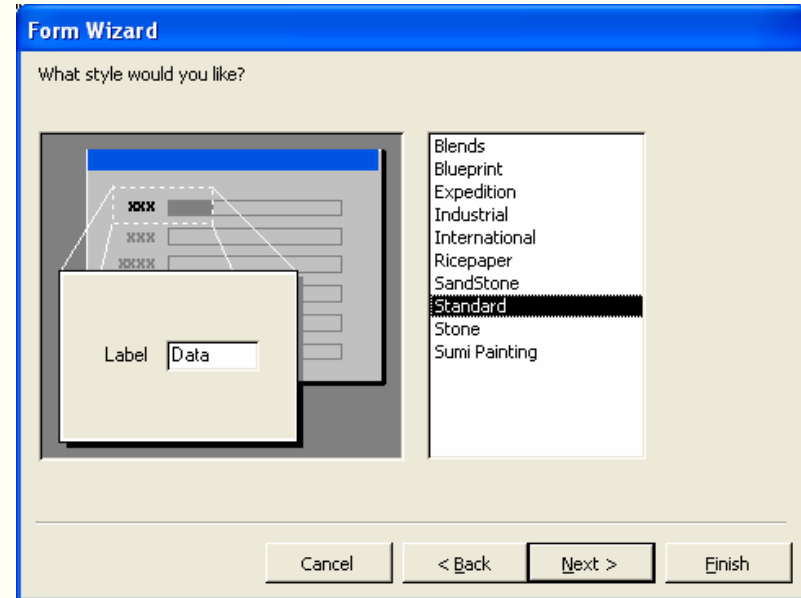
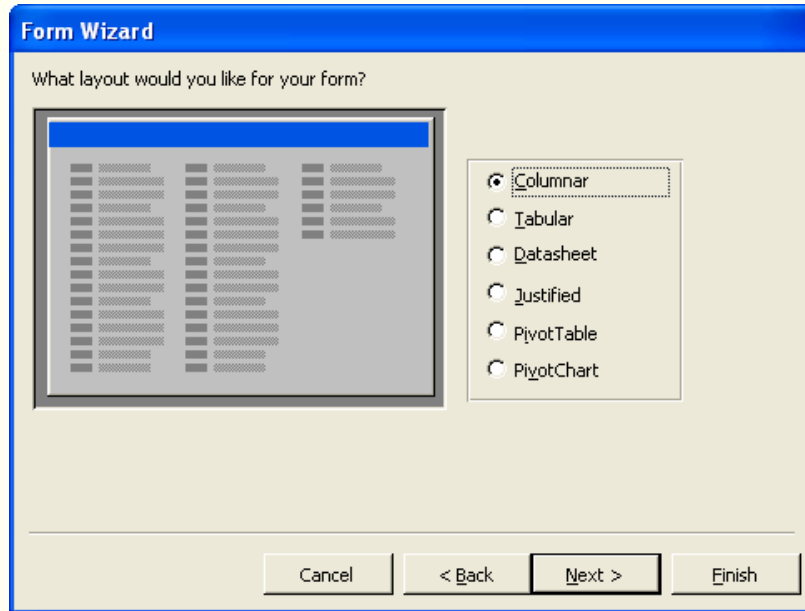
Location_ID
Site
Web
Plot
Quad

Cancel < Back Next > Finish

- Click on >> to accept all fields



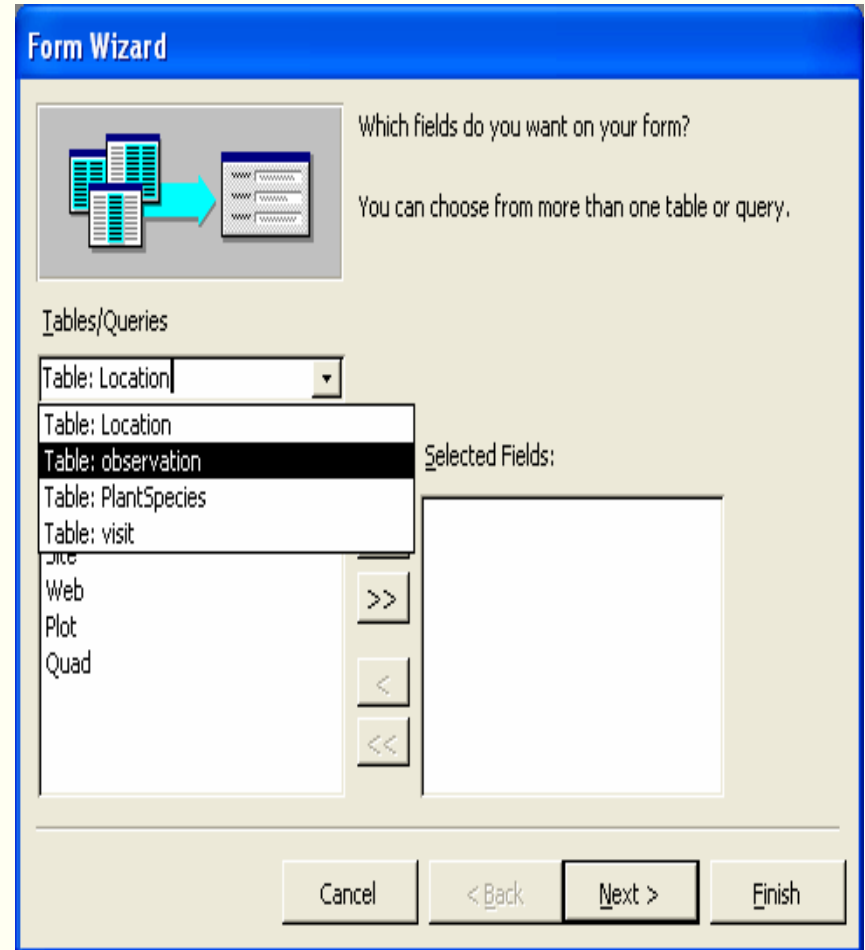
# Choose form appearance



- Accept "Location" as the name of the form

## Create more forms

- ❑ Create forms for the Visits table and the Observations table using the Form Wizard
- ❑ Put all fields in the forms



**Form Wizard**

Which fields do you want on your form?  
You can choose from more than one table or query.

Tables/Queries

Table: Location

Table: Location

Table: observation

Table: PlantSpecies

Table: visit

Web

Plot

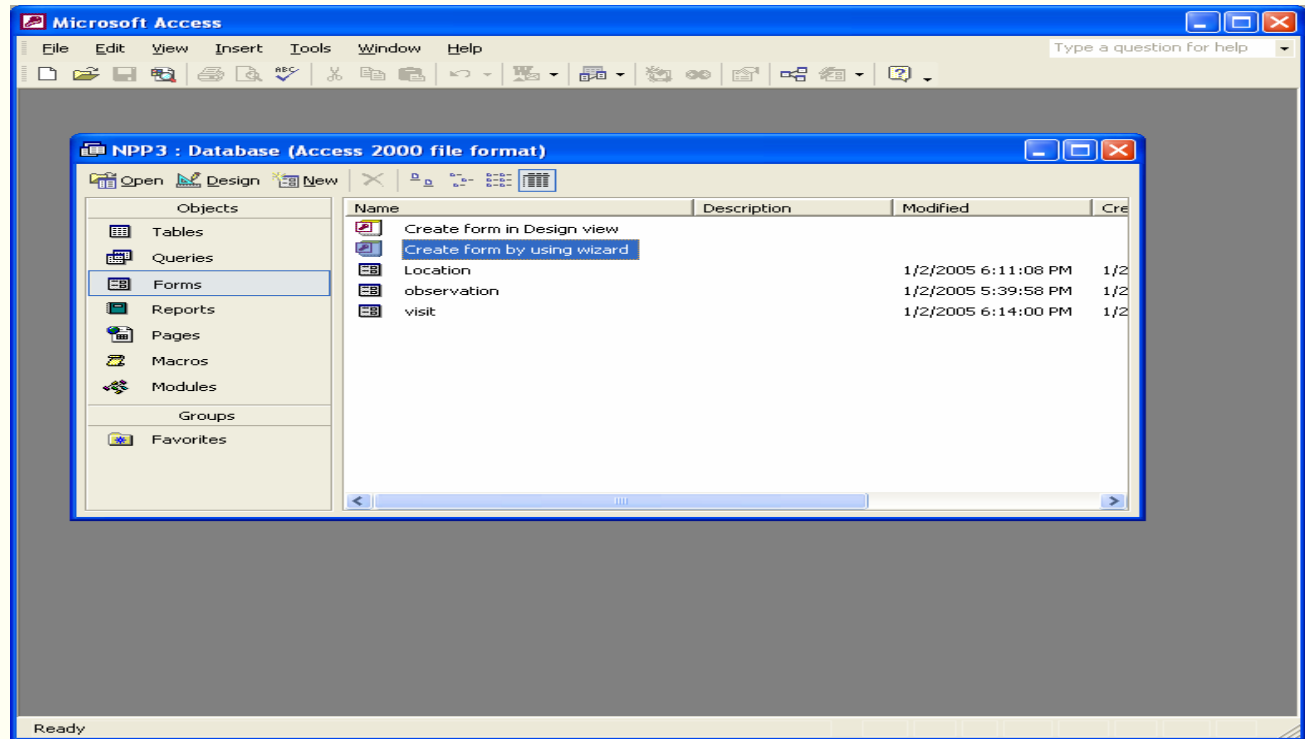
Quad

Selected Fields:

Cancel < Back Next > Finish



# Create subforms



- Now embed the observations table inside the Visits table, and then embed the visits table inside the Location table



# Embed the Observation Table inside the Visit Table

Microsoft Access - [visit]

File Edit View Insert Format Records Tools Window

Help

MS Sans Serif 8 B I

Visit\_ID (AutoNumber)

crew

Location\_id 0

date

Record: 1 of 1

Form View



Microsoft Access - [visit : Form]

File Edit View Insert Format Tools Window Help

Form

Form Header

Detail

Visit\_ID Visit\_ID

crew crew

Location\_id Location\_id

date date

Form Footer

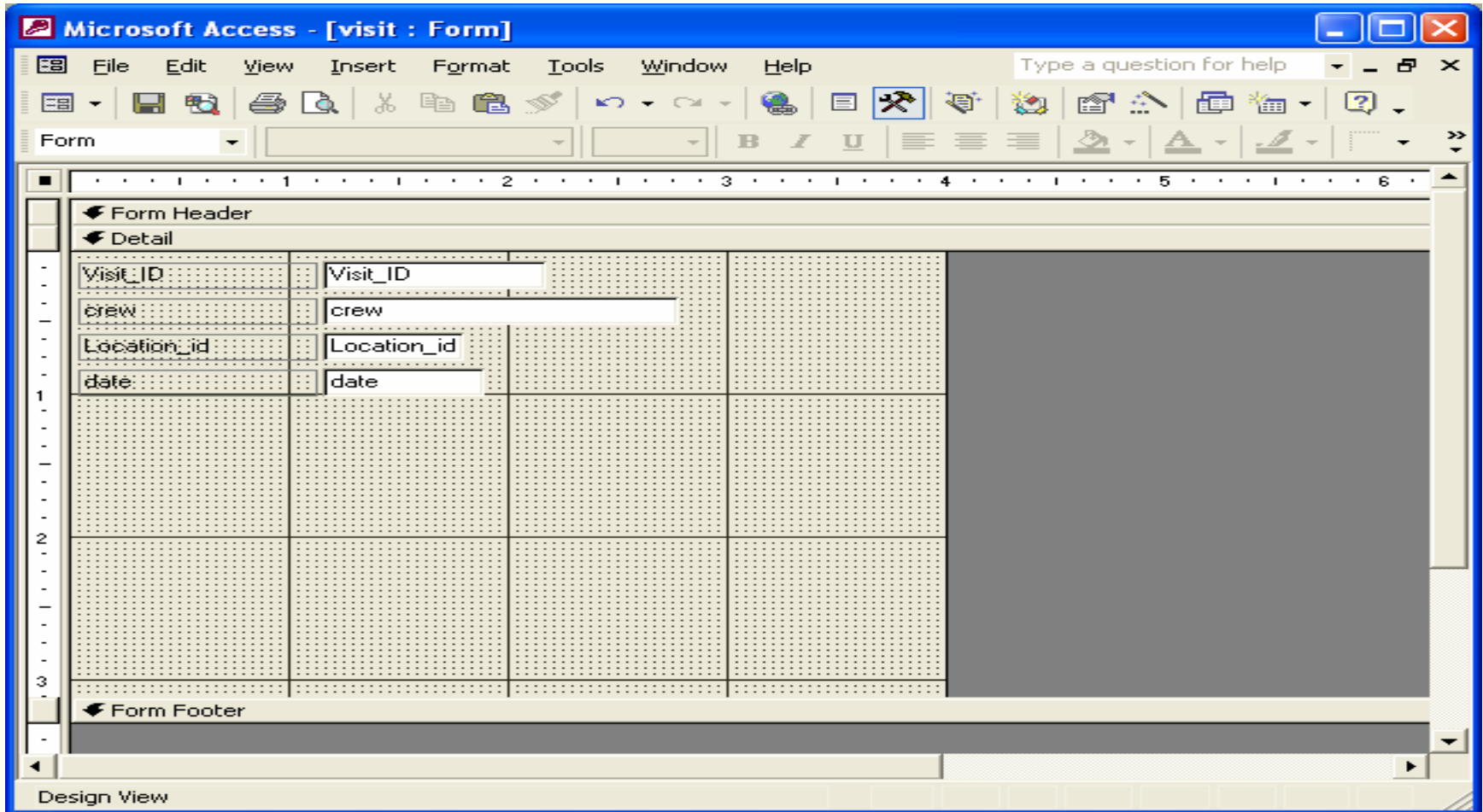
Design View

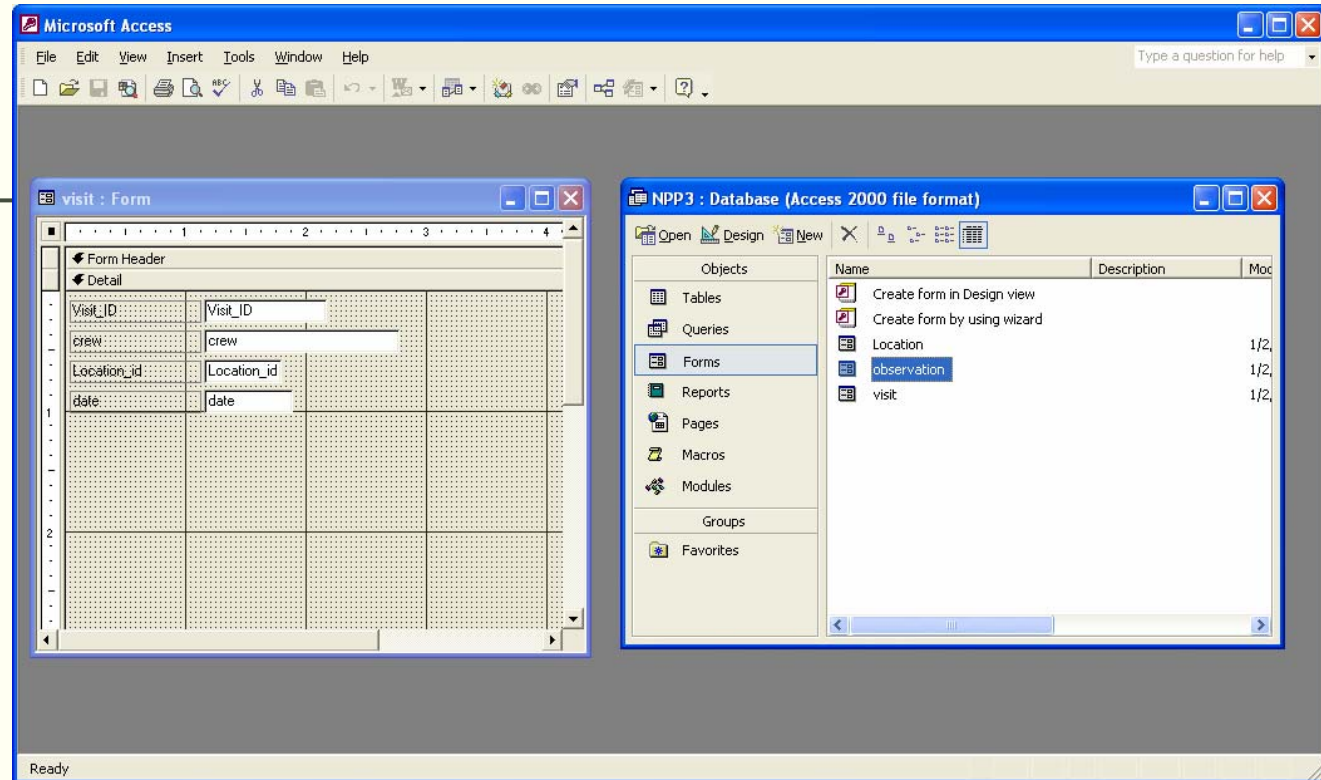
- Open the Visit form and then switch to Design View by clicking on the icon in the upper left-hand corner





# Resize Visit form by clicking on footer and edges and dragging





- ❑ Position design view of Visit form and database window (with Forms selected) next to each other
- ❑ Left-click on Observation form in Database window and drag it onto the Visit form



Microsoft Access - [visit : Form]

File Edit View Insert Format Tools Window Help

Type a question for help

observation

Form Header

Detail

visit\_id visit\_id

crew crew

Location\_id Location\_id

date date

observation

Form Header

Detail

visit\_id visit\_id

species species\_code

cover cover

height height

observation observation

phenology phenology

comments comments

Form Footer

Design View



Microsoft Access - [visit]

File Edit View Insert Format Records Tools Window Help

Type a question for help

MS Sans Serif 8

Visit\_ID [AutoNumber]

crew

Location\_id 0

date

observation

visit\_id

species

cover 0

height 0

observation

phenology

comments

observation\_id [AutoNumber]

Record: 1 of 1

Form View

- Click on the View icon to see the completed Visits form with the Observation form embedded within it



# Embed the Visit form within the Location form

- Open the Location form in Design View and resize it so there is room to embed the Visits form

Microsoft Access - [Location : Form]

File Edit View Insert Format Tools Window Help

Form

Form Header

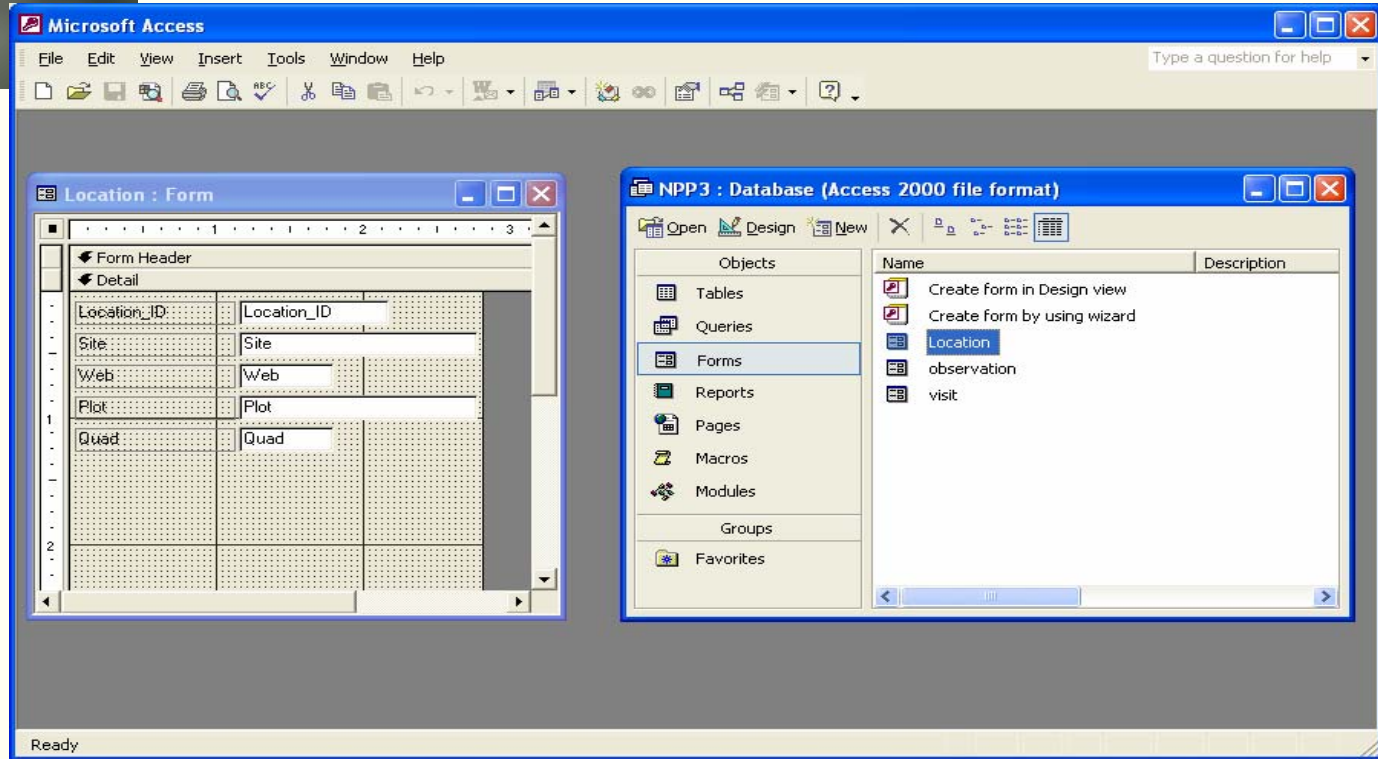
Detail

Location_ID	Location_ID
Site	Site
Web	Web
Plot	Plot
Quad	Quad

Form Footer

Design View





- ❑ Position design view of Location form and database window (with Forms selected) next to each other
- ❑ Left-click on visit form in Database window and drag it onto the Location form



# The finished form in design view

Microsoft Access - [Location : Form]

File Edit View Insert Format Tools Window Help

Type a question for help

visit

Form Header

Detail

Location_ID	Location_ID
Site	Site
Web	Web
Plot	Plot
Quad	Quad

visit

Form Header

Detail

Visit_ID	Visit_ID
crew	crew
Location_id	Location_id
date	date

observation

Form Header

Detail

visit_id	visit_id
species	species_code
cover	cover
height	height
observation	observation
phenology	phenology
comments	comments

Form Footer

Design View





# Enter some data

- You can enter multiple observations without having to re-enter visit or location information

The screenshot displays the Microsoft Access database interface for a project named 'Location'. The form is titled 'Microsoft Access - [Location]' and includes a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help) and a toolbar. The form is divided into several sections for data entry:

- Location Information:** Location\_ID (AutoNumber), Site, Web, Plot, Quad.
- visit Section:** Visit\_ID (AutoNumber), crew, Location\_id, date.
- observation Section:** A sub-form containing fields for visit\_id, species, cover, height, observation, phenology, comments, and observation\_id (AutoNumber).

The form is currently in 'Form View' and displays 'Record: 1 of 1'. The status bar at the bottom indicates 'Record: 1 of 1' and 'Form View'.