Database and Data File Management

Oct 6/7/8, 2010

Overview

‣ Database Management and Access
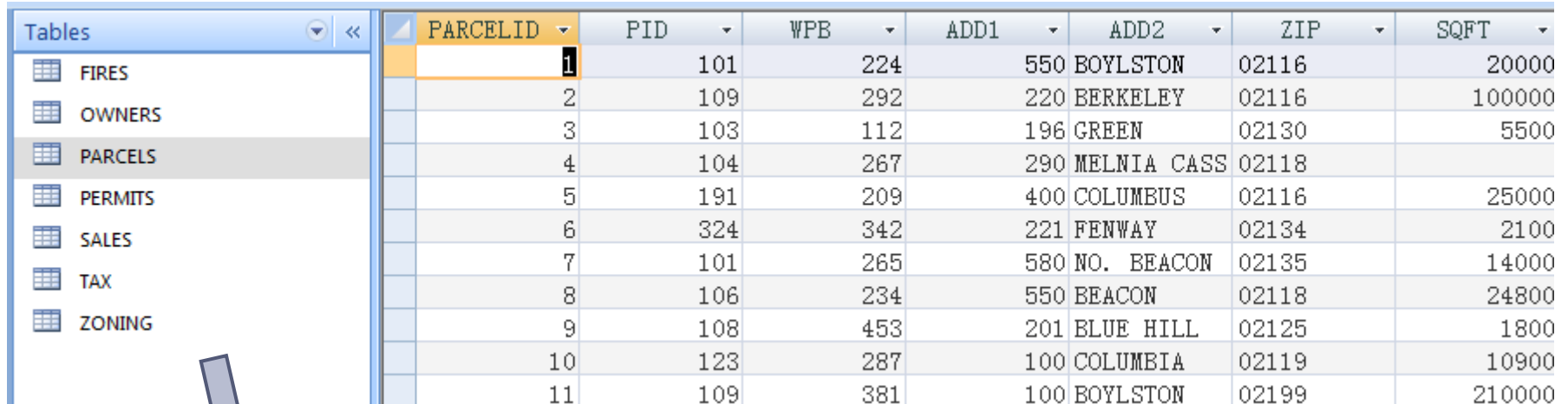
‣ Data File Management

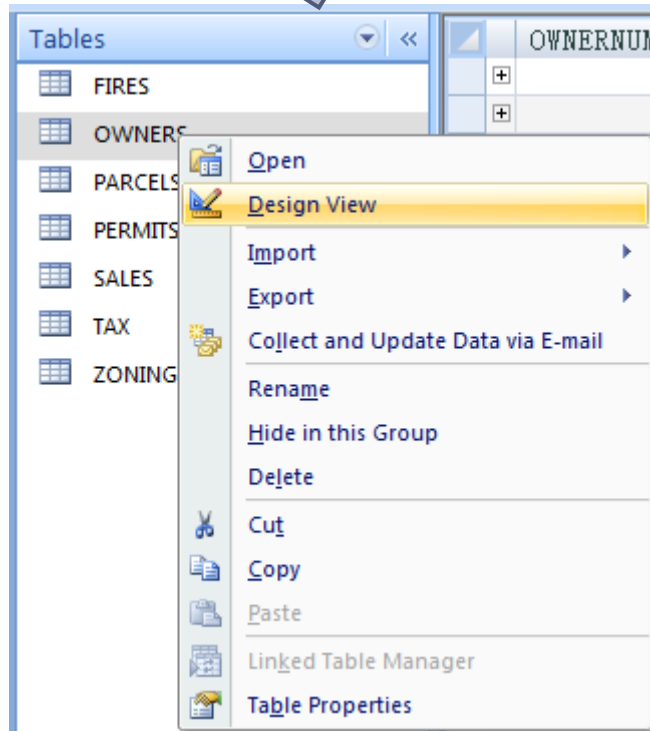‣ Course Feedbacks and Q&A

Database Management
Definitions, Definitions…

- **Database:** Collection of tables and queries
- **Table (or relational table)**
  - Collection of records
- **Record**
  - A record is consist of several fields (or attributes)
- **Query**
  - Set of instructions to a database "engine" to retrieve, sort and format the returning data.
    - "find the # of housing sales in my database"

What is the difference between a table and a query?

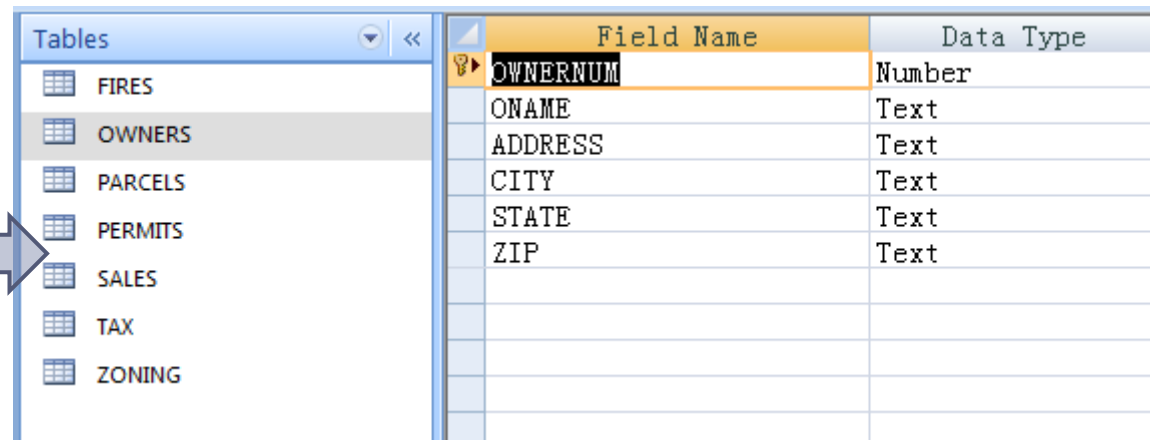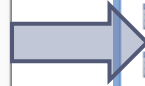|	PARCELID	PID	WPB	ADD1	ADD2	ZIP	SQFT
	1	101	224	550	BOYLSTON	02116	20000
	2	109	292	220	BERKELEY	02116	100000
	3	103	112	196	GREEN	02130	5500
	4	104	267	290	MELNIA CASS	02118	
	5	191	209	400	COLUMBUS	02116	25000
	6	324	342	221	FENWAY	02134	2100
	7	101	265	580	NO. BEACON	02135	14000
	8	106	234	550	BEACON	02118	24800
	9	108	453	201	BLUE HILL	02125	1800
	10	123	287	100	COLUMBIA	02119	10900
	11	109	381	100	BOYLSTON	02199	210000

Tables
- FIRES
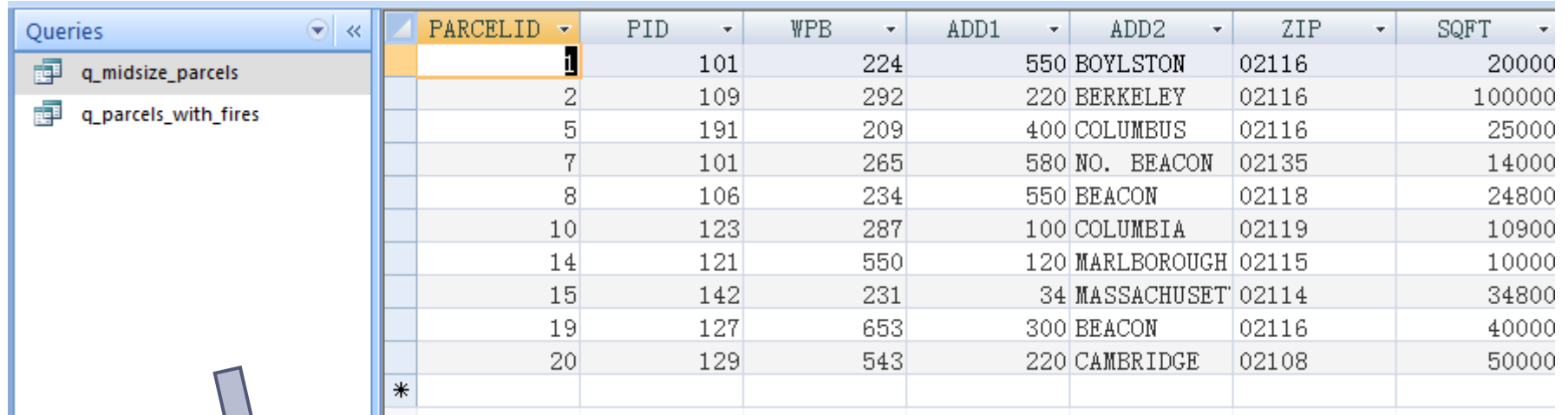- OWNERS
- PARCELS
- PERMITS
- SALES
- TAX
- ZONING

OWNERNUM

Context menu:
- Open
- Design View
- Import
- Export
- Collect and Update Data via E-mail
- Rename
- Hide in this Group
- Delete
- Cut
- Copy
- Paste
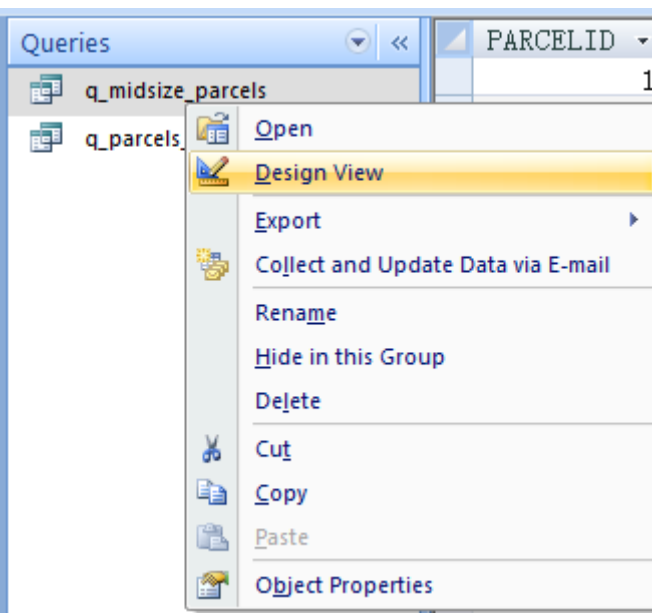- Linked Table Manager
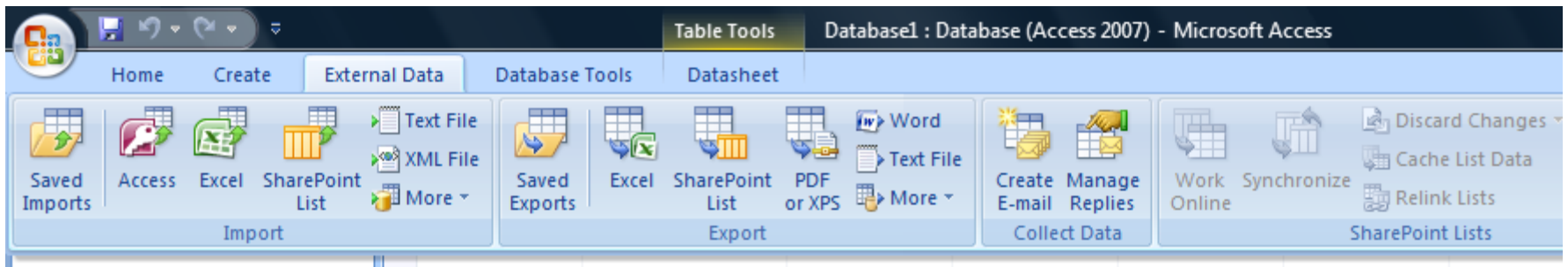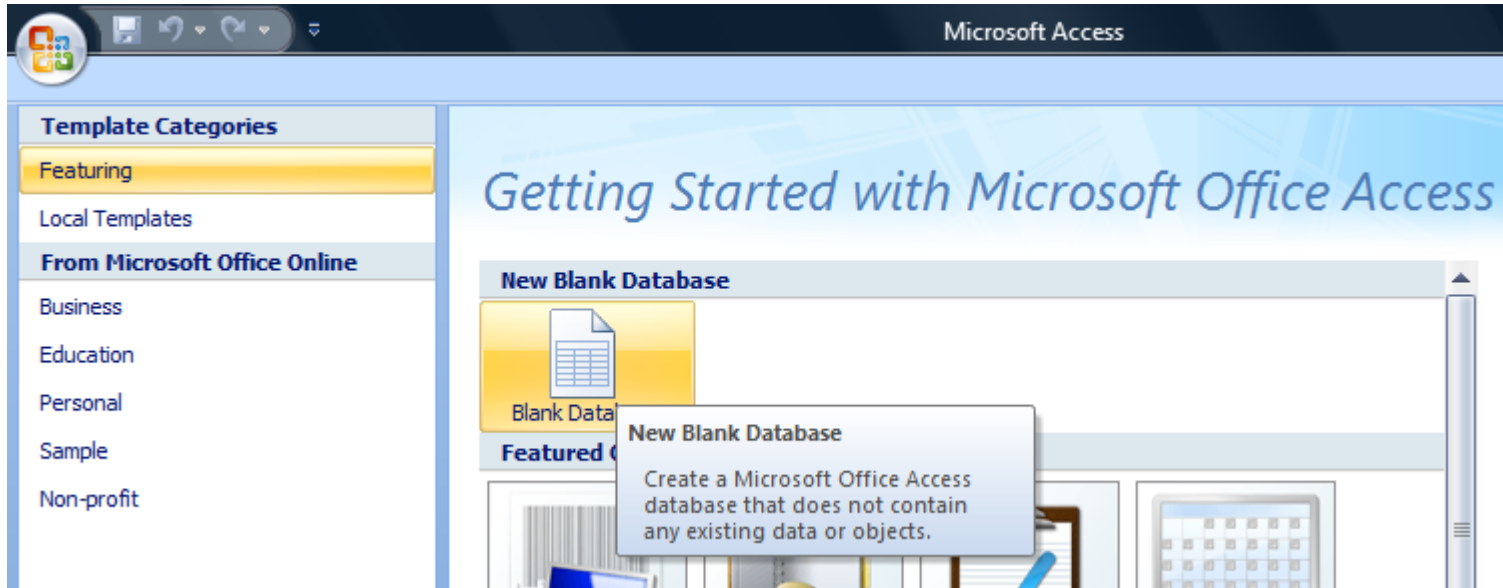- Table Properties

Field Name	Data Type
OWNERNUM	Number
ONAME	Text
ADDRESS	Text
CITY	Text
STATE	Text
ZIP	Text

What is the difference between tables and queries?

Create MS Access database

Querying MS Access
or any relational database…

▸ Querying = extracting information out of the database

▸ This is done using the **S**tructured **Q**uery **L**anguage (SQL)

Select PARCELID, ADD2, SQFT, LANDUSE
From PARCELS
Where SQFT>5000

PARCELS
*
🔑 PARCELID
PID
WPB
ADD1
ADD2
ZIP
SQFT
ONUM
LANDUSE

Field:	PARCELID	ADD2	SQFT	LANDUSE
Table:	PARCELS	PARCELS	PARCELS	PARCELS
Sort:				
Show:	✓	✓	✓	✓
Criteria:			>5000	
or:				

Select fields
Select table
Select records

Example table

PARCELID	PID	WPB	ADD1	ADD2	ZIP	SQFT	ONUM	LANDUSE
1	101	224	550	BOYLSTON	02116	20000	18	C
2	109	292	220	BERKELEY	02116	100000	32	C
3	103	112	196	GREEN	02130	5500	11	R3
4	104	267	290	MELNIA CASS	02118		18	CL
5	191	209	400	COLUMBUS	02116	25000	10	E
6	324	342	221	FENWAY	02134	2100	55	CM
7	101	265	580	NO. BEACON	02135	14000	32	A
8	106	234	550	BEACON	02118	24800	200	C
9	108	453	201	BLUE HILL	02125	1800	9	R1
10	123	287	100	COLUMBIA	02119	10900	32	
11	109	381	100	BOYLSTON	02199	210000	18	C
12	110	250	200	MORRISSEY	02127	5300	89	R3
13	183	236	55	HARRISON	02118		38	R2
14	121	550	120	MARLBOROUGH	02115	10000	18	A
15	142	231	34	MASSACHUSET	02114	34800	32	
16	103	276	930	COMMONWEALT	02116	9600	200	A
17	131	283	660	TREMONT	02120	1500	29	R1
18	145	229	45	HUNTINGTON	02119	9500	18	A
19	127	653	300	BEACON	02116	40000	32	C
20	129	543	220	CAMBRIDGE	02108	50000	100	E

Querying MS Access
or any relational database…

▸ Example:

    ▸ Wildcard characters: '*' '%'

    ▸ AND vs. OR

> Select PARCELID, ADD2, SQFT, LANDUSE
> From PARCELS
> Where LANDUSE like 'C' OR LANDUSE
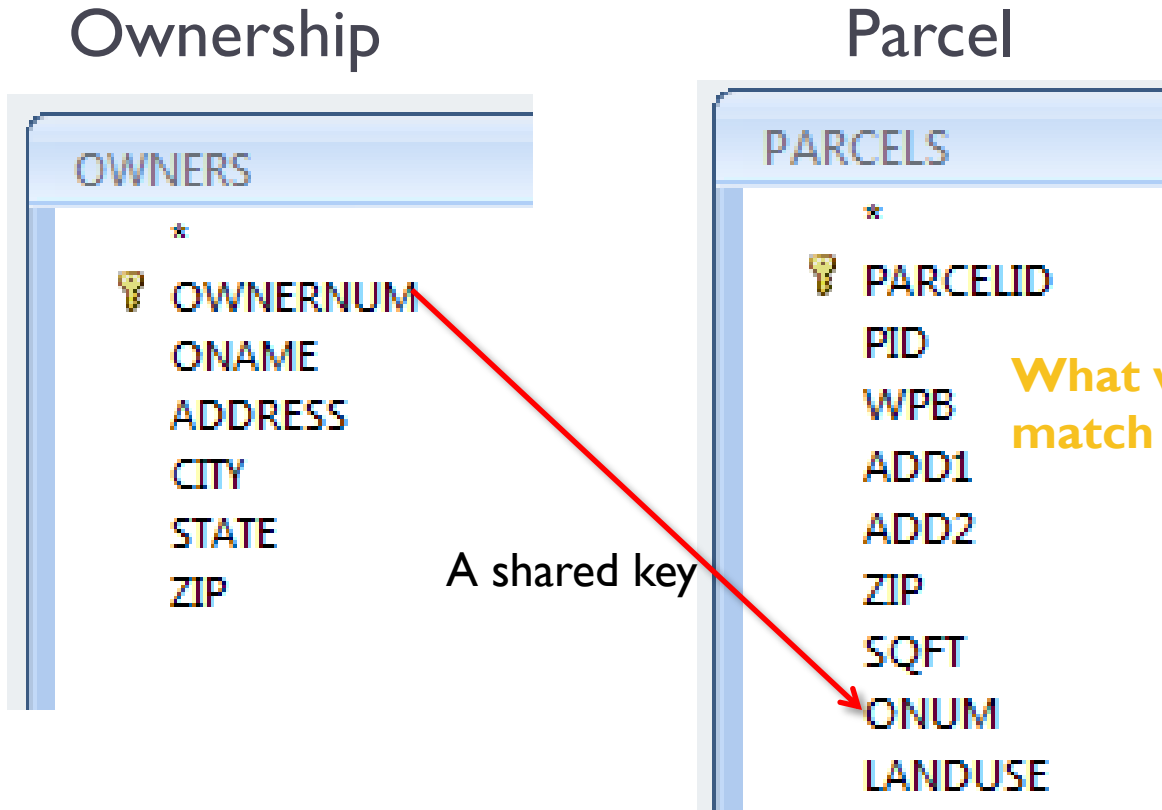>   like 'R*' OR LANDUSE like 'A'

Field:	PARCELID	LANDUSE	ADD2	SQFT
Table:	PARCELS	PARCELS	PARCELS	PARCELS
Sort:				
Show:	✓	✓	✓	✓
Criteria:		Like 'C'		
or:		Like 'R*'		
		Like 'A'		

Select fields

Select records

Querying MS Access
or any relational database…

▸ What if you want to query two tables?

Ownership   Parcel

OWNERS		PARCELS
*		*
🔑 OWNERNUM		🔑 PARCELID
ONAME		PID
ADDRESS		WPB
CITY		ADD1
STATE		ADD2
ZIP	A shared key	ZIP
		SQFT
		ONUM
		LANDUSE

What will happen if you don't match up the tables with owerid?

Shared key (ownerid) that is:
1. unique to identify each row
2. can be referenced by another table

▸
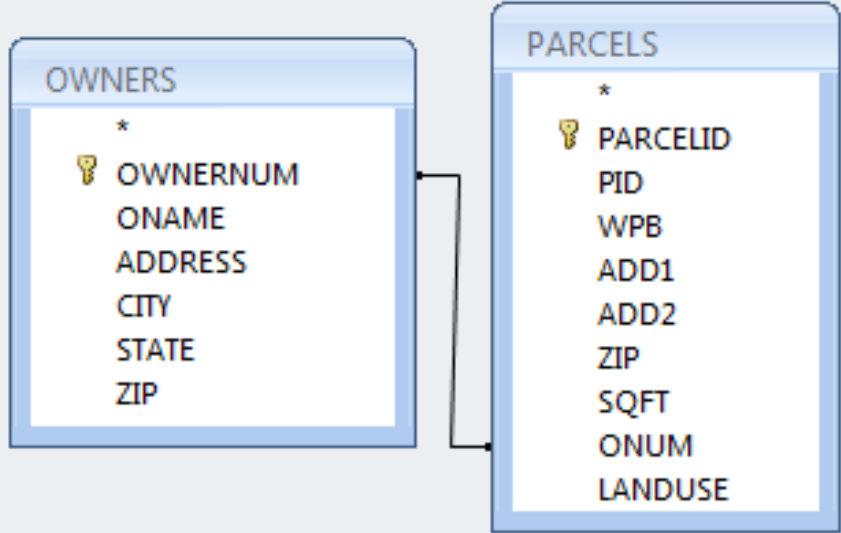
Field:	PARCELID	SQFT	OWNERNUM	ONUM	ONAME	▼
Table:	PARCELS	PARCELS	OWNERS	PARCELS	OWNERS	
Sort:						
Show:	✓	✓	✓	✓	✓	
Criteria:		>5000				
or:						

SELECT PARCELS.PARCELID, PARCELS.SQFT, OWNERS.OWNERNUM, PARCELS.ONUM,
OWNERS.ONAME
FROM **OWNERS INNER JOIN PARCELS ON OWNERS.OWNERNUM = PARCELS.ONUM**
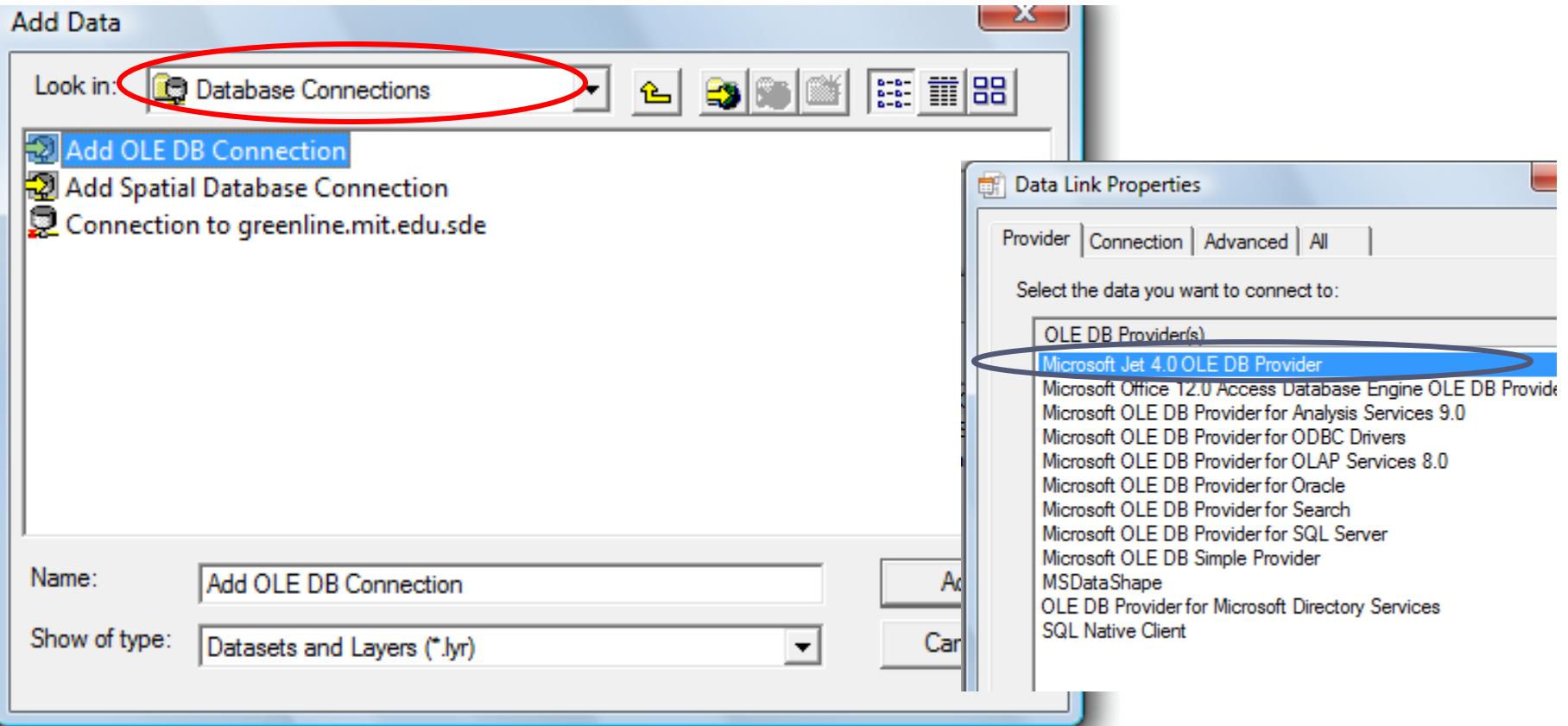WHERE (((PARCELS.SQFT)>5000));

▶

From queries to tables

Import MS-Access tables to ArcGIS

-Use MS Access database provider to talk to MS-Access **2003**
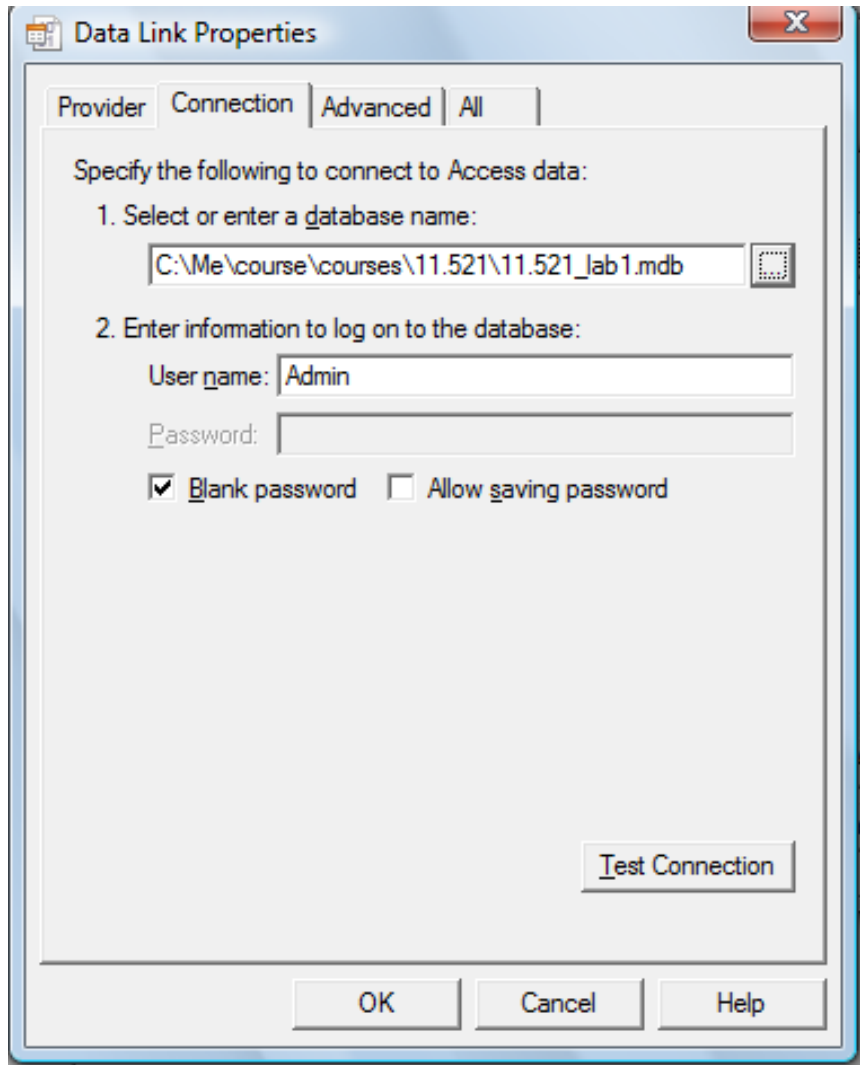
1. Specify the location of your database
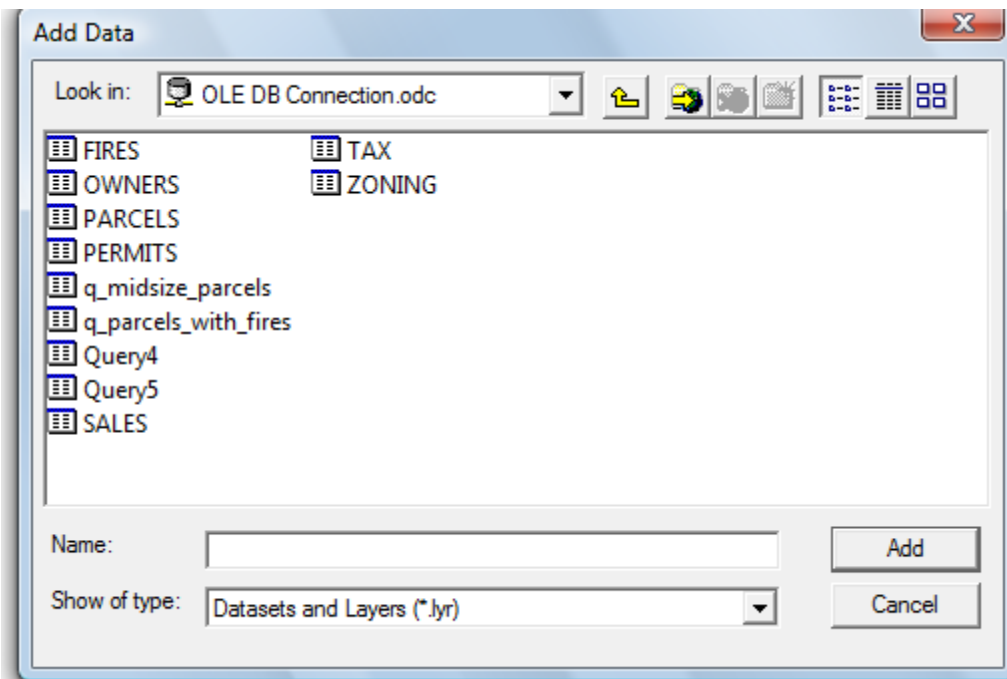   (**must be a MS Access 2003 database**)

2. Test connection

3. Click "OK"

Miscellaneous

▸ One OLE DB connection will create only one connection to the database.

▸ ArcGIS will remember the connection for you.

Resources – MS Access
Free Online Resources

‣ Get to know Access(45 min) http://office.microsoft.com/en-us/training/get-to-know-access-RZ006118141.aspx

‣ Table that data(50 min): http://office.microsoft.com/en-us/training/table-that-data-RZ006149432.aspx

‣ Get answers with queries(50 min): http://office.microsoft.com/en-us/training/queries-i-get-answers-with-queries-RZ001077757.aspx

‣ Youtube: Tables and Relationships

http://www.youtube.com/watch?v=IarzvwTijwk&feature=related

Data File Management

If you work on computers in the lab (37-312, or CRON), for lab exercises/homework or in-class test, we advise you to follow the steps as described below to save your time and efforts in retrieving your previously created maps.
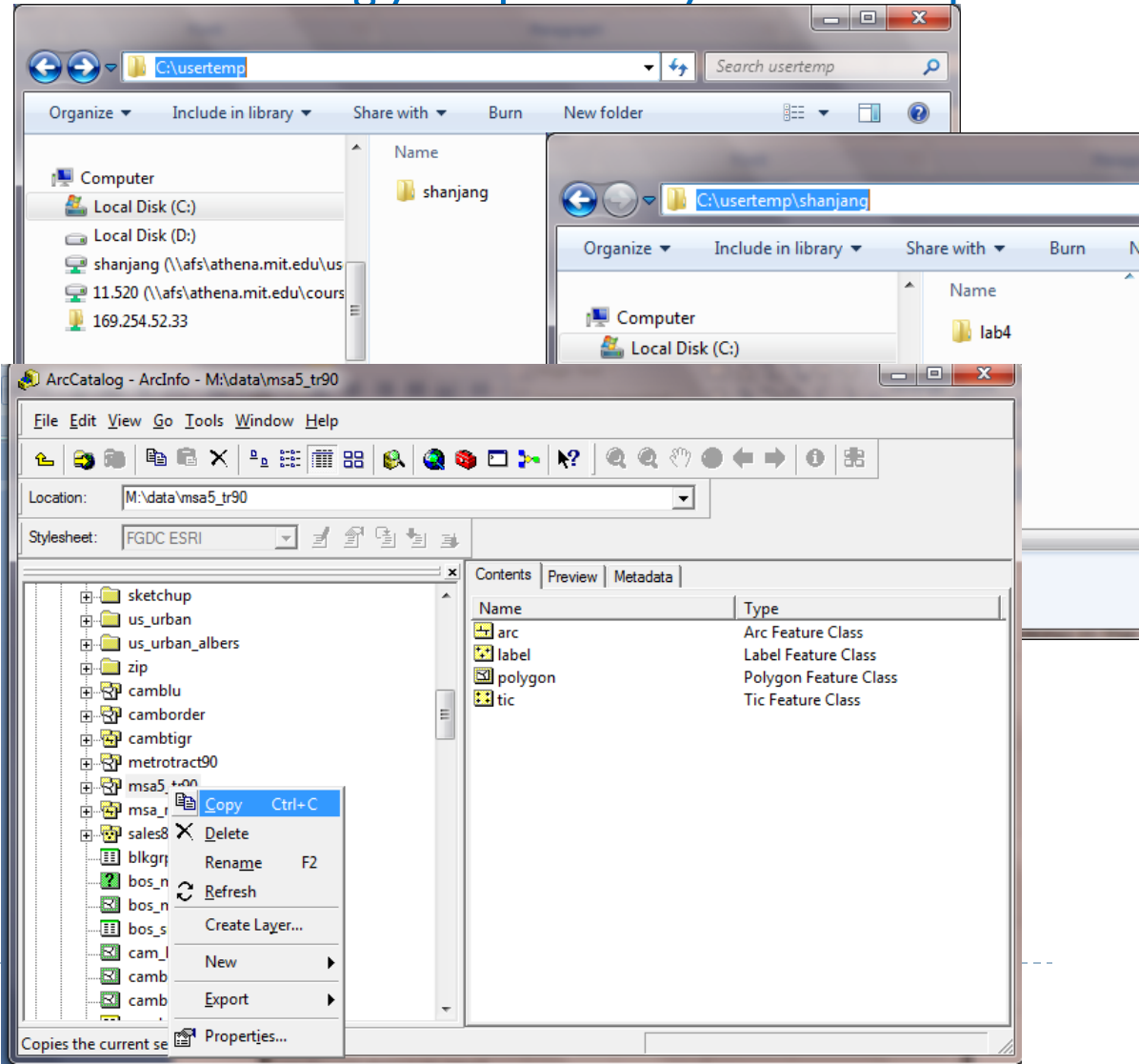
➢ **Create your own folder on the local machine**
 Under C:\usertemp (if you are working in 37-312) or C:\Users (if you are working in the CRON labs)
  e.g.,
  C:\usertemp\shanjang\lab4

➢ **Copy GIS data from Course Locker to your local folder by Using ArcCatalog**

Data File Management

- Create your map, and save path as **relative path** instead of full path, if you have all your datasets in the previously mentioned newly creased folder under your MIT kerberobs name, by choosing from

    - File→ Document Properties→ Data Source Options → **Store relative path names to data**
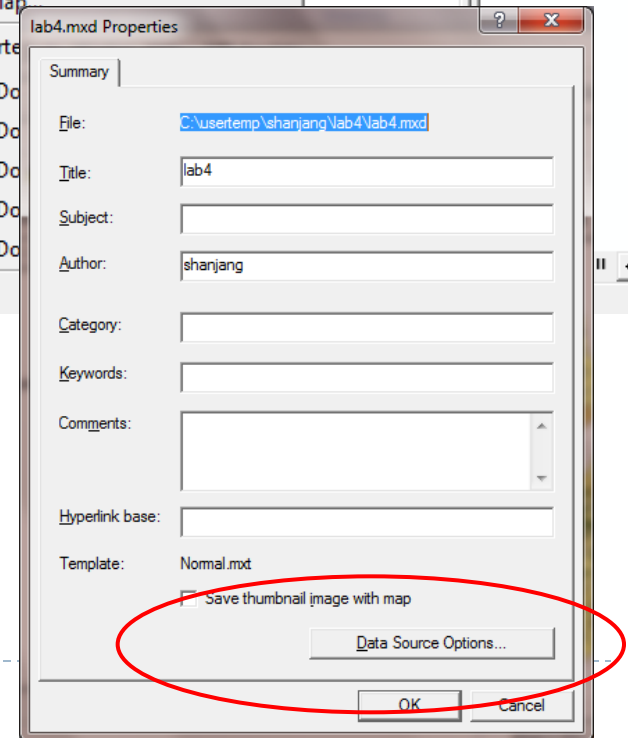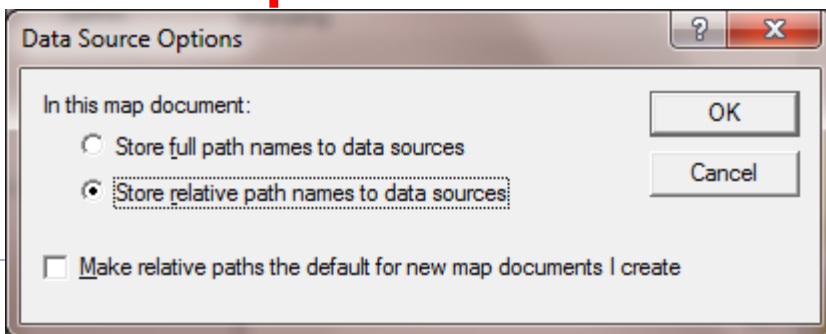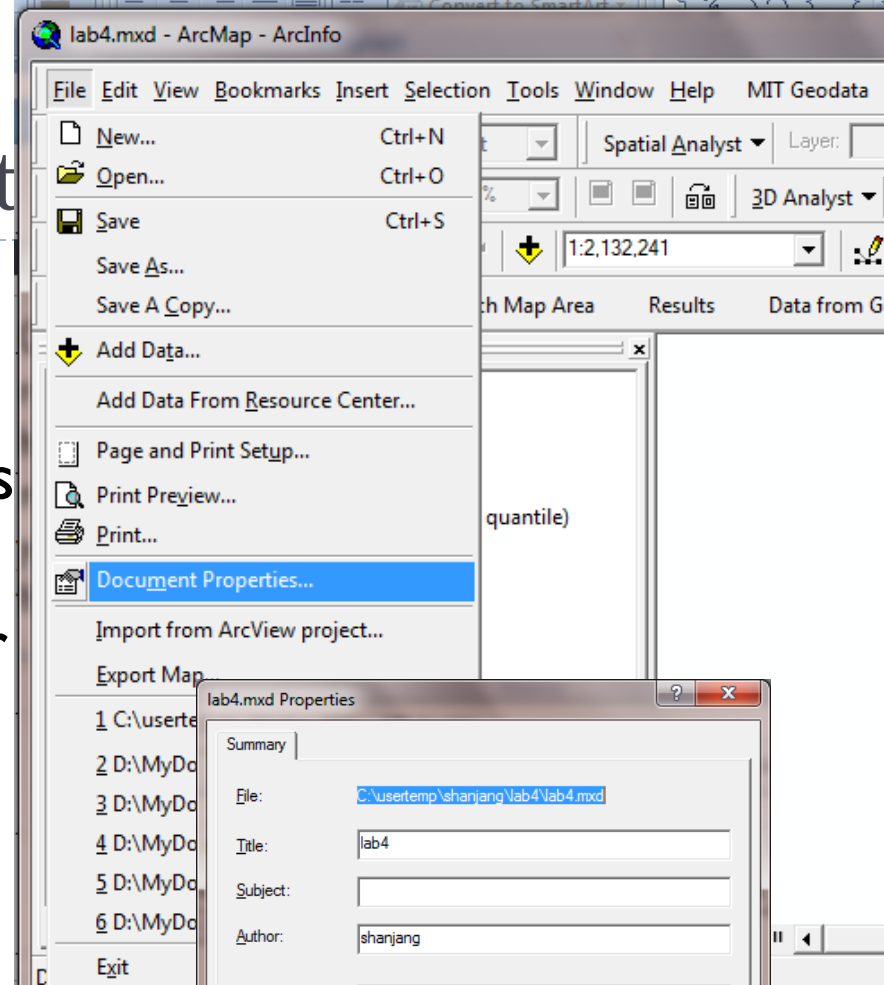
Data File Management

▸ After you finish your lab session, please remember to move your local folder to your *I* drive, so that you don't lose anything next time.
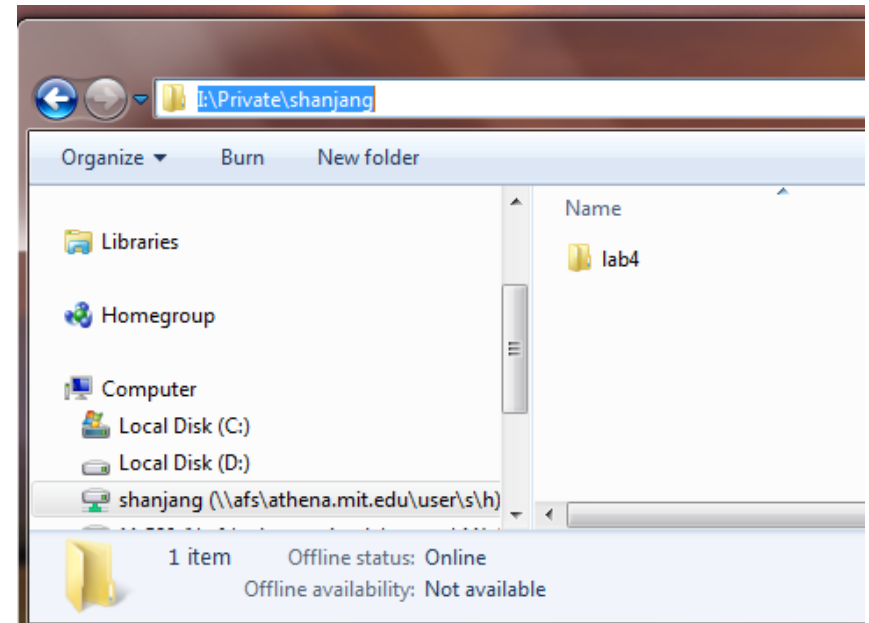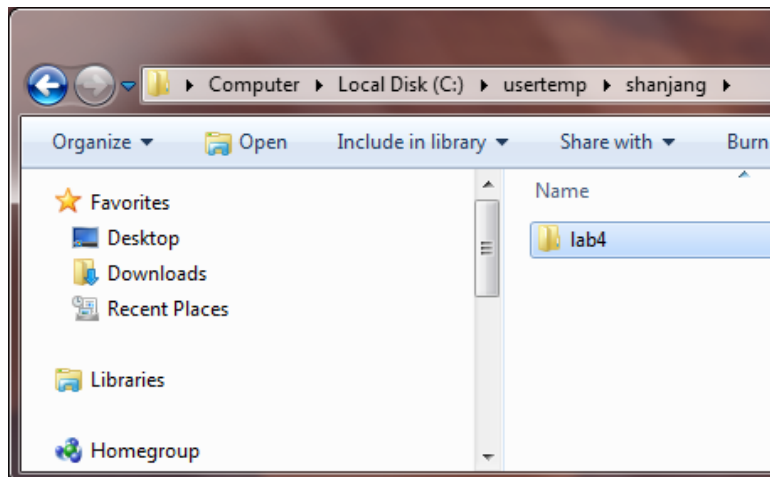
▸ When you resume your work next time, just move back your folder from your I drive to the local machine, such as C:\usertemp\shanjang\

Questions? Feedbacks? Q&A
ask us 11.520staff@mit.edu

This PowerPoint was prepared by Lulu Xue and Shan Jiang, Oct 6, 2010