

EGCO342 INFORMATION TECHNOLOGY IN DAILY LIFE



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Why do we need Database? (1)

- You want to store your employee phone numbers.
- What will you do?
- What if?
 - You have a company with 100000+ employees across the globe.
 - You want to add these information
 - Job name
 - Job description
 - Min/max salary for the job
 - Working location
 - Location telephone

Why do we need Database? (2)

- When we have more complicate question to ask.
- When there are a lot of information and there are many duplicate information.

Types of Database

- Three Types of Database
 - Relational
 - Object-oriented
 - Multidimensional
- Relational databases is most common

BIG Players

- IBM
 - DB2
- Oracle
 - Oracle DB = Leading in the Market.
 - MySQL = Free
- SAP
- Microsoft
 - Access = Personal/Small Data.
 - Microsoft SQL Server = Enterprise/Big Data.

Relational Databases

- Data in tables
- Define relation between tables.
- Primary key is unique for each record (row)

Database Terminologies

- Databases have three main components;
 - Fields
 - Store each category of information
 - Displayed in columns
 - Records
 - Group of related fields
 - Tables (or files)
 - Group of related records

Field (Column)

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Pane		T02	Manager	A supervisory p	Four year degree	\$50,000	\$150,000		
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Record (Row)

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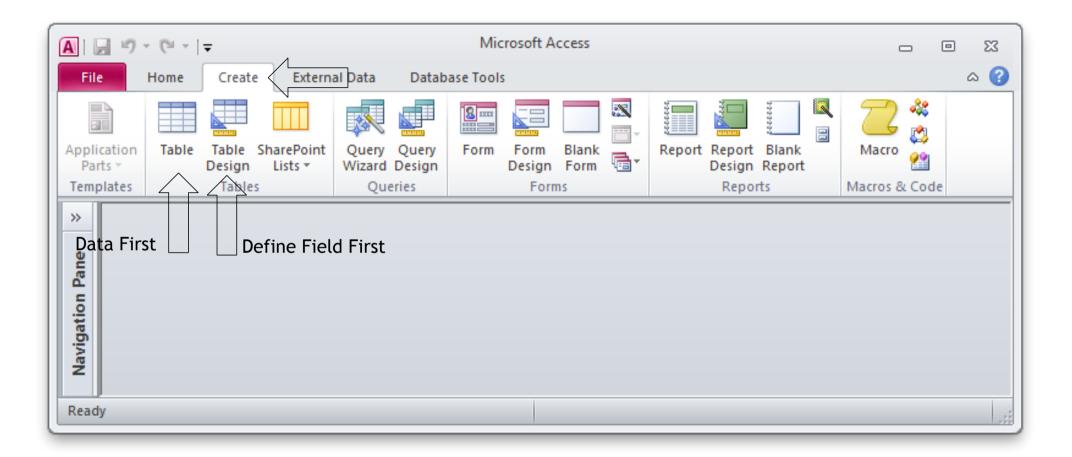
Table (Entity)

	Titlel 🔻	Title 👻	Description 👻	$EducationRequire \boldsymbol{\prec}$	MinimumSala 👻	MaximumSalaı 👻 (lick to Add	*
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Lalle	T02	Manager	A supervisory p	Four year degree	\$50,000	\$150,000		
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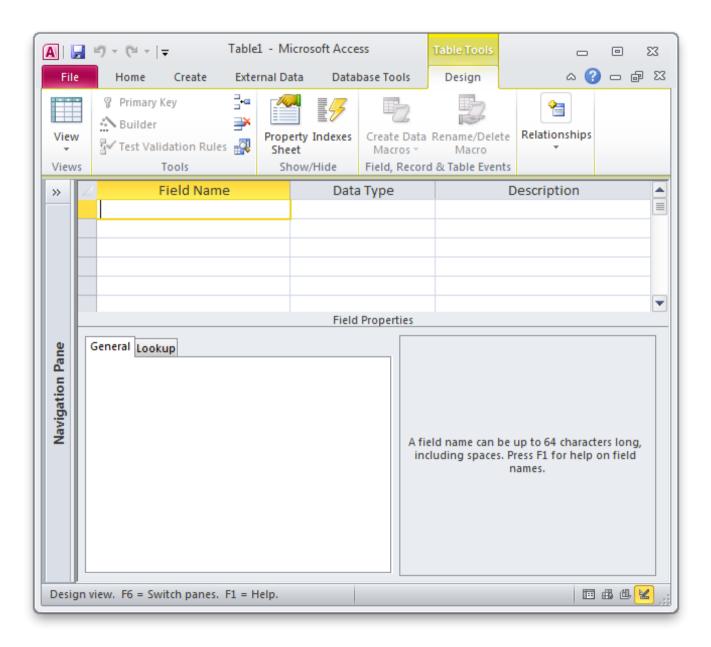
Create Table

- Data First
- Define Field First

New Table



Define Field



Common Data Types

Data Type	Used to Store	Examples
Text	Short text with maximum length limit	John Doe
Number	Numbers	2901 or 3.499
Yes/No	Boolean	False/True or 0/1
Date & Time	Dates	2/21/2016
Мето	Long text with no limit	I want to finish this exercise so I can go home.
Calculated	Formula	Grade * Credit
Attachment	Files	Document, Picture
Hyperlink	Hyperlink to a Web page	Google.com

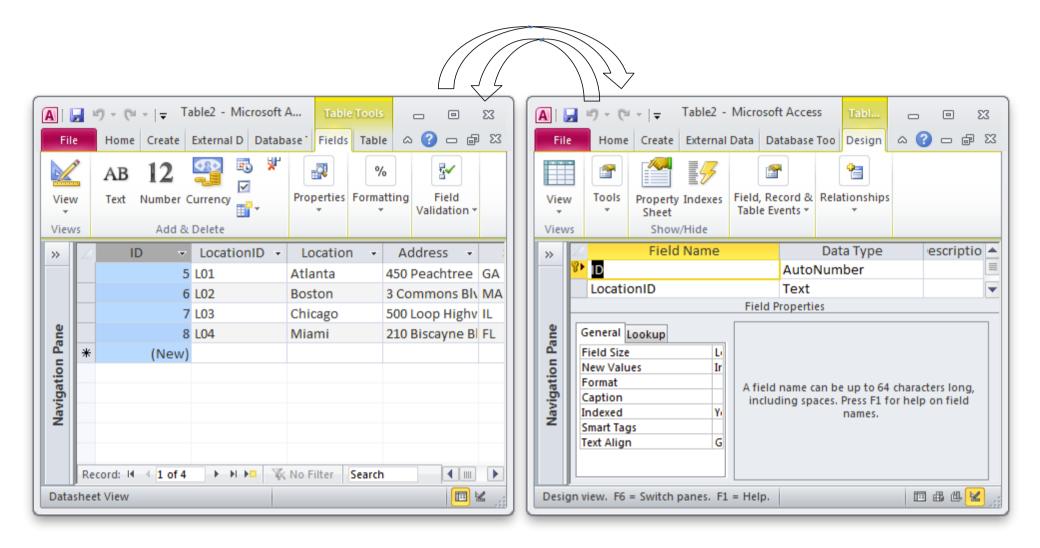
Filed Size

- Set field size to save space
- Too small size = missing data
- Will all names fit in 10 characters?
- Will addresses fit in 20 characters?

Data First

A 🛃	10 × (21 × 1 -	Table1 - Micro	osoft Access	Table Tools	_ 0 %
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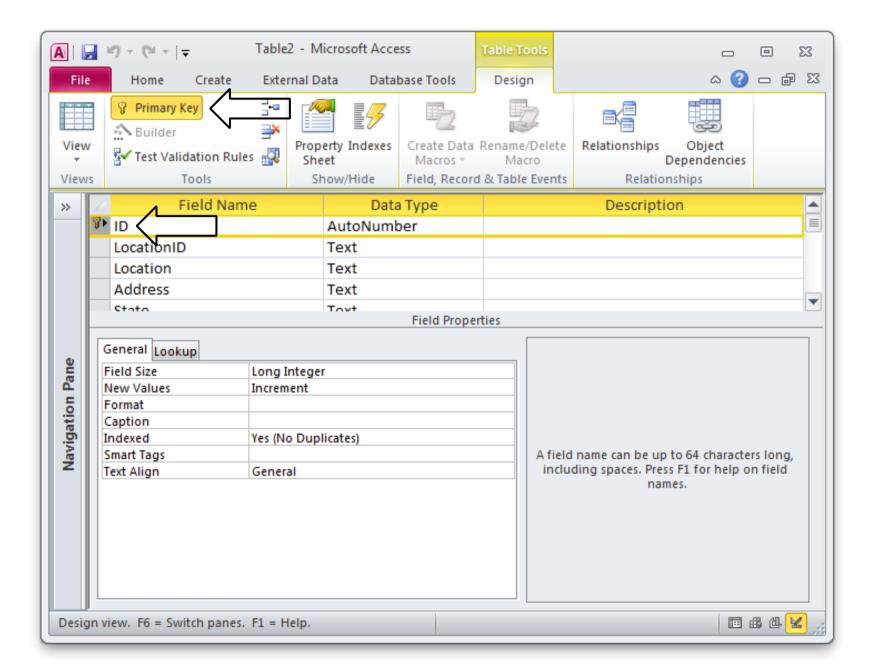
Switch Between Design and View



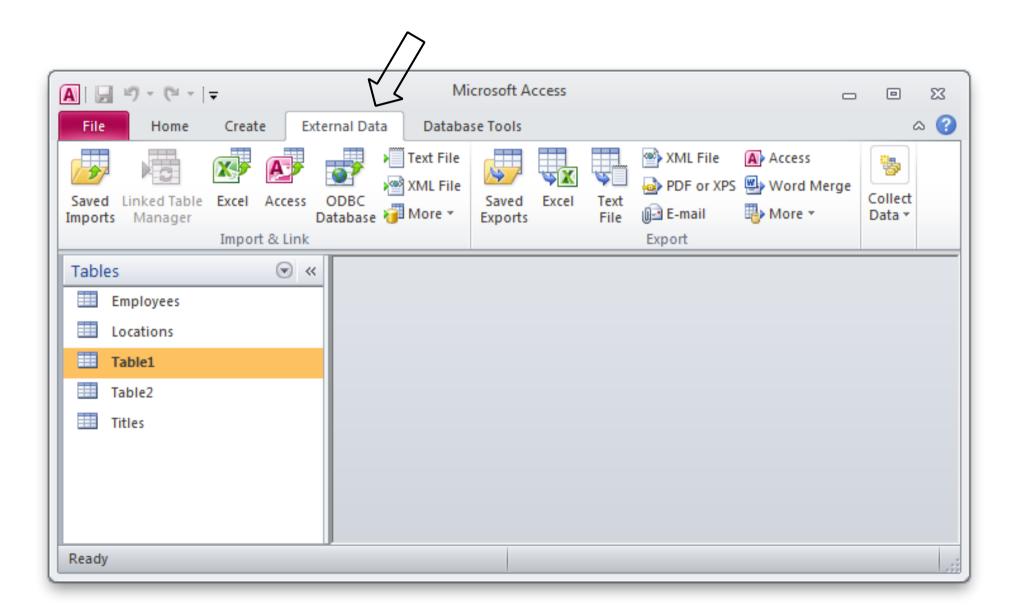
Primary Key

- Row must be unique!
- Database must be able to tell rows apart quickly to be fast
- Find fields (columns) that together will be unique and set them to be primary key.
- Can be set in Design mode

Set Primary Key



Import & Export Data (1)



Import & Export Data (2)

Get External Data - Excel Spreadsheet	? 🗙
Select the source and destination of the data	
Specify the source of the data.	
Eile name: C:\Users\Ruj\Documents\	Browse
 Specify how and where you want to store the data in the current database. Import the source data into a new table in the current database. If the specified table does not exist, Access will create it. If the specified table already exists, Access might over with the imported data. Changes made to the source data will not be reflected in the database. Append a copy of the records to the table: Locations If the specified table exists, Access will add the records to the table. If the table does not exist, Access will create to the source data will not be reflected in the database. Link to the data source by creating a linked table. Access will create a table that will maintain a link to the source data in Excel. Changes made to the source data i reflected in the linked table. However, the source data cannot be changed from within Access. 	ate it. Changes made
OK	Cancel

Import & Export Data (3)

	Import Spreadshe	et Wizard							23	
	Your spreadsheet file contains more than one worksheet or range. Which worksheet or range would you like?									
	Show Worksheets Employees Show Named Ranges Imployees									
Sa	mple data for works	heet 'Employee	es'.							
1	EmployeeID	LastName	FirstName	LocationID	TitleID	Salary	Gender	Performance		
	2 10000	Milgrom	Pamela	L02	T02	57,500.00	F	Average		
	3 11111	Adams	Jennifer	L01	тоз	19,500.00	F	Average		
	1 20000	Johnson	James	L03	T01	47,500.00	м	Good		
	5 22222	Coulter	Tracey	L01	T02	100,000.00	F	Good		
	5 30000	Marlin	Billy	L04	T02	125,000.00	м	Good		
	7 33333	Smith	Mark	L03	T01	42,500.00	м	Average		
8	3 40000	Manin	Ann	L02	T01	49,500.00	F	Average		
9	9 44444	Smith	Francine	L01	T01	65,000.00	F	Good		
1	0 50000	Brown	Mark	L01	T03	18,500.00	м	Poor		
1	1 55555	Frank	Vernon	L04	T01	75,000.00	м	Good		
1	2 60000	Rubin	Patricia	L02	T01	45,000.00	F	Average		
1	3 66666	Charles	Kenneth	L02	T01	40,000.00	м	Poor		
1	470000	Adamson	David	L03	T02	52,000.00	м	Poor	-	
					Cancel	< <u>B</u> ack		ext > <u>F</u> inish		

Import & Export Data (4)

=	mport Spreadshe	et Wizard							23
	Microsoft Access of row specified cont	ain column hea	dings?	s field names for y	our table. Doe	es the first			
	EmployeeID	LastName	FirstName	LocationID	TitleID	Salary	Gender	Performance	٦
1	10000	Milgrom	Pamela	L02		57,500.00	F	Average	_
2	11111	Adams	Jennifer	L01	T03	19,500.00	F	Average	
3	20000	Johnson	James	LO3	T01	47,500.00	м	Good	
4	22222	Coulter	Tracey	L01	T02	100,000.00	F	Good	
5	30000	Marlin	Billy	L04	T02	125,000.00	м	Good	
6	33333	Smith	Mark	L03	T01	42,500.00	м	Average	
7	40000	Manin	Ann	L02	T01	49,500.00	F	Average	
8	44444	Smith	Francine	L01	T01	65,000.00	F	Good	
9	50000	Brown	Mark	L01	T03	18,500.00	м	Poor	
10	55555	Frank	Vernon	L04	T01	75,000.00	м	Good	
11	60000	Rubin	Patricia	L02	T01	45,000.00	F	Average	
12	66666	Charles	Kenneth	L02	T01	40,000.00	м	Poor	
13	70000	Adamson	David	LO3	T02	52,000.00	м	Poor	
14	77777	Marder	Kelly	LO3	T01	38,500.00	F	Average	-
-			•	•		•			- <u>-</u> -
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Import & Export Data (5)

-Field Options	he 'Field Options'							
	Ever Louis TD		Data Turan Taut					
Field Name:	EmployeeID		Data Type: Text		-			
Indexed:	Yes (Duplicates (ОК) 🖵 [Do not import fi	eld (<u>S</u> kip)				
					1			
	D LastName	FirstName	LocationID		_	Gender	Performance	
10000	Milgrom	Pamela	L02	T02	57,500.00	F	Average	
11111	Adams	Jennifer	L01	T03	19,500.00	F	Average	
20000	Johnson	James	L03	T01	47,500.00	м	Good	
22222	Coulter	Tracey	LO1	T02	100,000.00	F	Good	
30000	Marlin	Billy	L04	T02	125,000.00	м	Good	
33333	Smith	Mark	LO3	T01	42,500.00	м	Average	
40000	Manin	Ann	L02	T01	49,500.00	F	Average	
44444	Smith	Francine	LO1	T01	65,000.00	F	Good	
50000	Brown	Mark	LO1	тоз	18,500.00	м	Poor	
55555	Frank	Vernon	L04	T01	75,000.00	м	Good	
60000	Rubin	Patricia	L02	T01	45,000.00	F	Average	
66666	Charles	Kenneth	L02	T01	40,000.00	м	Poor	
70000	Adamson	David	LO3	т02	52,000.00	м	Poor	
77777	Marder	Kelly	LO3	T01	38,500.00	F	Average	

Import & Export Data (6)

 Import Spreadsheet Wizard Microsoft Access recommends that you define a primary key for your uniquely identify each record in your table. It allows you to retrieve d Let Access add primary key. Choose my own primary key. No primary key. 									23
		, , ,	-						
EmployeeID		Pamela	Locatio L02	nID	TitleID T02	Salary	Gender	Performance	- I I
	Milgrom				1	57,500.00	ч ч	Average	
	Adams	Jennifer	L01		T03	19,500.00	F	Average	
_	Johnson	James	L03		T01	47,500.00	м	Good	
-	Coulter	Tracey	L01		T02	100,000.00	r.	Good	
-	Marlin	Billy	L04		T02		М	Good	
-	Smith	Mark	L03		T01	42,500.00	М	Average	
	Manin	Ann	L02		T01	49,500.00	F	Average	
	Smith	Francine	L01		T01	65,000.00	F	Good	
	Brown	Mark	L01		T03	18,500.00	м	Poor	
	Frank	Vernon	L04		T01	75,000.00	м	Good	
11 60000	Rubin	Patricia	L02		T01	45,000.00	F	Average	
12 66666	Charles	Kenneth	L02		T01	40,000.00	м	Poor	
1370000	Adamson	David	L03		T02	52,000.00	М	Poor	
1477777	Marder	Kelly	L03		T01	38,500.00	F	Average	-
▲									Þ
					Cancel	< <u>B</u> ack		ext > <u>F</u> inish	

Import & Export Data (7)

Import Spreadsheet Wiz	zard	23
	That's all the information the wizard needs to import your data.	
	Import to Table: Employees	
	I would like a wizard to <u>a</u> nalyze my table after importing the data.	
	Cancel < Back Next > Finish	-

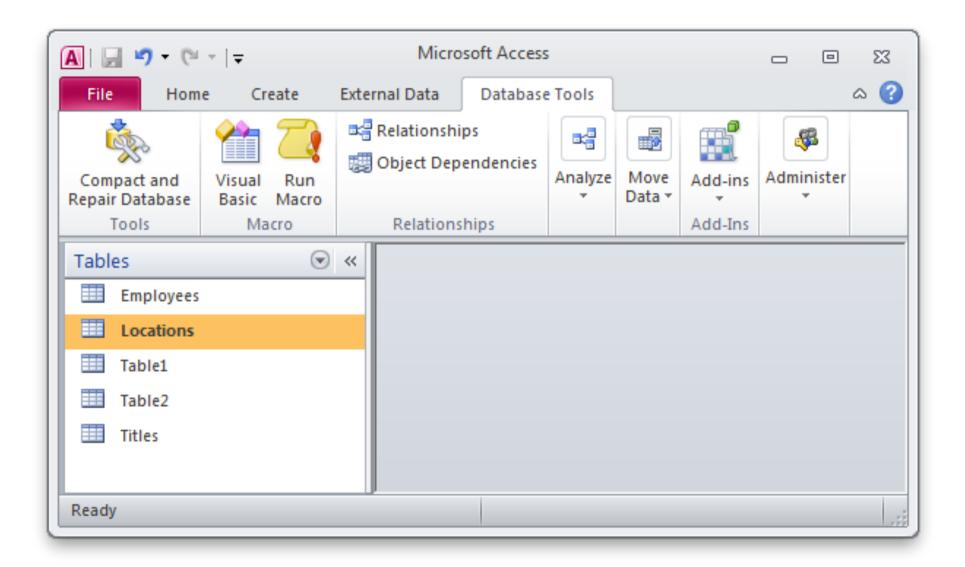
Relationship

- Define relationship to make querying easier
- Tell how database can look up more info from other tables

Types of Relationships

- One-to-one
 - For each record in a table, there is only one corresponding record in a related table
- One-to-many
 - Only one instance of a record in one table; many instances in a related table
- Many-to-many
 - Records in one table related to multiple records in another

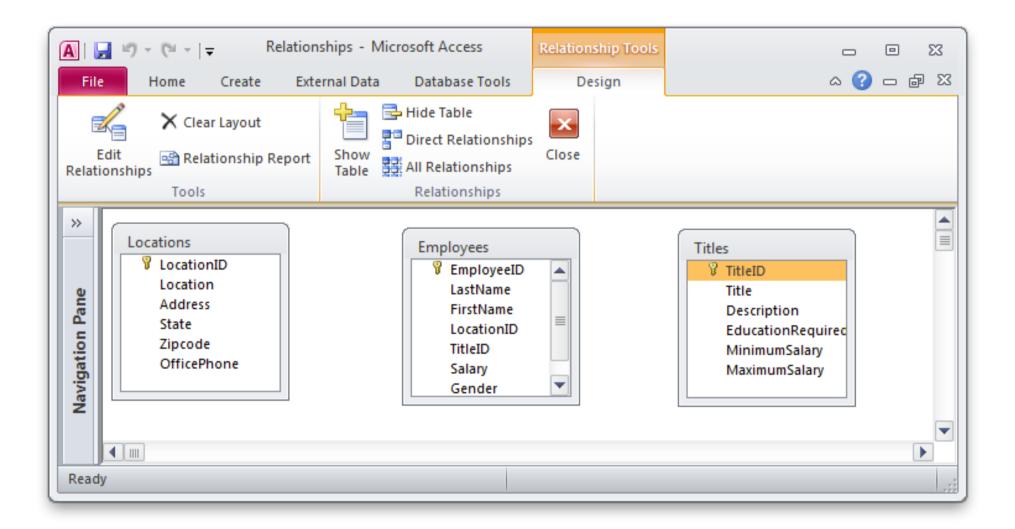
Define Relationship (1)



Define Relationship (2)

Show Ta	ble			? *
Tables	Queries	Both		
Employ Locatio Table1 Table2 Titles	ns			
			Add	Close

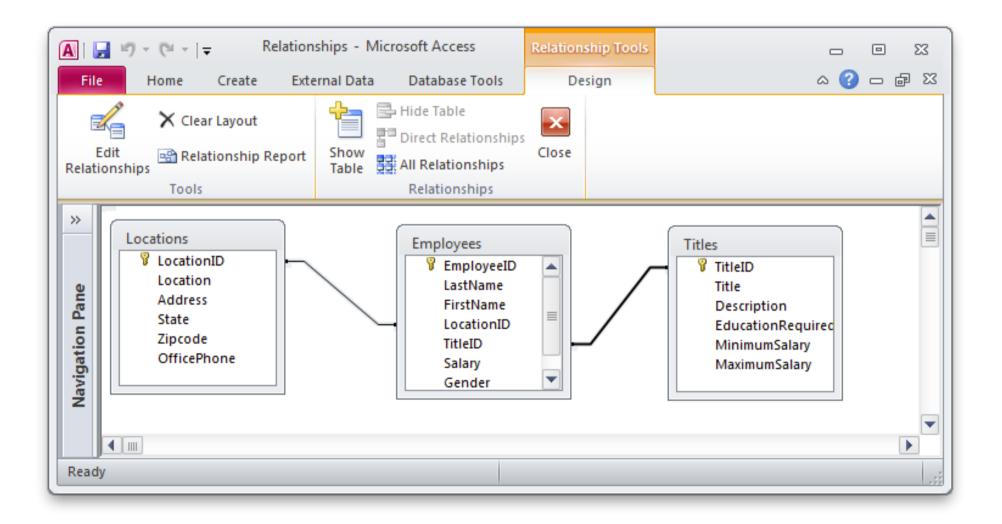
Define Relationship (3)



Define Relationship (4)

Edit Relationships			? 💌
Table/Query:	Related Table/Query:	-	Create
LocationID	LocationID	* 	Join Type
Cascade Update	Create New		
Relationship Type:	One-To-Many		

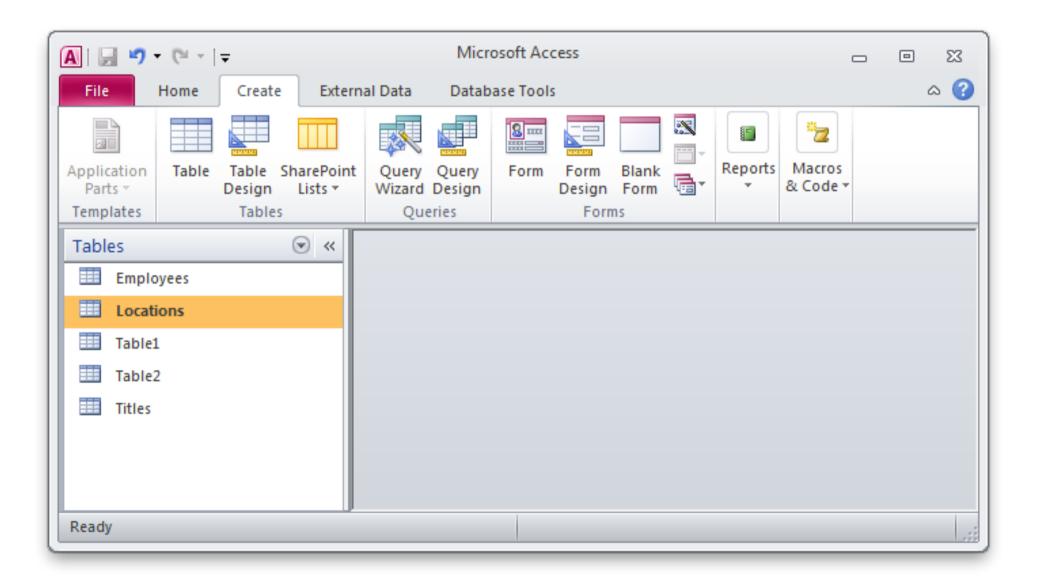
Define Relationship (5)



What Else

- Create Forms to enter data
- Create Reports to read data
- Ask questions
- Validate data

Querying (1)

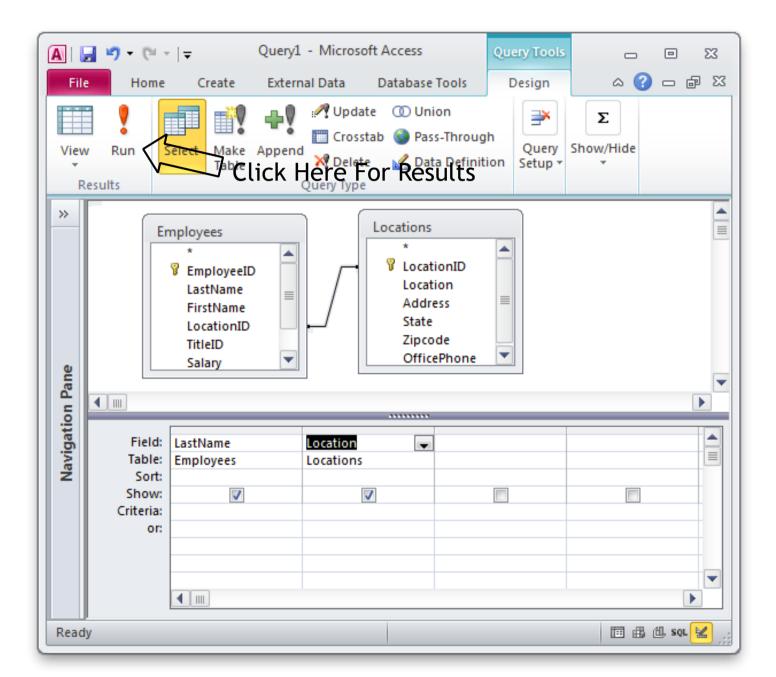


Querying (2)

Show Table	J
Tables Queries Both	
Employees Locations Table1 Table2 Titles	
Add Close	

- Drag what you want to know into table below
- Try Last Name and Location

Querying (3)



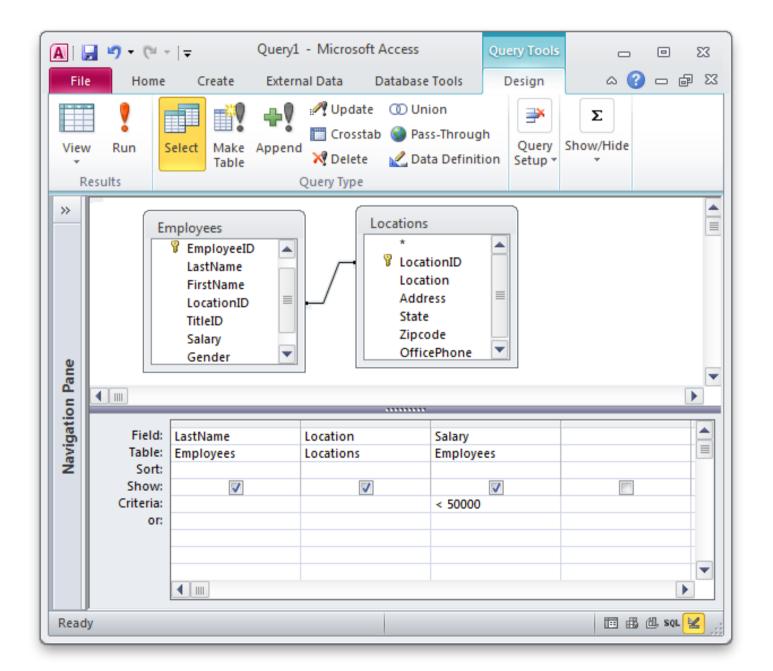
Querying (4)

		n) - (ci - [-		Query1 -	Microsoft A	ccess	c	- 0	23
File	2	Home	Create Extern	al Data	Database	Tools	۵	?	ස ව
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»	2	LastName	- Location	*					
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		Coulter	Atlanta						
		Smith	Atlanta						
		Brown	Atlanta						
		Milgrom	Boston						
		Manin	Boston						
P		Rubin	Boston						
P P		Charles	Boston						
Navigation Pane		Johnson	Chicago						
		Smith	Chicago						
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2		Marder	Chicago						
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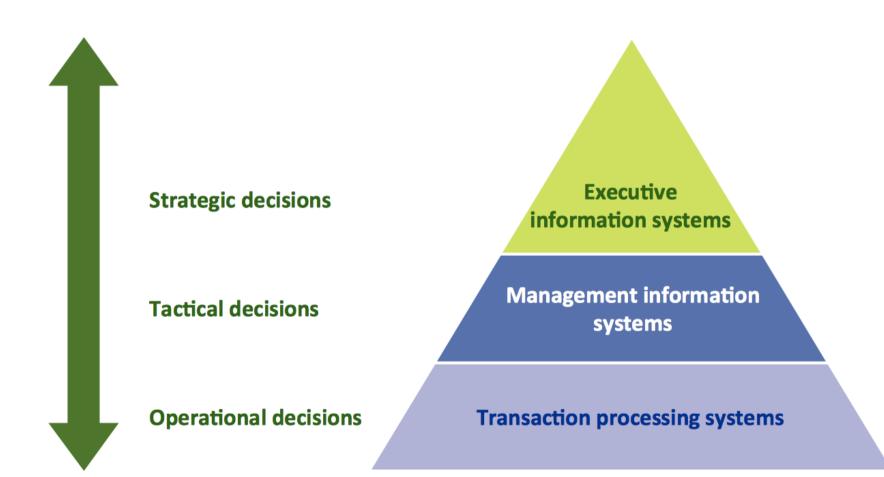
Querying (5)

- You can set condition
 - Salary < 50,000
- Same row means "and"
- Different row means "or"
- Try putting "Boston" into different rows

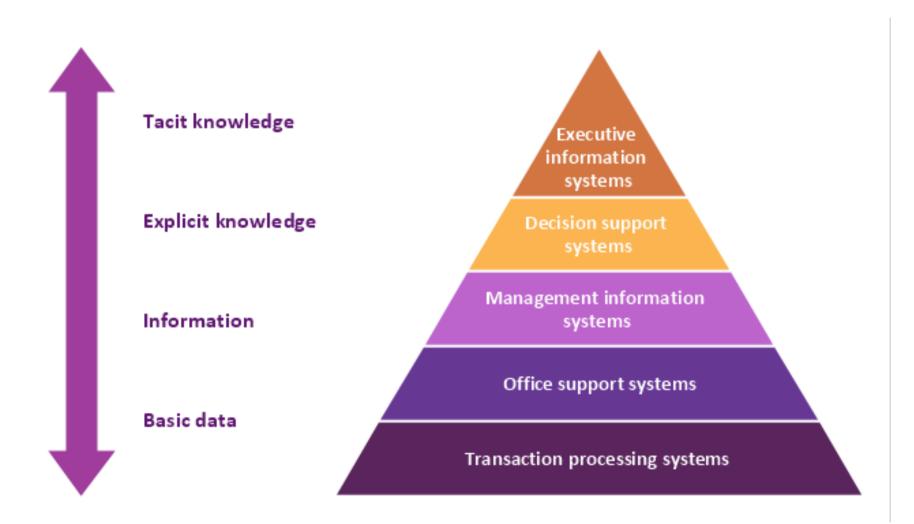
Querying (6)



Information Systems Types (1)



Information Systems Types (2)



Assignment 6 (1)

- Create a table named "Locations"
- Be in Design mode
- Open Locations.xlsx using Excel
- Look at column names in Excel and enter them as fields in Access
- Choose appropriate data type.
- Save

Assignment 6 (2)

- Create a table named "Titles"
- Be in View mode
- Open Titles.xlsx using Excel.
- Copy and paste everything into table.
- Save

Assignment 6 (3)

 Import From Employees.xlsx (Excel File) to a new table named Employee

Assignment 6 (4)

• Define relationships of all tables.

Assignment 6 (5)

- Find who live in Boston with less than 50000 salary
- Find titles of those who live in Boston with less than 50000 salary