



Implementing a Database in MS Access

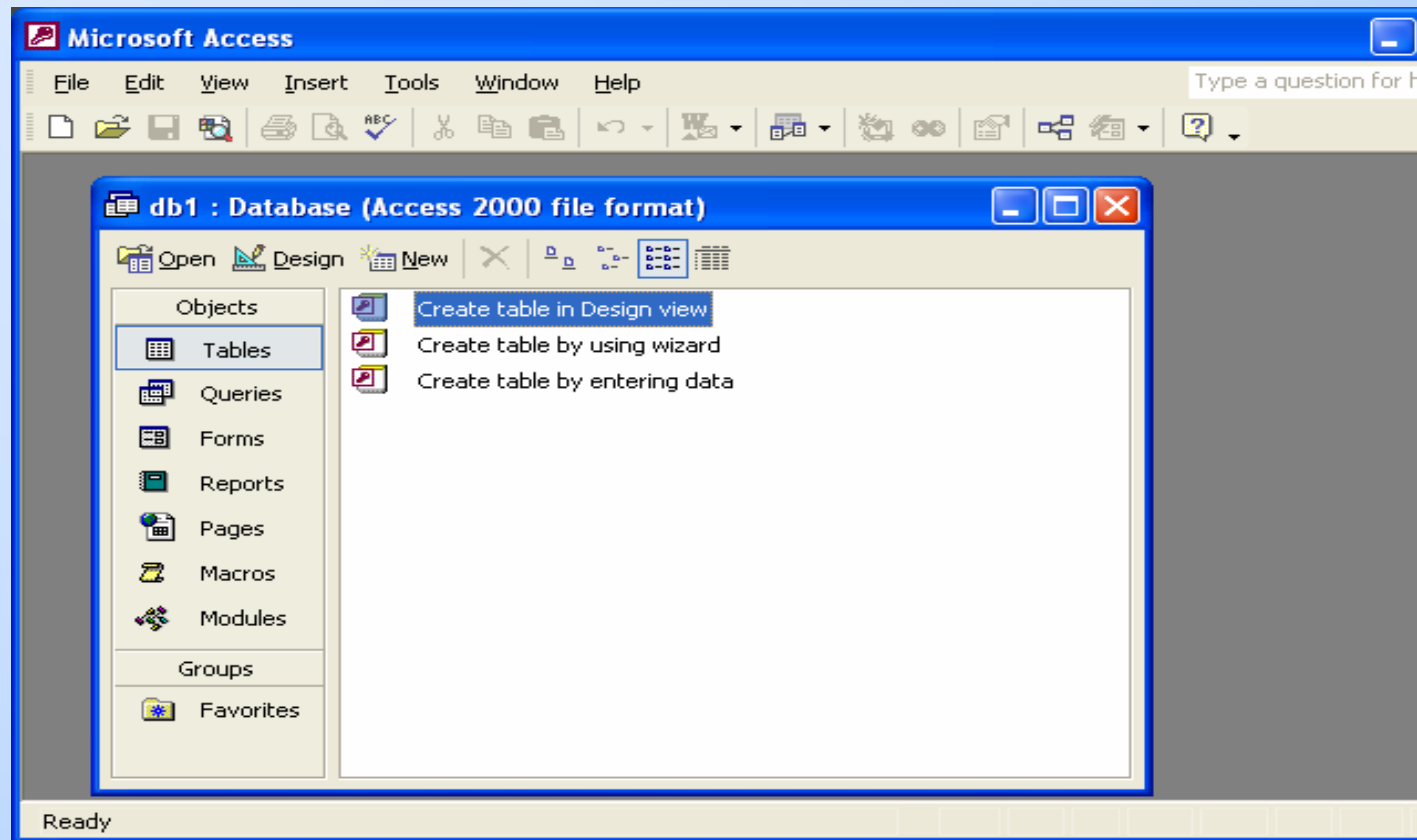


- Open Access
- Go to File ... New ... blank database
- Save as NPP.mdb



Defining tables

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





Define the 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
- Go to File > Save and save the table as Location
- Close the table by clicking on the X in the upper right-hand corner

Microsoft Access - [Location : Table]

File Edit View Insert Tools Window Help

	Field Name	Data Type	
🔑	Location_ID	AutoNumber	
▶	Site	Text	
	Web	Number	
	Plot	Text	
	Quad	Number	

Field Properties

General Lookup

Field Size 50

Format

Input Mask

Caption

Default Value

Validation Rule

Validation Text

Required No



Define Visit table

- Select “create table in design view” from the Database window
- Enter the fields (Visit_ID, crew, Location_ID and date) as shown
- Make Visit_ID the primary key
- Save table as “Visit” and close the table

Microsoft Access - [visit : Table]

Type a question for help

File Edit View Insert Tools Window Help

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

Field Properties

General | Lookup

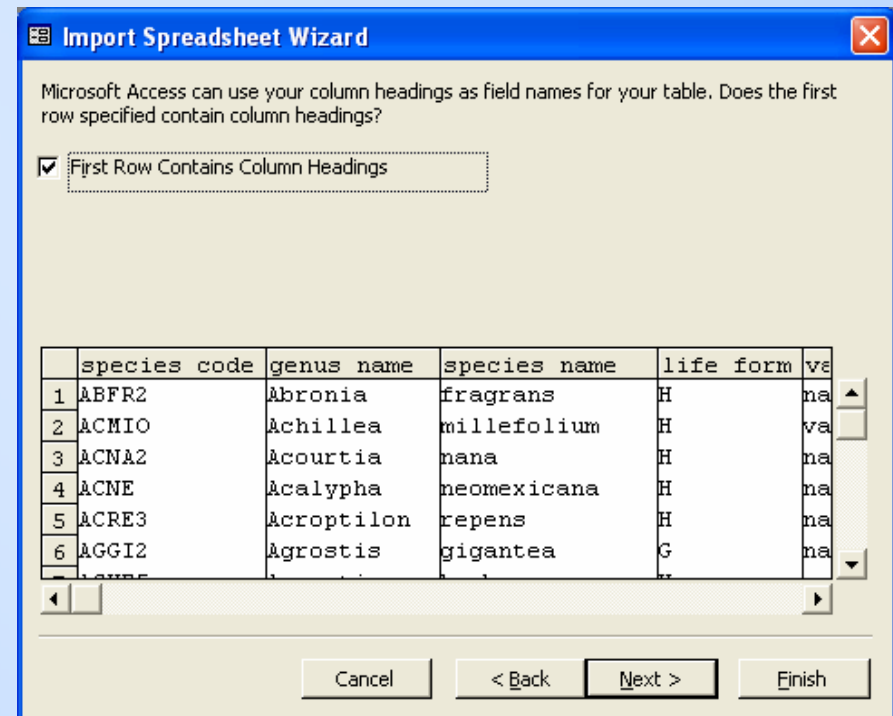
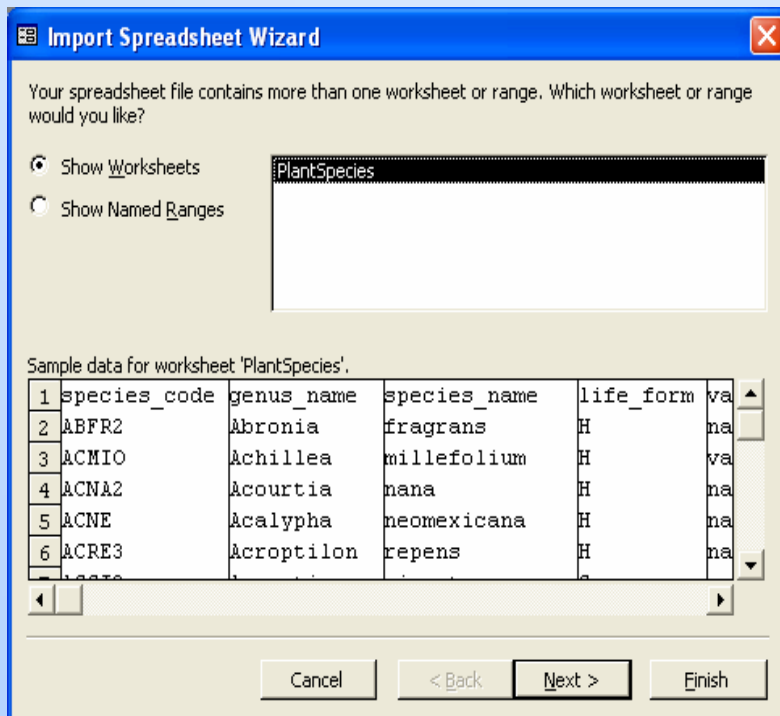
Field Size	Long Integer
New Values	Increment
Format	
Caption	
Indexed	Yes (No Duplicates)



Import PlantSpecies table

Download the file PlantSpecies.xls to your computer.

Then go to File → Get External Data → Import → and locate and import the Excel file. The window should look like the one on the left.



- ❑ Select 'Next'

- ❑ Check 'First Row Contains Column Headings'
- ❑ Next



Import PlantSpecies table

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	ve
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

- Select 'In a New Table'
- Next



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	ve
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
- Accept other defaults
- Next



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

- ❑ Select "choose my own primary key" and choose species_code from the drop-down list

❑ Next

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

- Accept the name PlantSpecies for the table
- Select 'Finish'



Define Observation Table

- Select "Create table in Design View" from the database window
- Enter the fields as shown
- Make observation_id the primary key
- Save the table and name it Observation

Microsoft Access - [Observation : Table]

File Edit View Insert Tools Window Help Adobe PDF

Field Name	Data Type	Description
Visit_ID	Number	
Species_Code	Text	
height	Number	
cover	Number	
comments	Memo	
observation_id	AutoNumber	

Field Properties

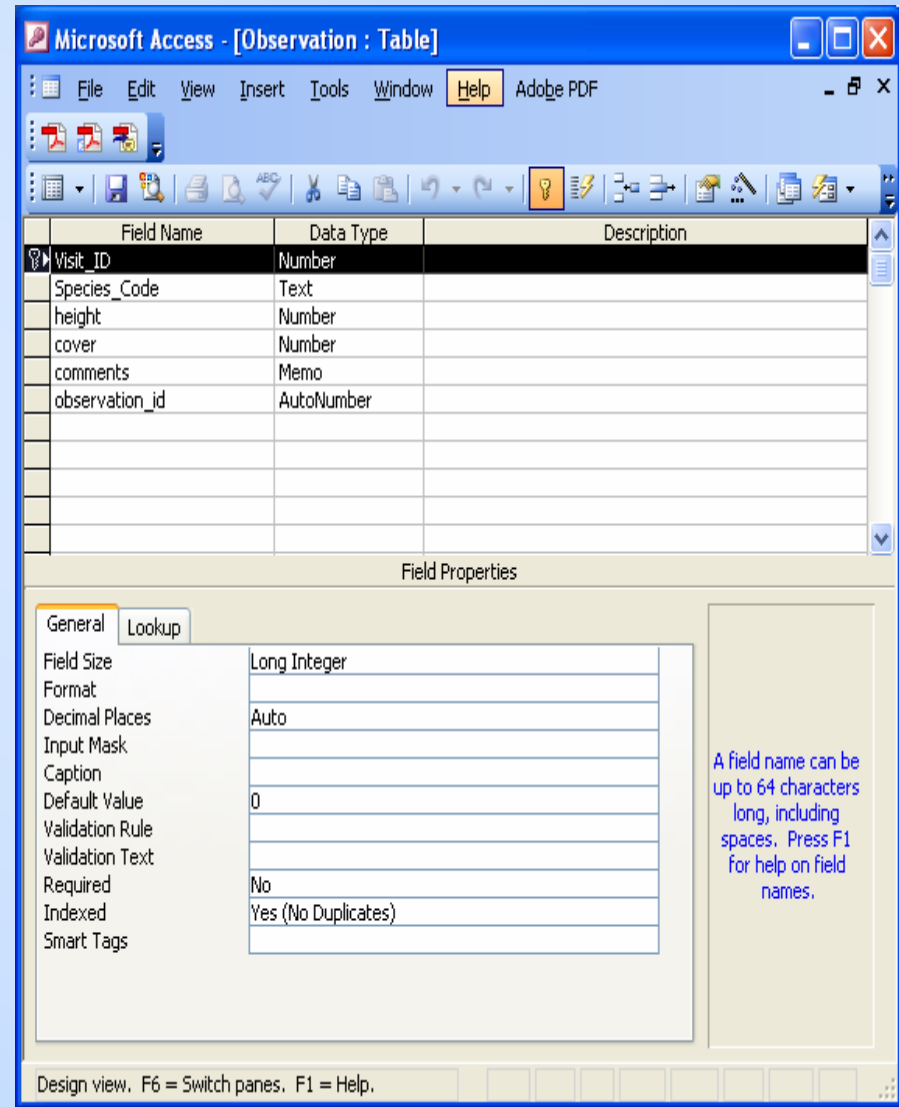
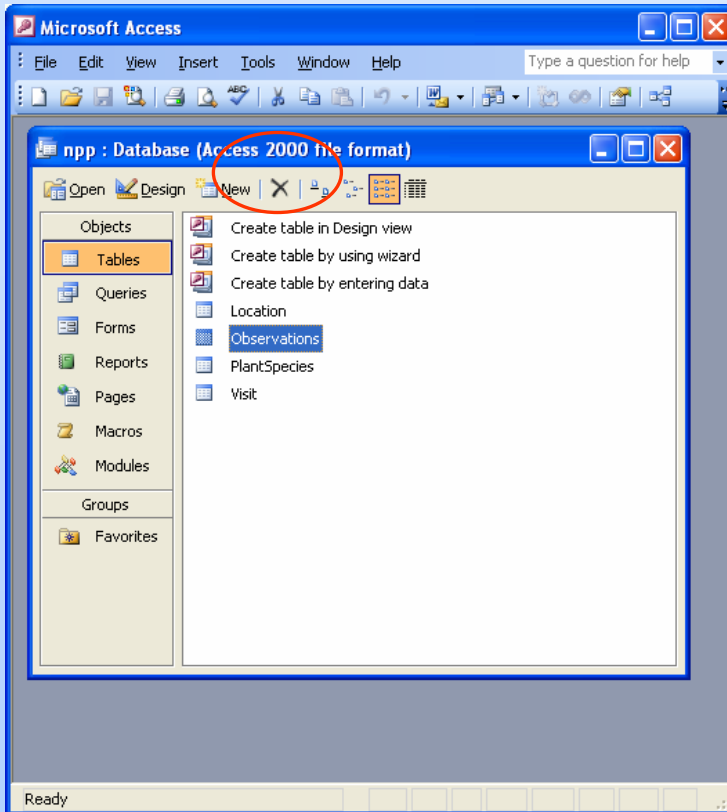
General Lookup

Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	0
Validation Rule	
Validation Text	



Open Observation Table in Design View

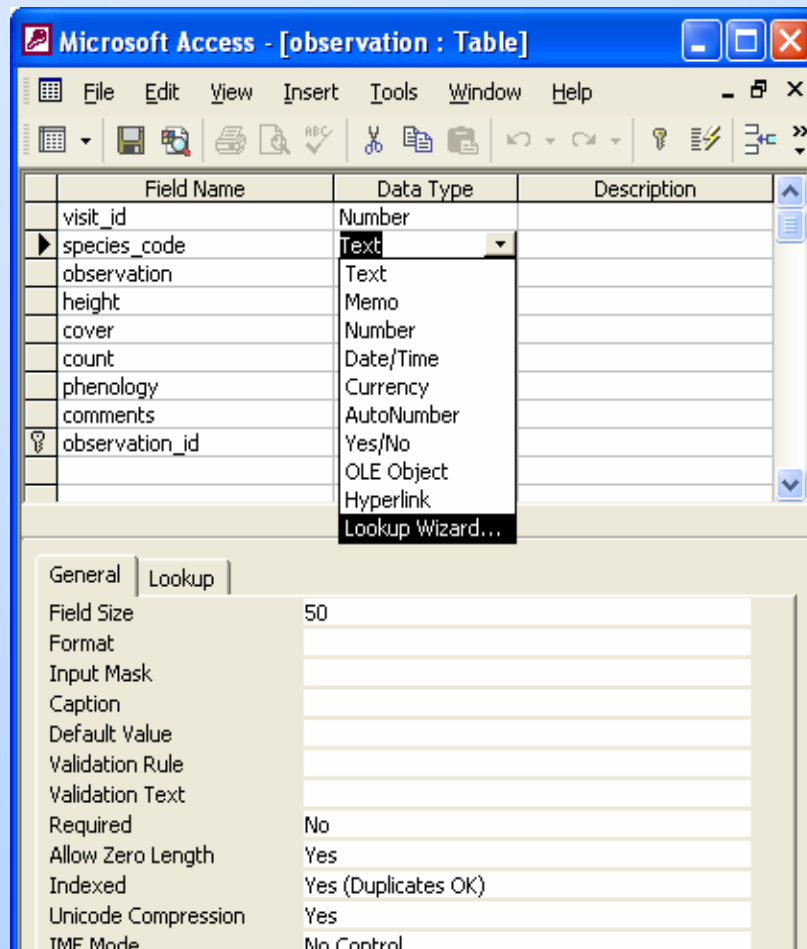
- Highlight the Observations table, and then click on 'Design'





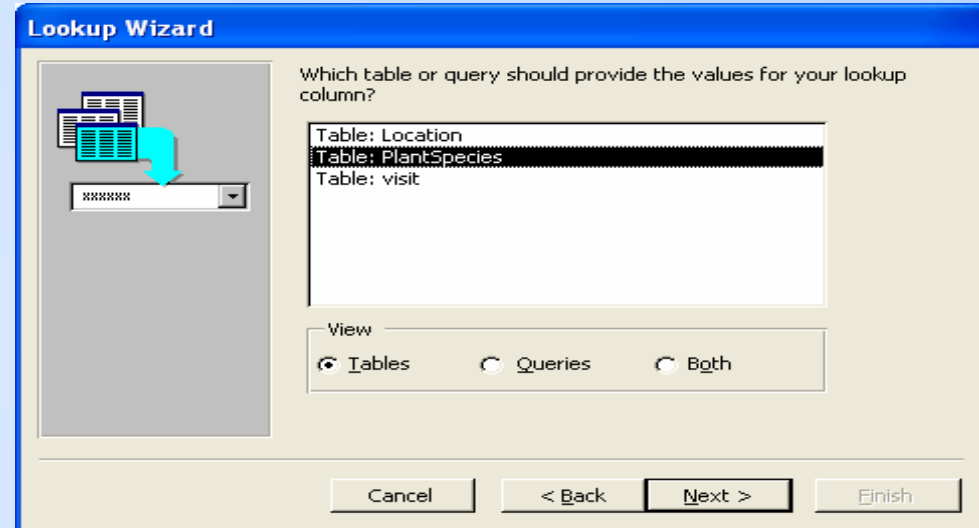
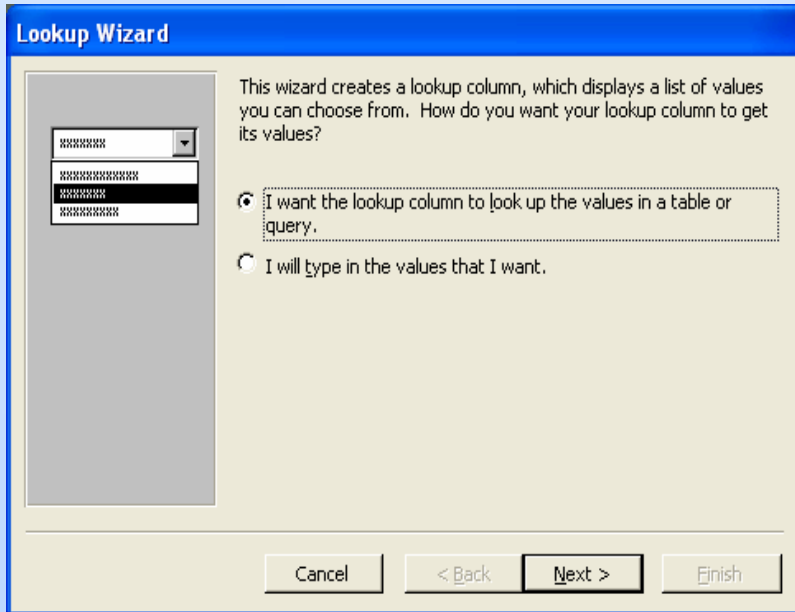
Constrain entries in Species_code field to the species codes listed in the PlantSpecies table

- Select Lookup Wizard under Data Type for species_code





Using the lookup wizard

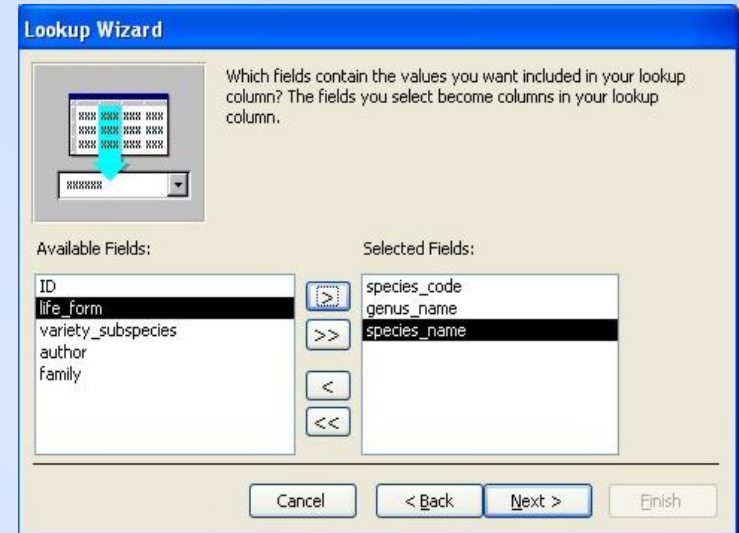
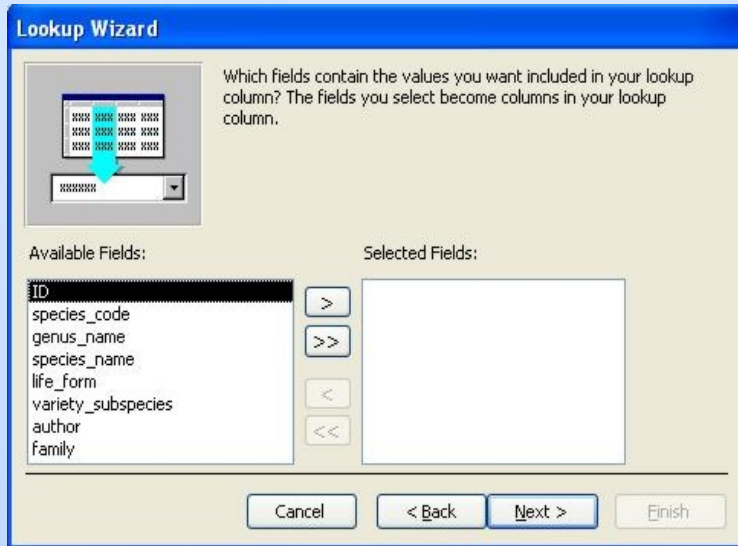


- ❑ The lookup column will use records in the table PlantSpecies

- ❑ Select Table: PlantSpecies



Using the lookup wizard



- ❑ Select species_code, genus_name, and species_name

- ❑ Next



Using the lookup wizard

Lookup Wizard

What sort order do you want for your list?

You can sort records by up to four fields, in either ascending or descending order.

1

2

3

4



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)

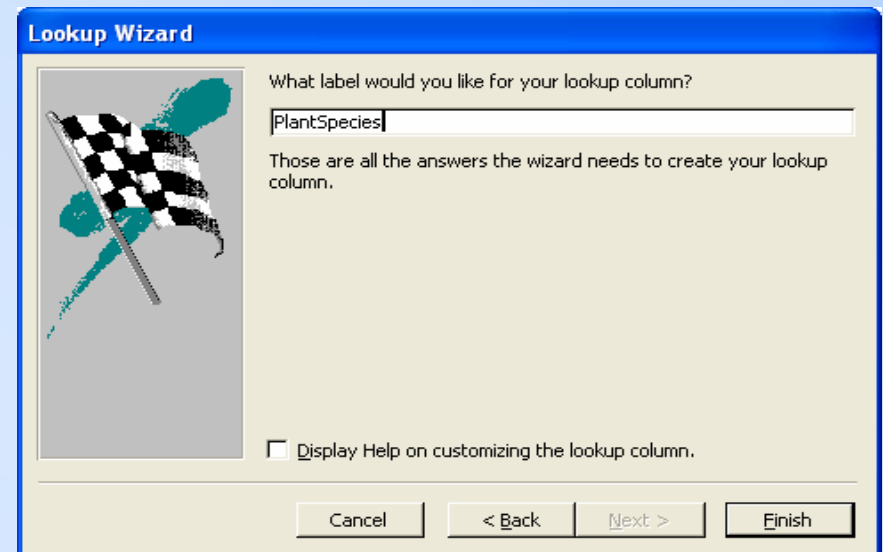
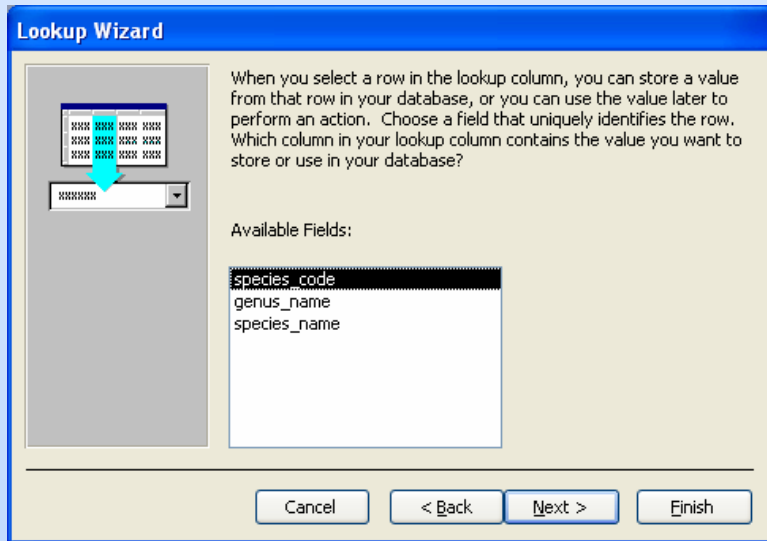
species_code	genus_name	species_name
ABFR2	Abronia	fragrans
ACM10	Achillea	millefolium
ACNA2	Acourtia	nana
ACNE	Acalypha	neomexicana
ACRE3	Acroptilon	repens
AGG12	Agrostis	gigantea
AGHE5	Ageratina	herbacea

- ❑ Select ascending order on species_code

- ❑ If Species_code is not visible, uncheck the 'Hide Key Column' box



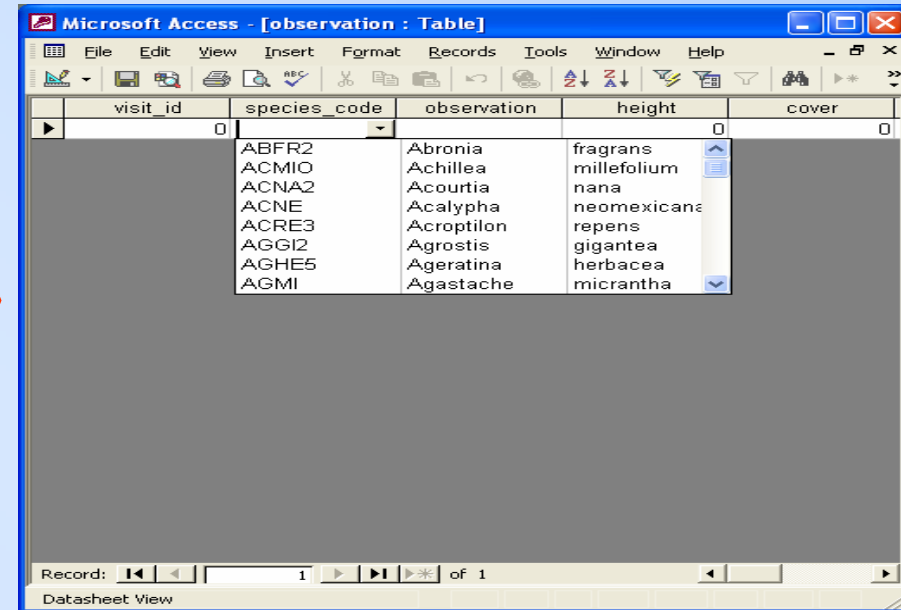
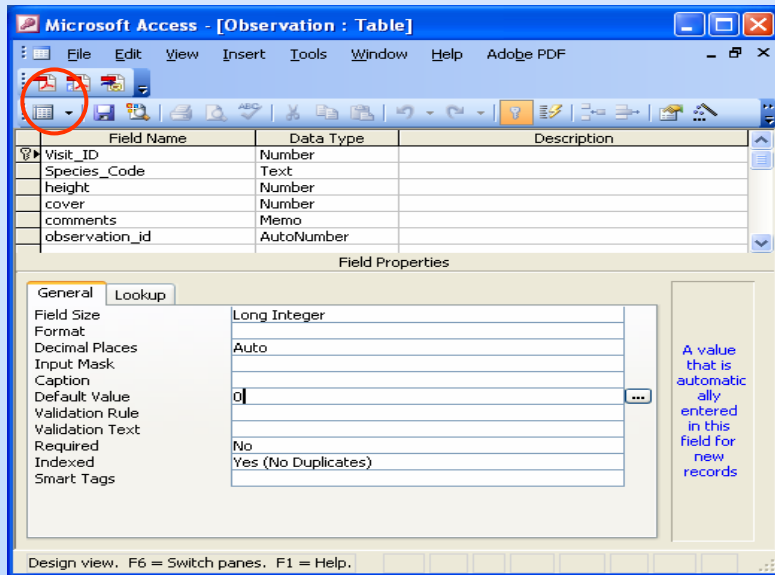
Using the lookup wizard



- ❑ Accept species_code as the value to be stored in the database
- ❑ Next
- ❑ Accept PlantSpecies as the default name for the lookup column
- ❑ Click Finish



Switch between design and table view

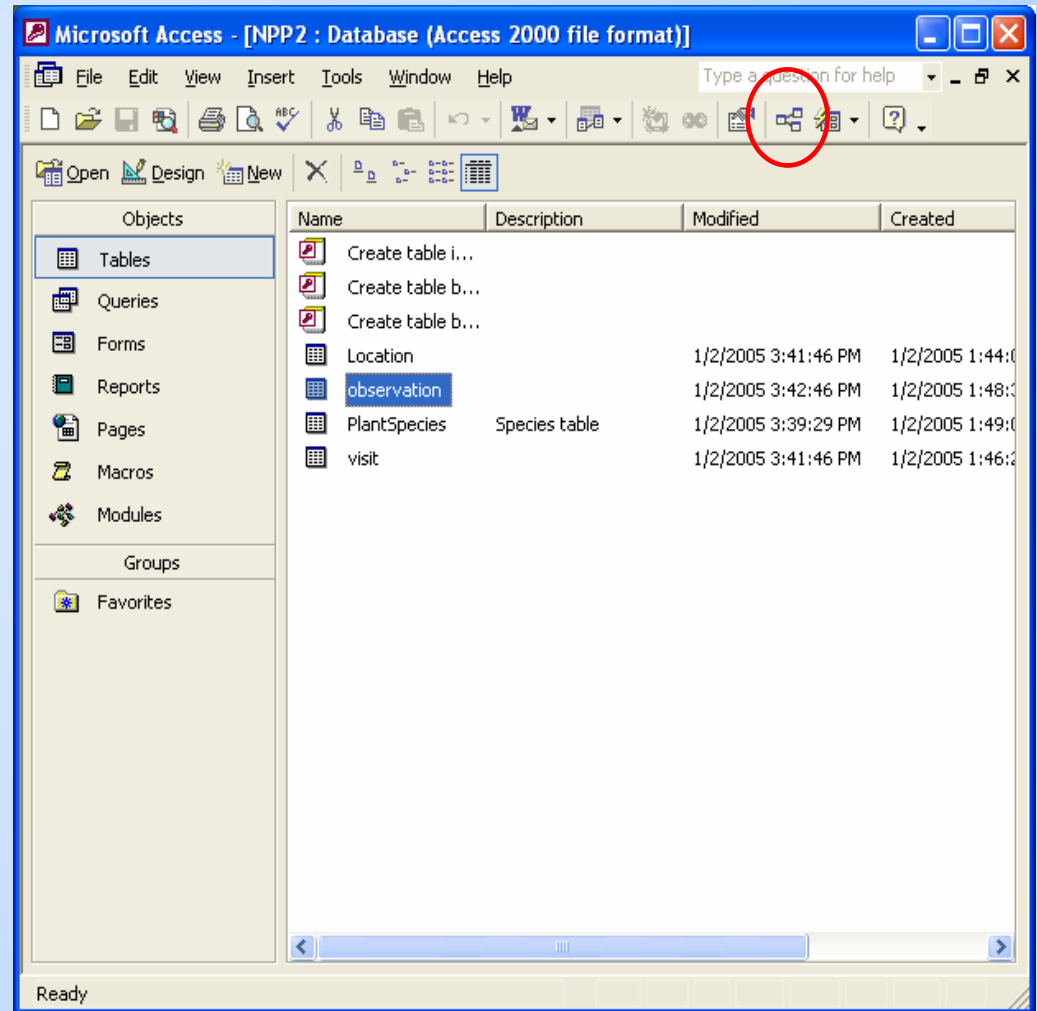


- Click on View button in upper left-hand corner to switch from "design view" to "datasheet view"
- Click in the species_code field to see the drop-down list
- CLOSE the observation table



Define relationships between tables

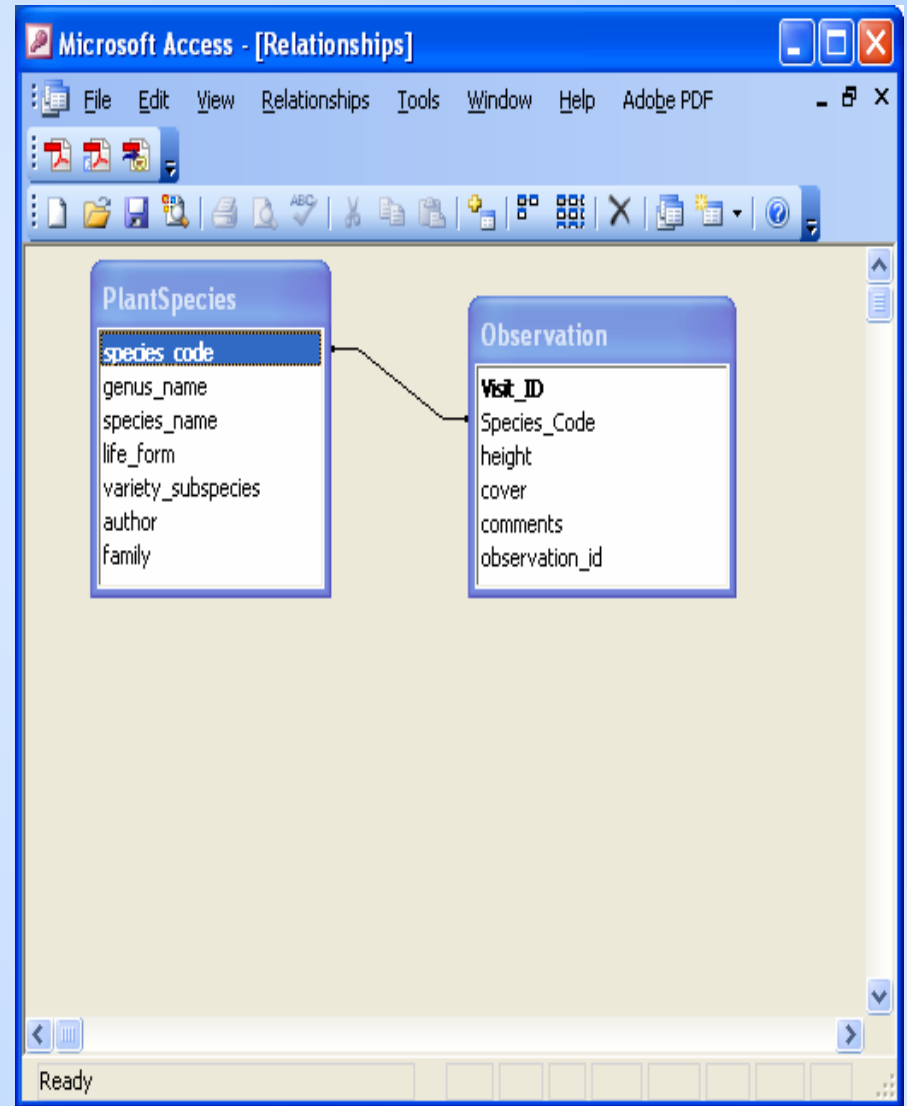
- Click on the “relationship” icon in the database window





Define relationships: add tables to the relationships window

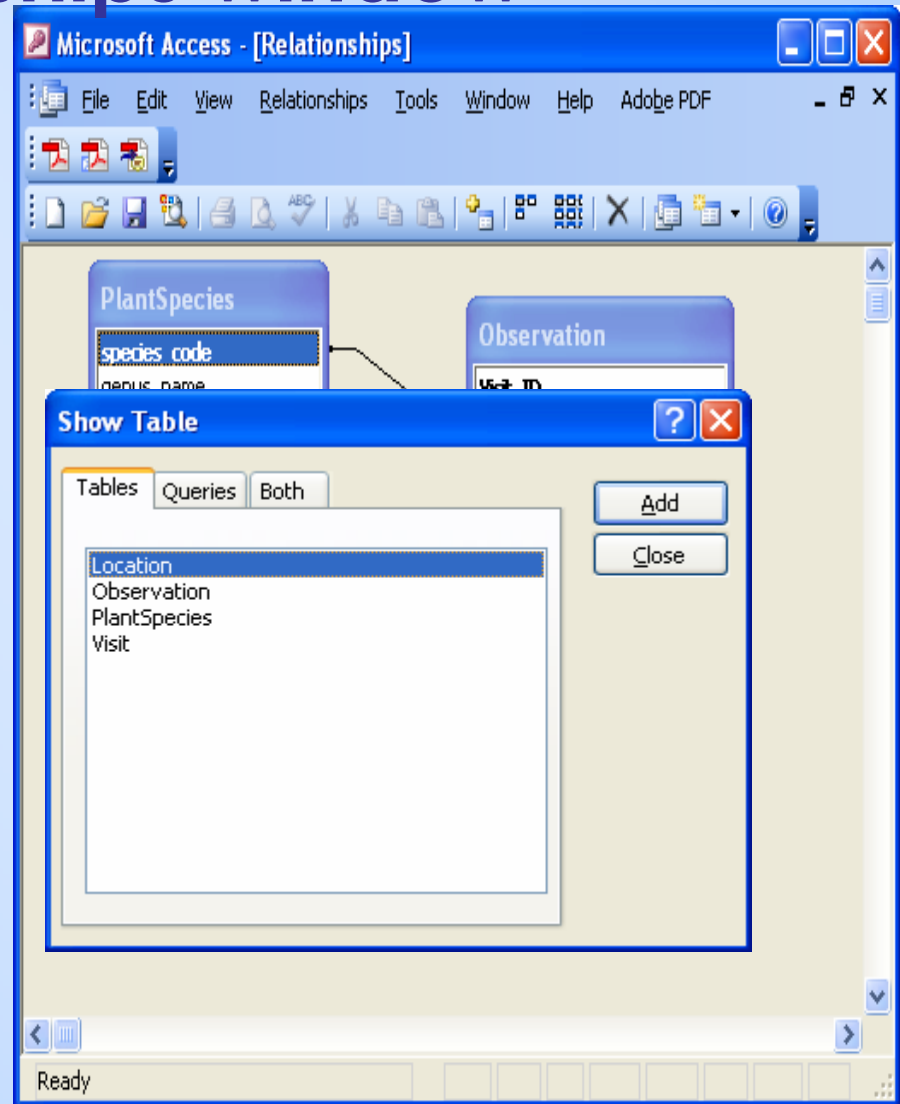
- PlantSpecies and Observation are already shown in the relationships window because a relationship was defined with the Lookup wizard
- Right click in the window and choose "Show table" to add the Location and Visit tables
- Close the "Show Table" window





Define relationships: add tables to the relationships window

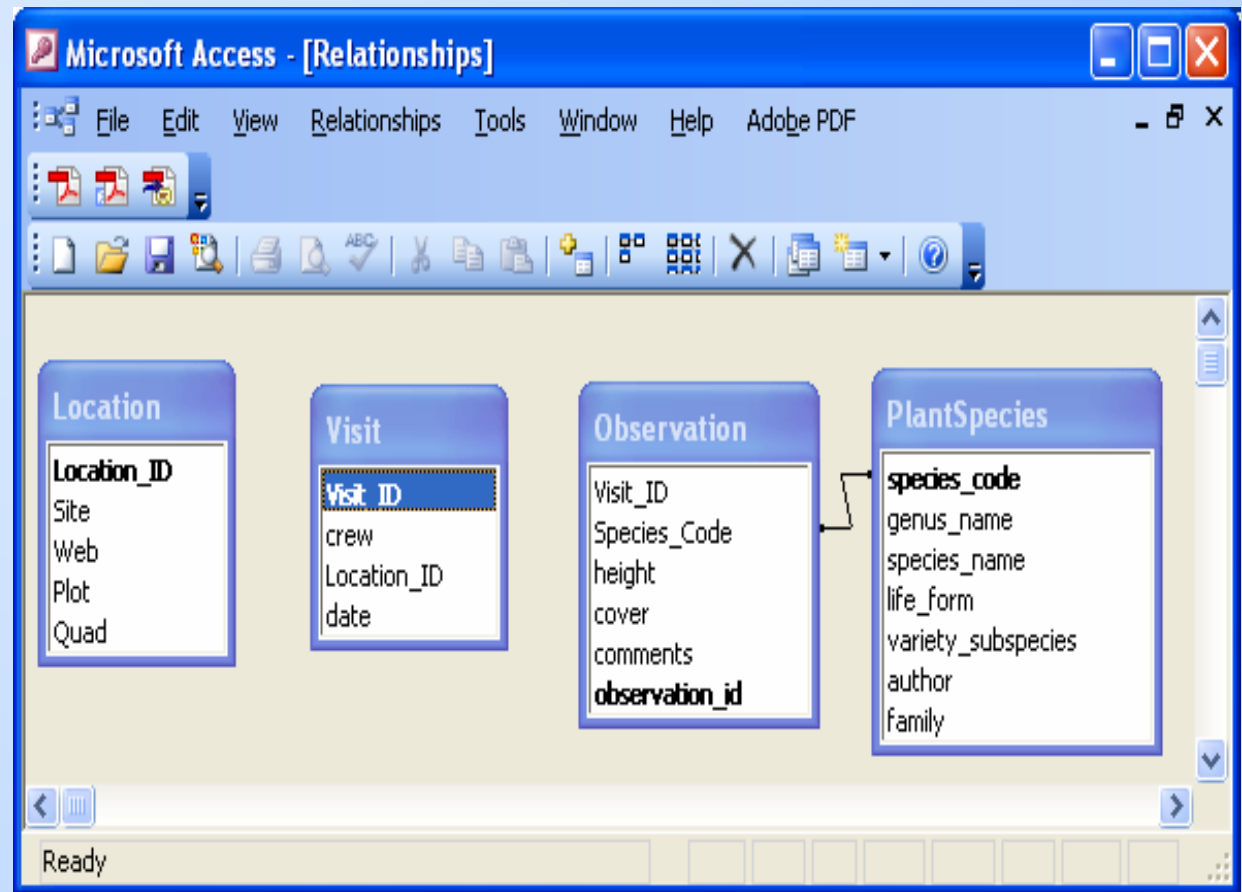
- Right click in the window and choose "Show table" to add the Location and Visit tables
- Close the "Show Table" window





Create relationship between Location and visit tables

- left-click and hold on Location_ID in the Location table and drag the icon overtop of Location_ID in the visit table





Edit relationships

- The 'Edit Relationships' window will open. Enforce referential Integrity (this means that you won't be able to delete a record in the Location table if there is a related table in the Visit table)
- 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

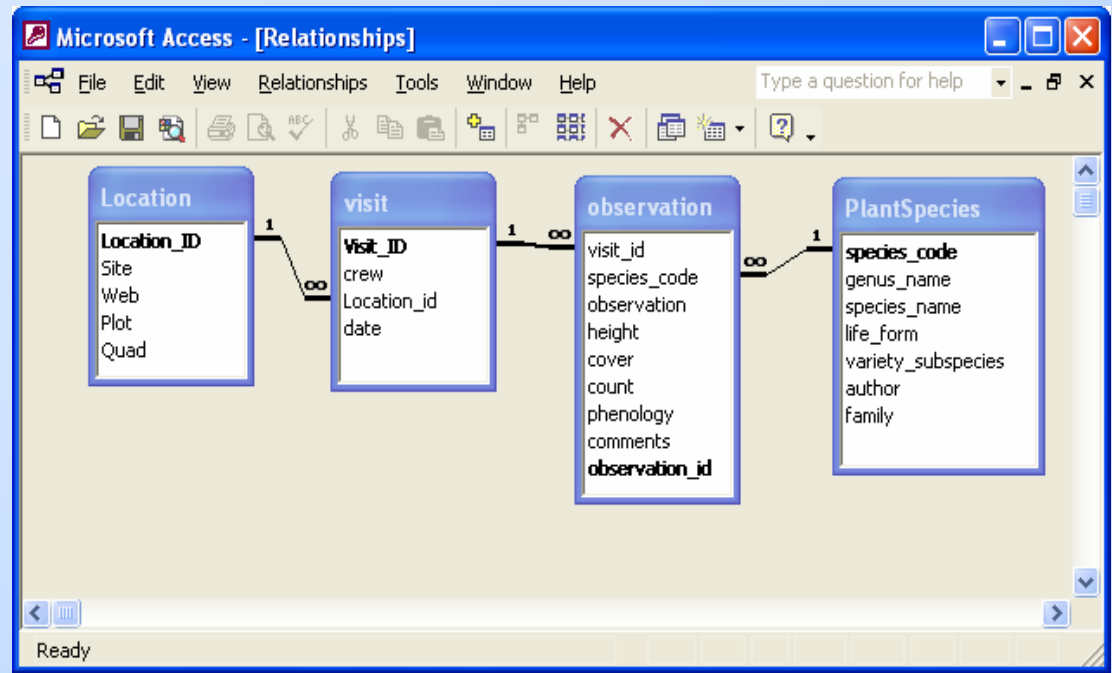
Relationship Type: One-To-Many

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



Finish defining relationships

- Left click on Visit_ID in Visit table and drag the icon overtop of Visit_ID in the Observation table; enforce referential integrity
- Close the relationships window; save changes if prompted





Now create a data entry form similar to this one:

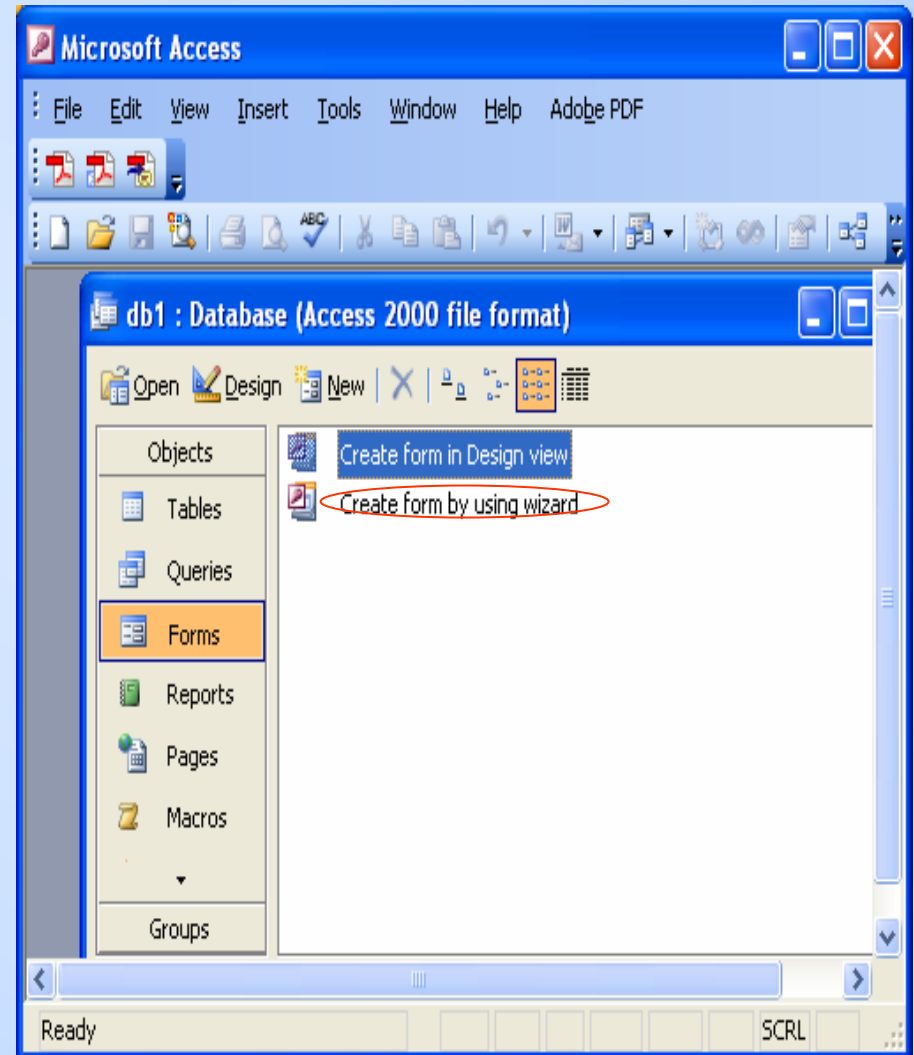
The screenshot shows a Microsoft Access window titled "Microsoft Access - [Location]". The form is displayed in Form View and contains the following fields:

- Site_ID**: (AutoNumber)
- Site**: Text field
- Web**: Text field with value 0
- Plot**: Text field
- Quad**: Text field with value 0
- visit**: Section header
- Visit_ID**: (AutoNumber)
- crew**: Text field
- site_id**: Text field with value 0
- date**: Text field
- observation**: Section header
- visit_id**: Text field
- species**: Text field
- cover**: Text field with value 0
- height**: Text field with value 0
- observation**: Text field
- phenology**: Text field
- comments**: Text area
- observation_id**: (AutoNumber)

Record navigation controls are visible at the bottom, showing "Record: 1 of 1".



- 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:

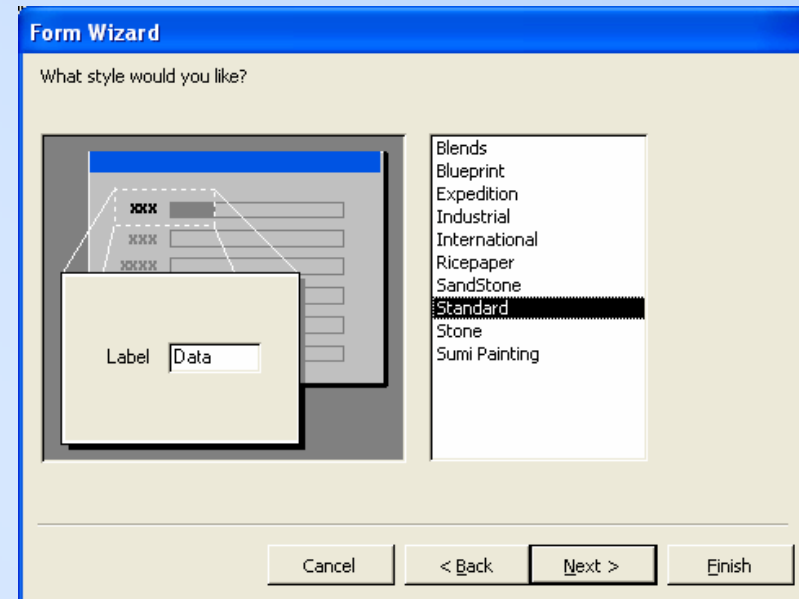
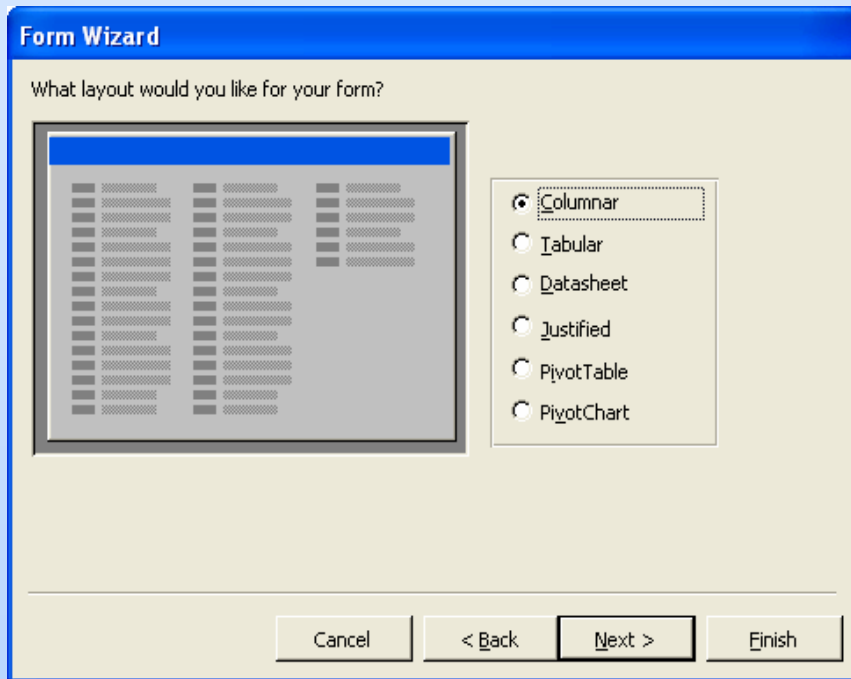
Location_ID
Site
Web
Plot
Quad

Cancel < Back Next > Finish

- Click on >> to accept all fields



Choose form appearance



- Choose "columnar"

- Choose "standard"



Form Wizard

What title do you want for your form?
Location

That's all the information the wizard needs to create your form.

Do you want to open the form or modify the form's design?

Open the form to view or enter information.
 Modify the form's design.

Display Help on working with the form?

Cancel < Back Next > Finish



Microsoft Access - [Location1]

File Edit View Insert Format Records Tools Window Help

MS Sans Serif 8

Site_ID [AutoNumber]
Site
Web 0
Plot
Quad 0

Record: 1 of 1
Form View

- Accept 'Location' for the name of the table
- Click 'Finish'

- Your form will look like this



Create more forms

- Create forms for the Visits table and the Observations table using the Form Wizard
- Put all fields in the forms
- Close all forms when you are done.

Form Wizard

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

Tables/Queries

Table: Location

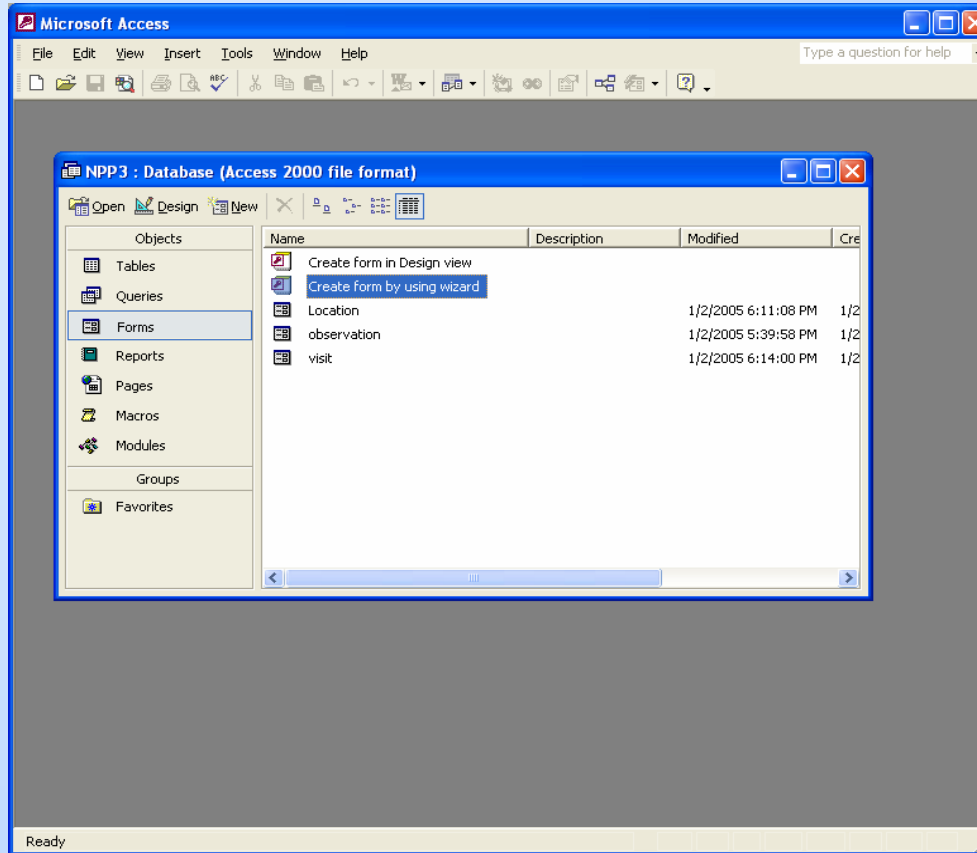
Table: Location
Table: observation
Table: PlantSpecies
Table: visit
Site
Web
Plot
Quad

Selected Fields:

Cancel < Back Next > Finish



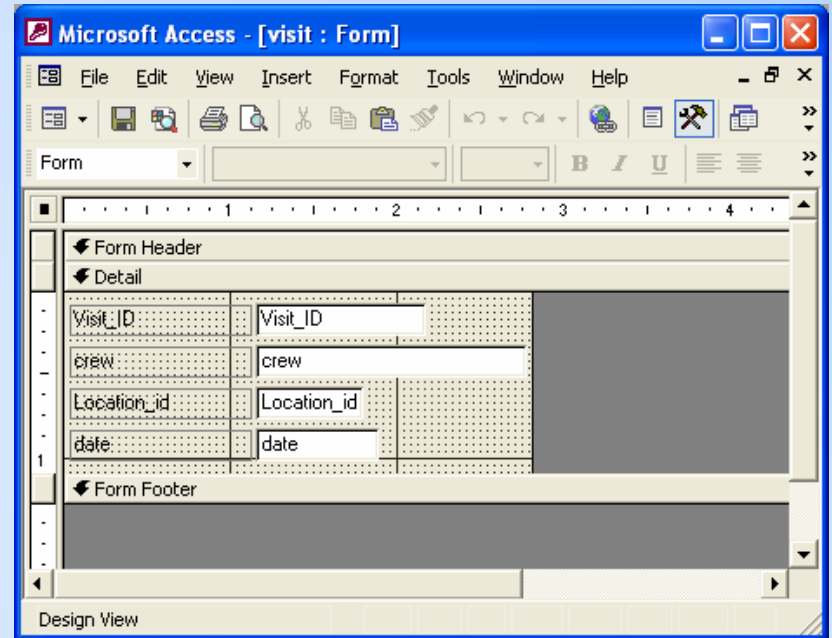
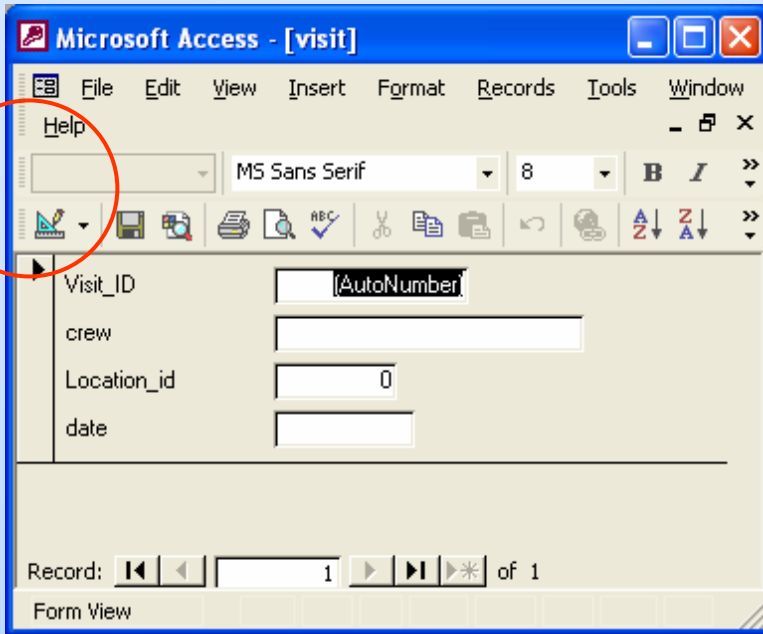
Create subforms



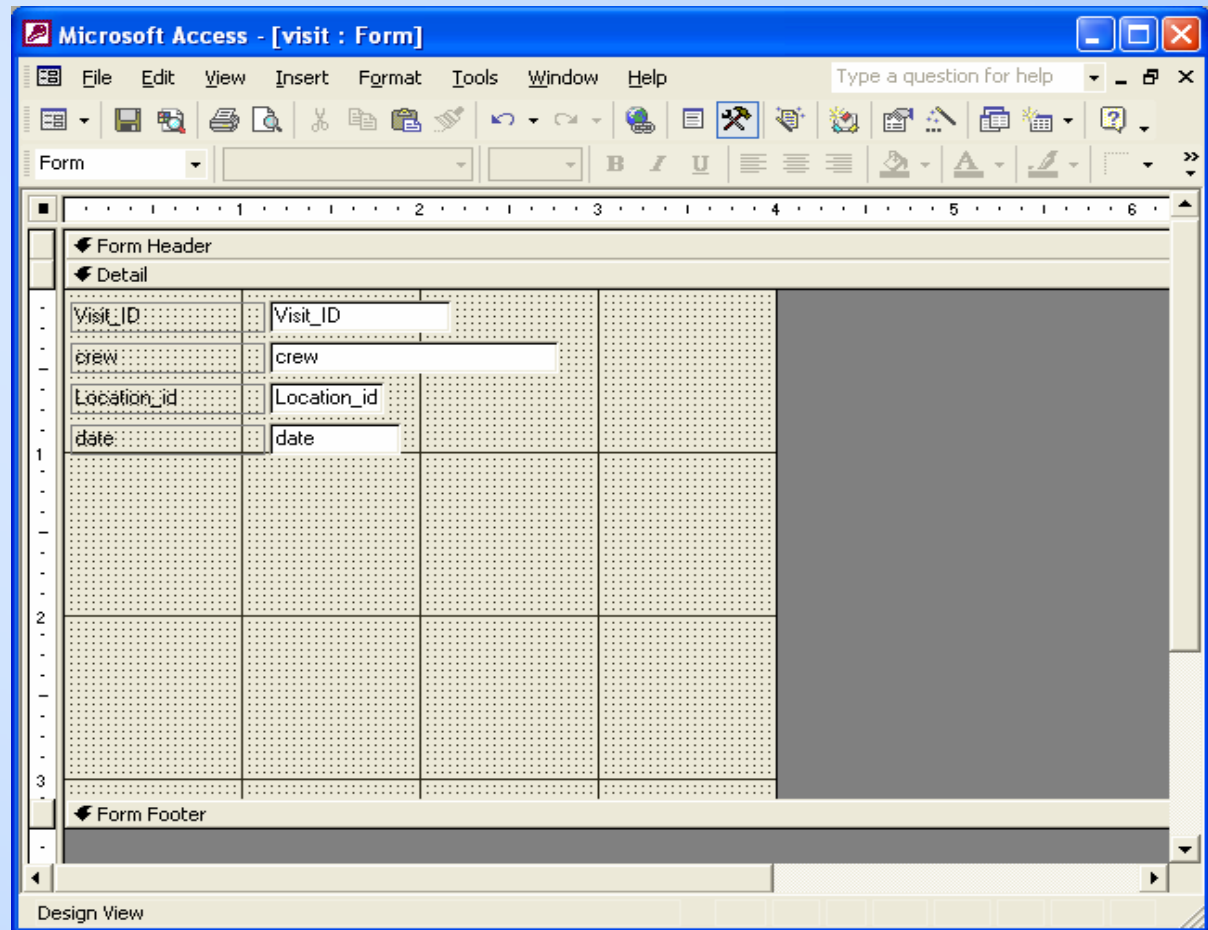
- Now you will embed the Observations table inside the Visit table, and then embed the Visit table inside the Location table



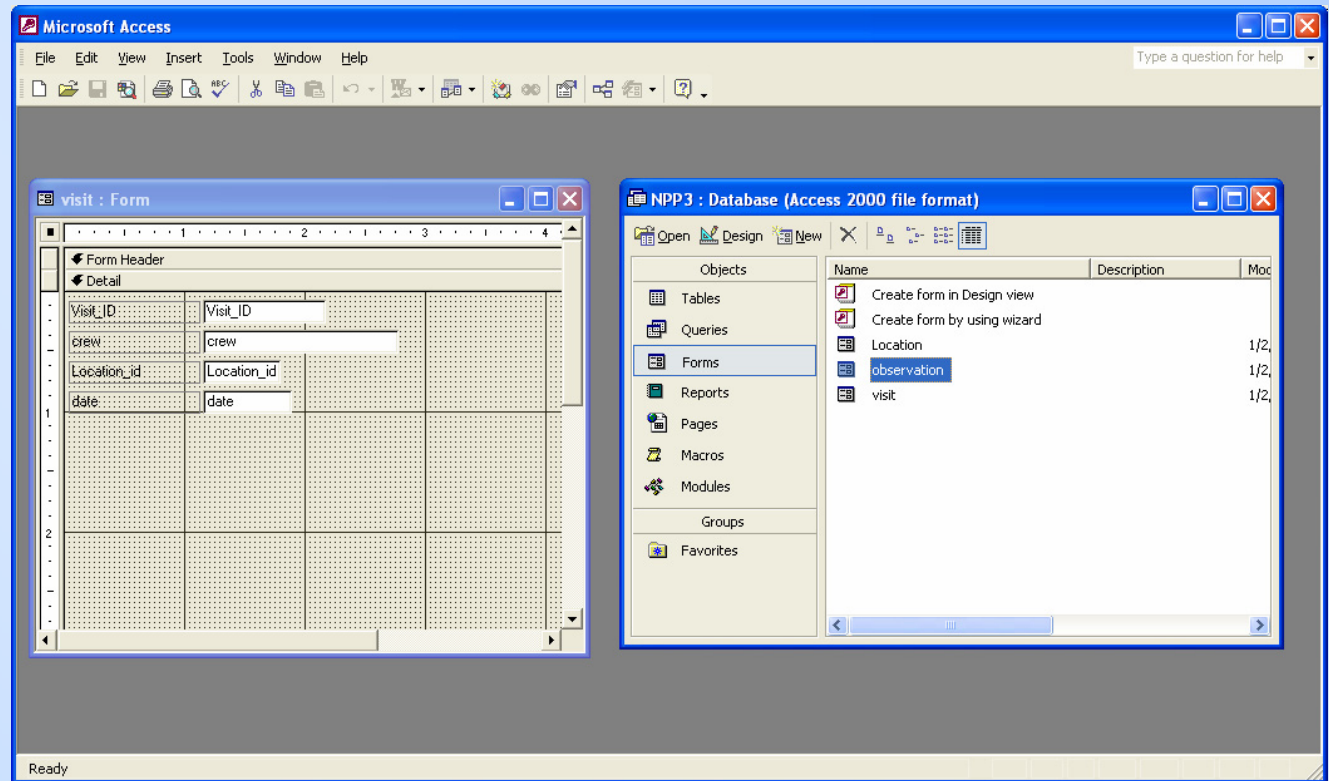
Embed the Observation Table inside the Visit Table



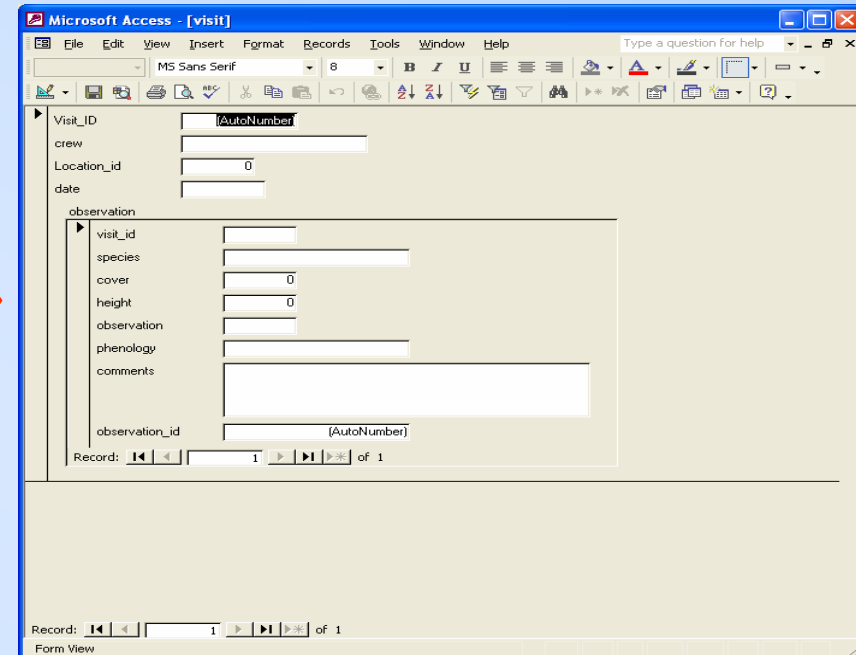
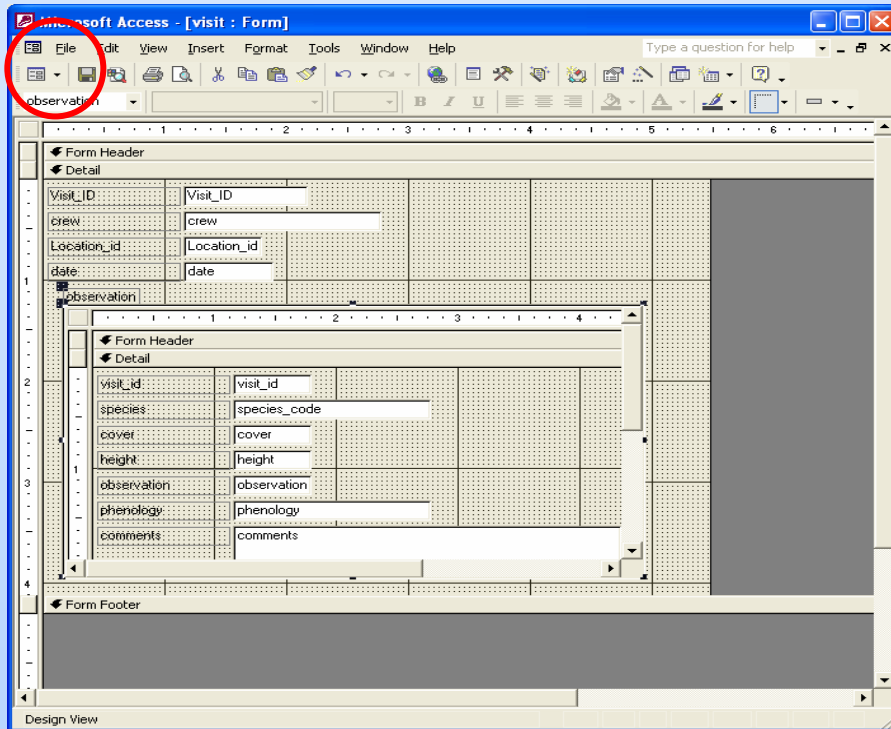
- Open the Visit form and then switch to Design View by clicking on the icon in the upper left-hand corner



- Resize Visit form so that there is room to embed the Observation 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 and hold on Observation form in Database window and drag it onto the Visit form

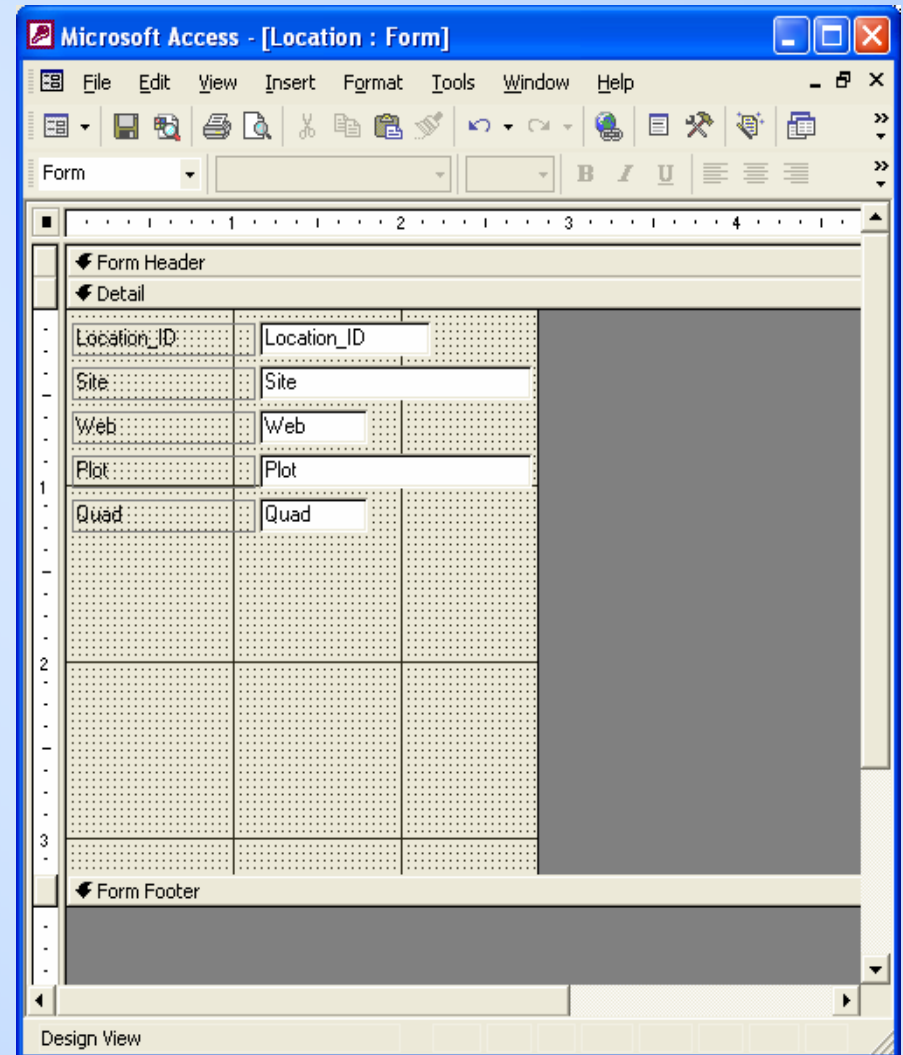


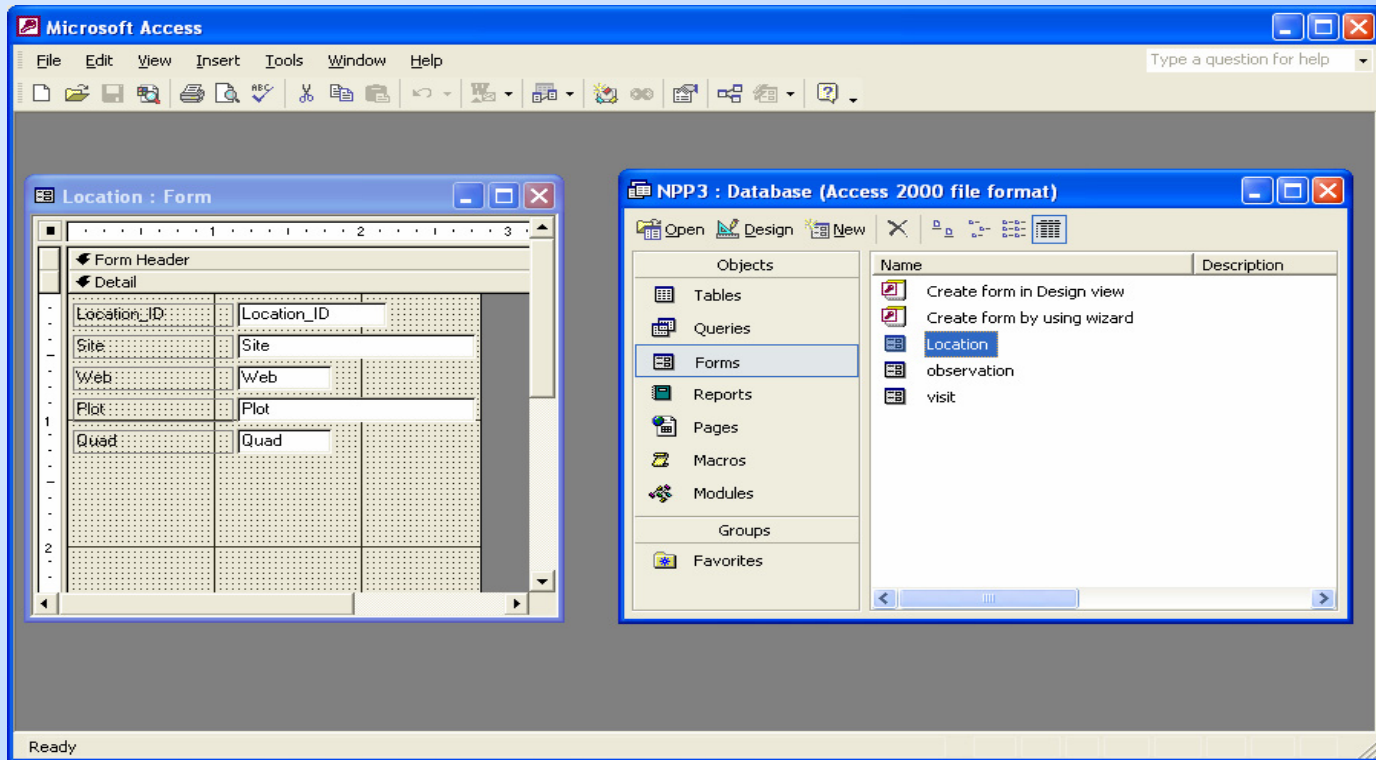
- Click on the View icon to see the completed Visit form with the Observation form embedded within it
- Close and save changes to the Visit Form



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 Visit form

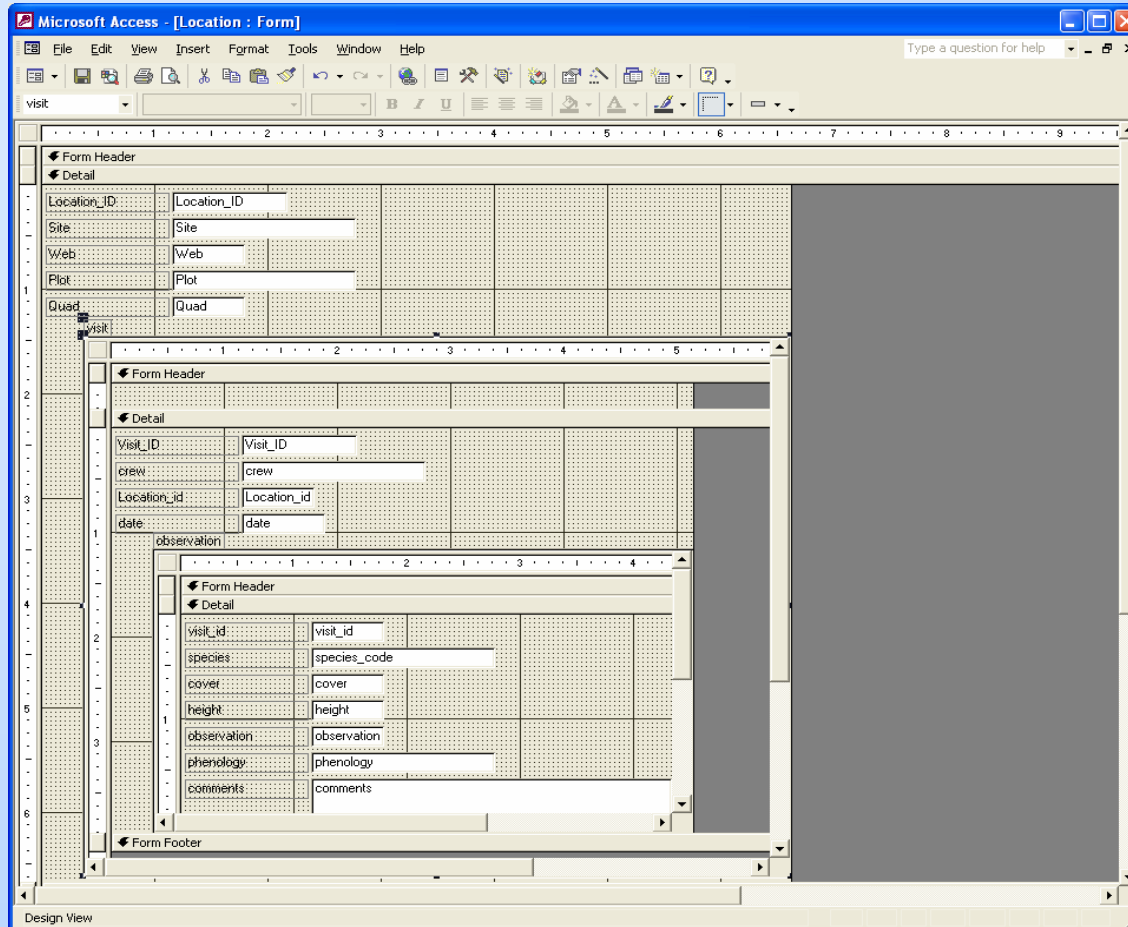




- Position design view of Location form and database window next to each other
- Left-click and hold on the visit form in the database window and drag it onto the Location form



The finished form in design view



- Close and Save the form



Enter some data

- Open the Location form
- You can enter multiple observations without having to re-enter visit or location information
- In the Location form:
 - Site = C ,
 - Web = 1,
 - Plot = N,
 - Quad = 2

Microsoft Access - [Location]

File Edit View Insert Format Records Tools Window Help

MS Sans Serif 8 B I U

Location_ID (AutoNumber)

Site

Web 0

Plot

Quad 0

visit

Visit_ID (AutoNumber)

crew

Location_id

date

observation

* visit_id

species

cover 0

height 0

observation

phenology

comments

observation_id (AutoNumber)

Record: 1 of 1

Record: 1 of 1

Form View



Enter some data

- In the Visit Form, enter
 - Crew = karen
 - Date = 6/25/2004
 - Note that visit_id and location_id are automatically filled in, and that Location_ID is the same in both forms
- In the Observation form, enter
 - Species = bogr2
 - Cover = 10
 - Height = 13
- Use the right arrow on the bottom of the Observation form to advance to a new record
- Enter two more records in the Observation table
- Close the form.

Microsoft Access - [Location]

File Edit View Insert Format Records Tools Window Help

MS Sans Serif 8

Location_ID (AutoNumber)

Site

Web 0

Plot

Quad 0

visit

Visit_ID (AutoNumber)

crew

Location_id

date

observation

* visit_id

species

cover 0

height 0

observation

phenology

comments

observation_id (AutoNumber)

Record: 1 of 1

Record: 1 of 1

Form View

Record Advance



View the entered data

Microsoft Access - [Location : Table]

Location_ID	Site	Web	Plot	Quad
1	C	1	N	2
*	(AutoNumber)	0		0

Record: 1 of 1

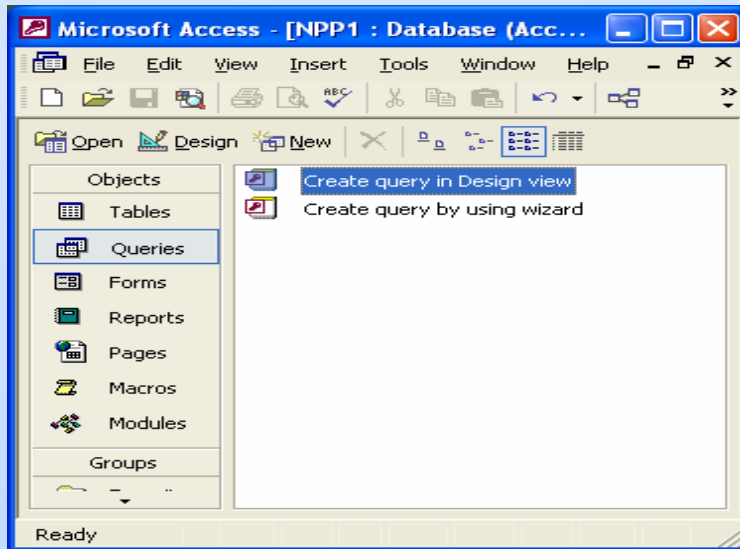
Microsoft Access - [Location : Table]

Location_ID	Site	Web	Plot	Quad	
1	C	1	N	2	
	Visit_ID	crew	date		
	1	Karen	6/25/2004		
	Species_Code	height	cover	comments	observation_id
	ACMIO	10	20	grazed	1
	AGHE5	3	2		2
	PORE	6	12	asdfadfad	3
	*	0	0		(AutoNumber)
*	(AutoNumber)				
*	(AutoNumber)		0		0

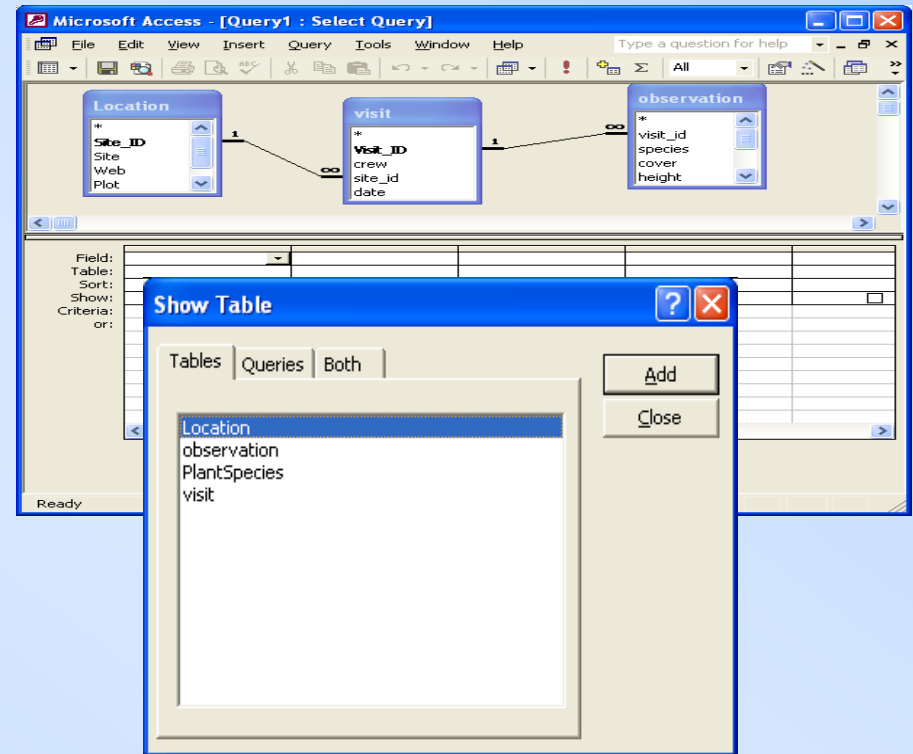
Record: 1 of 3

- Open the Location table and expand the table to show linked data by clicking on the '+'
- Close all tables

Create a query to show all the data at once



- Choose Query from the database objects list
- Choose “Create query in Design View”



- Add the tables Location, Observation, and Visit to the query
- Close the ‘Show Table’ window



Define a query to see all the data

- Use the drop-down boxes to make your window look like this
- Click on the '!' to run your query

Microsoft Access - [Query1 : Select Query]

File Edit View Insert Query Tools Window Help Adobe PDF

Location

*
Location_ID
Site
Web
Plot

Visit

*
Visit_ID
crew
Location_ID
date

Observation

*
Visit_ID
Species_Code
height
cover

Field:	Location.*	Visit.*	Observation.*
Table:	Location	Visit	Observation
Sort:			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			
or:			

Ready SCRL



Results of the query

	Location.Locati	Site	Web	Plot	Quad	Visit.Visit_ID	crew	Visit.Locat	date	Observatio	Species_Cc	height	cover	comments	observation_id
▶		1 C	1 N		2	1	Karen	1	6/25/2004	1	ACMIO	10	20	grazed	1
		1 C	1 N		2	1	Karen	1	6/25/2004	1	AGHE5	3	2		2
		1 C	1 N		2	1	Karen	1	6/25/2004	1	PORE	6	12	asdfadfad	3
*	(AutoNumber)					AutoNumber)									(AutoNumber)

Record: 1 of 3

Datasheet View

- Now you have an Excel-like format that can be exported.