

Dr. Ibraheem Yousif

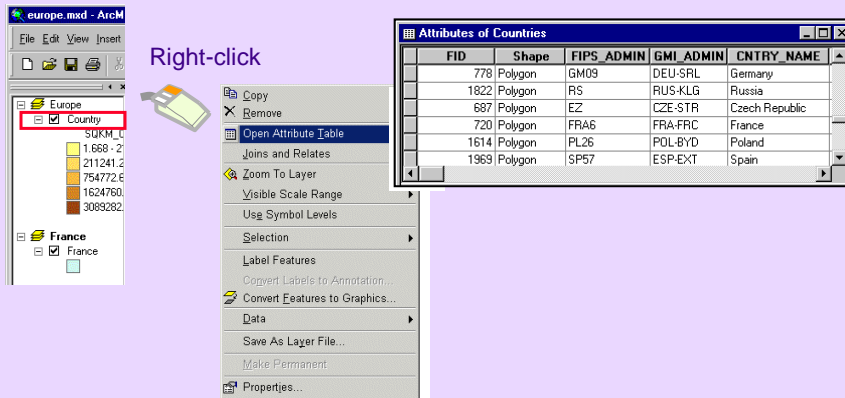
Geographic Information Systems

{GIS}

Working with Tables

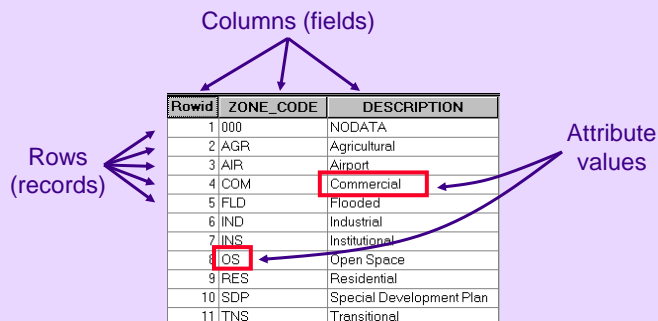
Tables

- ◆ Descriptive information about features
- ◆ Each feature class has an associated table
- ◆ One row for each geographic feature



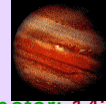
Understanding table anatomy

- ◆ Basic table properties
 - ◆ Records/rows and fields/columns
 - ◆ Column types can store numbers, text, dates
 - ◆ Unique column names



Tabular data field types

- ◆ Different field types store different kinds of values
- ◆ Choose the right field type for the right value
- ◆ Field types vary according to table format



Name: Jupiter

Moons: 16

Diameter: 142,984 km

Date of Comet Shoemaker-Levy impact: 7/16/1994

Rotation period: 9.8 hr


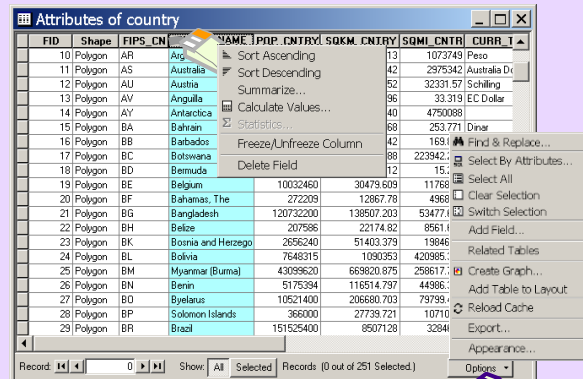
Text	Date	Short	Long	BLOB	Float
Jupiter	7/16/1994	16	142984		9.8

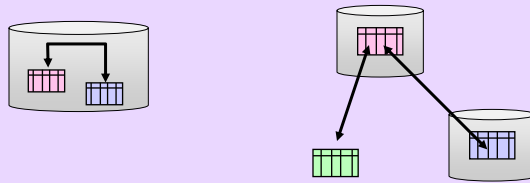
Table manipulation

- ◆ Open table in ArcMap or preview in ArcCatalog
 - ◆ Sort ascending or descending
 - ◆ Freeze/Unfreeze columns
 - ◆ Statistics
- ◆ In ArcMap
 - ◆ Select records
 - ◆ Modify table values



ArcGIS tabular formats

- ◆ Each ArcGIS spatial format has a native tabular format
 - ◆ Coverage: **INFO**
 - ◆ Shapefile: **.dbf**
 - ◆ Geodatabase: **RDBMS tables**
- } ArcGIS can convert between formats
- ◆ Create a link between related tables in ArcMap
 - ◆ Use ArcCatalog to connect to external tables



Associating tables

- ◆ Can store attributes in feature table or separate table
- ◆ Associate tables with common column key values
 - ◆ Must be same data field types
- ◆ Must know table relationships (cardinality)

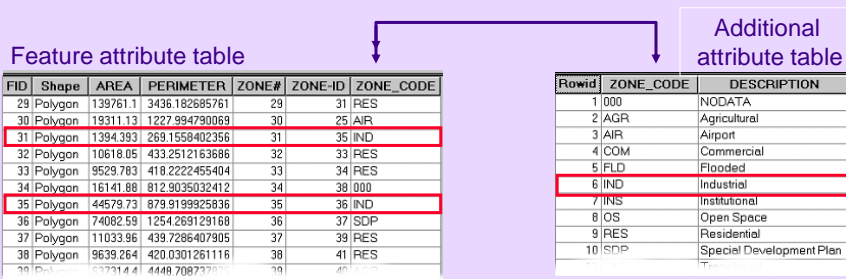
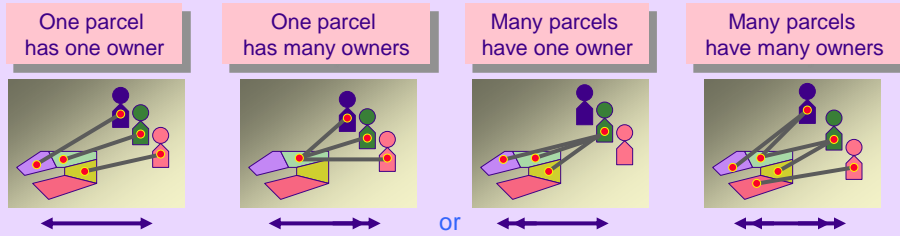


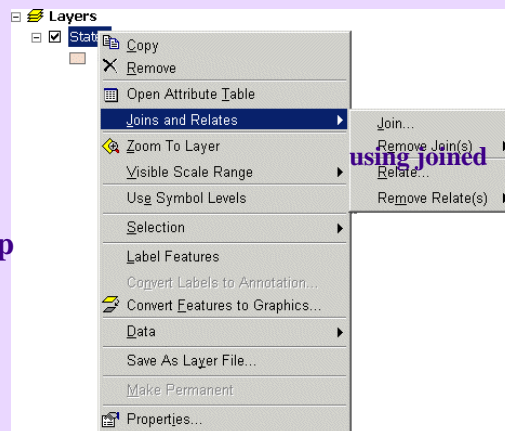
Table relationships

- ◆ How many A objects are related to B objects?
- ◆ Types of cardinality
 - ◆ One-to-one, one-to-many or many-to-one, and many-to-many
- ◆ Must know cardinality before connecting tables



Joins and relates

- ◆ Two methods to associate tables in ArcMap based on a common field
- ◆ *Join* appends the attributes from one onto the other
 - ◆ Label or symbolize features attributes
- ◆ *Relate* defines a relationship between two tables



Connecting tables with joins

- ◆ Physical connection between two tables
- ◆ Appends the attributes of two tables
- ◆ Assumes **one-to-one** or **many-to-one** cardinality

Parcel (before Join)

OBJECTID*	SHAPE*	PARCEL_ID*	ZONE_CODE*	SHAPE_Length	SHAPE_Area
1	Polygon	67508	601	512.602492	13042.492751
2	Polygon	67246	601	372.992656	6203.424403
3	Polygon	67247	603	353.692046	5446.766292
4	Polygon	67253	603	313.013884	5380.550025
5	Polygon	67254	603	401.035888	7320.703589
6	Polygon	67256	603	376.675717	2823.691788

ZoneCodeDesc

OBJECTID*	ZONE*	DESCRIPTION
1	601	Commercial
2	602	Institutional
3	603	Residential
4	604	Office

Many-to-one

Parcel (virtual table after Join)

OBJECTID	SHAPE	Parcel.PARCEL_ID	ZONE_CODE	SHAPE_Length	SHAPE_Area	OBJECTID	ZONE	ZoneCodeDesc.DESCRPTION
1	Polygon	67508	601	512.602492	13042.492751	1	601	Commercial
2	Polygon	67246	601	372.992656	6203.424403	1	601	Commercial
3	Polygon	67247	603	353.692046	5446.766292	3	603	Residential
4	Polygon	67253	603	313.013884	5380.550025	3	603	Residential
5	Polygon	67254	603	401.035888	7320.703589	3	603	Residential
6	Polygon	67256	603	376.675717	2823.691788	3	603	Residential

Connecting tables with relates

- ◆ Define relationship between two tables
- ◆ Tables remain independent
- ◆ Additional cardinality choices
 - ◆ **One-to-many, many-to-many**
- ◆ Discovers any related rows

1) Make selection

2) Open related table

Attributes of Blocks

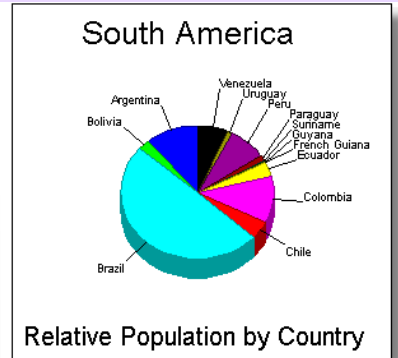
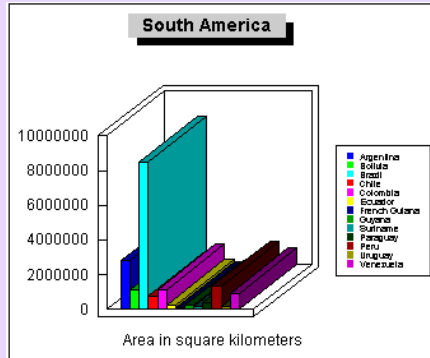
KEYFIELD	OBJECTID
06.071.0073 .101	1 F
06.071.0073 .111	2 F

Attributes of BIK_Dmg

OBJECTID*	STATEFP	CNTY	TRAC
12	06	071	0086
13	06	071	0073
14	06	071	0078
15	06	071	0078
16	06	071	0078
17	06	071	0078

Graphs

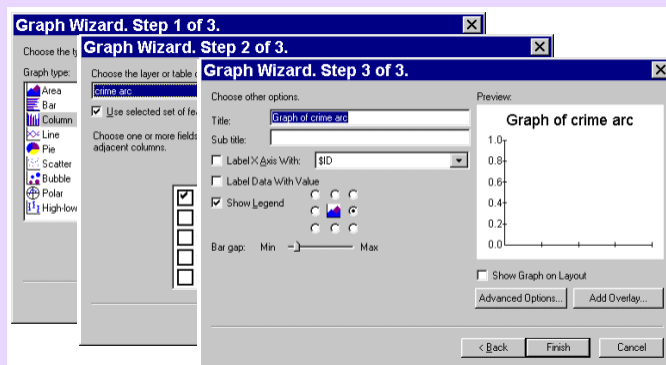
- ◆ Summarize tabular information
- ◆ A variety of graph formats
- ◆ Set display properties
- ◆ Add to a map



6

Graph creation

- ◆ Graph Wizard is a high-end professional graphing and plotting utility



6

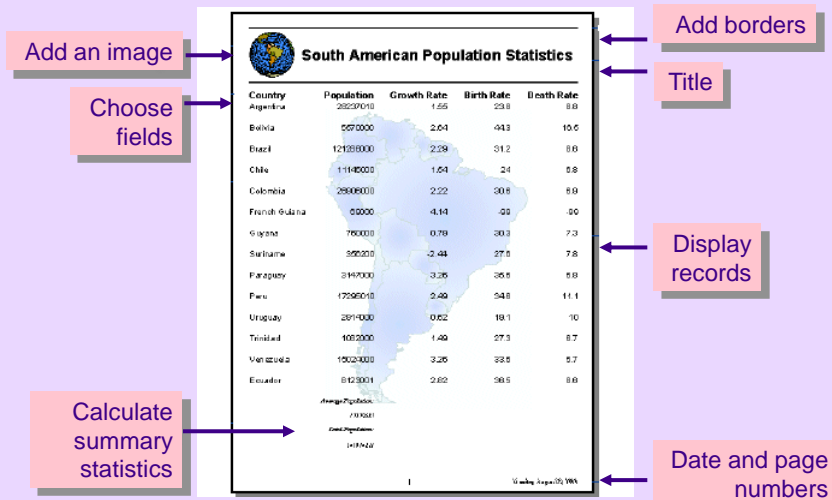
Reports

- ◆ Organize and display tabular data
- ◆ Group and format data
- ◆ Save and export
- ◆ Two reporting tools
 - ◆ Report Writer
 - ◆ Crystal Reports

OWNER	ADDRESS	CITY
WOODARD W WINDSOR HEIRS		WILSON
RICE DONNA D		COLUMBIA
CITY OF WILSON	P O BOX 10	WILSON
HINES WILLIAM HEIRS		WILSON
DILDY JOHN A JR	C/O BISSETTE REALTY	WILSON
MYLES MATTIE VIVIAN		WILSON
LASSITER WADE		BROOKLYN
CRAWFORD MAGGIE BARNES HEIRS	VERTIST C EDWARDS	TACOMA
CRAWFORD MAGGIE BARNES HEIRS	VERTIST C EDWARDS	TACOMA
WELLONS LOIS H		WILSON
CAMP W T & MARTHA H		WILSON
WILLIAMS SAMUEL JR & BETTIE L		WILSON
DANIELS ZELMA CREOLA	JOSEPH DANIELS	WINSTON SALEM
BENSON FRANK W &	JOHN L BENSON (RENTAL)	WILSON
PATTERSON MICHAEL		NEWARK

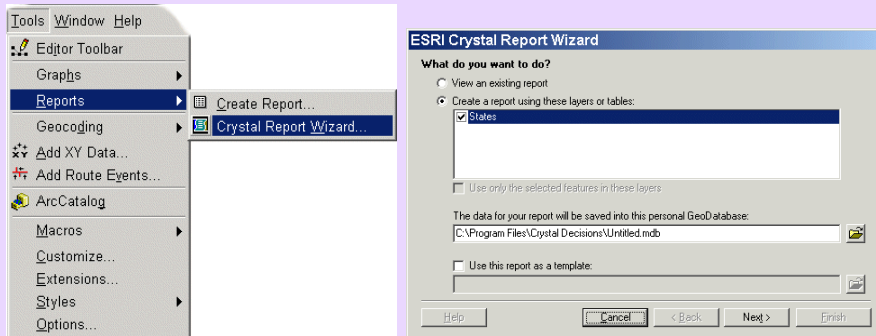
ArcMap Report Writer

- ◆ Quick, easy, professional report creation



Crystal Reports

- ◆ A more powerful reporting tool
- ◆ Export to Crystal Reports format
- ◆ Wizard aids report creation



Exercise 6A overview

- ◆ Examine tables in ArcCatalog
- ◆ Create a join between two tables
- ◆ Modify the appearance of the joined table
- ◆ Create a relate between two tables
- ◆ Make a selection and examine the related table
- ◆ Label features with joined attributes
- ◆ Challenge: Format labels

Exercise 6B overview

- ◆ Create a graph and set display properties
- ◆ Export the graph
- ◆ Generate the report
 - ◆ Display report properties and specify fields
 - ◆ Set the sorting and summary options
- ◆ Embed the graph in the report
- ◆ Add the report to the layout

Lesson 6 review

- ◆ There are different field types for different data formats. (T/F)
- ◆ Each field in a table must have a unique name. (T/F)
- ◆ Attributes and features are linked by _____ .
- ◆ Coverages store attributes in an _____ file, shapefiles store attributes in a _____ file, and the geodatabase stores attributes in a _____ .
- ◆ What is table cardinality, and why is it important?
- ◆ What are the main differences between joins and relates in ArcMap?

THANK YOU SO MUCH