

# GEOL 452/552 - GIS for Geoscientists I

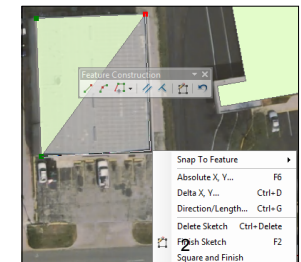
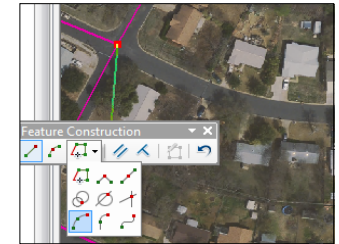
## Lecture 18 - editing (chapter 12)

- chapter 12 - Basic editing (add/change features)
- How to create new features with attribute settings
- We will skip Chapter 13 (More Editing Techniques, including topology, very useful for creating/correcting a geological map)
- Hands-on editing demo using the ch. 12 tutorial
- U:\ArcGIS\mgisdata\MapDocuments\ex\_12a.mxd

1

## Basic ArcGIS editing tasks

- Digitize new features from a paper map or scanned map.
- Examples: field boundaries, roads, rock contacts, faults, etc. (other examples from your background?)
- Construct new features from survey descriptions based on air photos or satellite imagery.
- Update features that have changed since they were created, or fix errors.
- Update or correct attributes of features.
- Advanced: create and validate

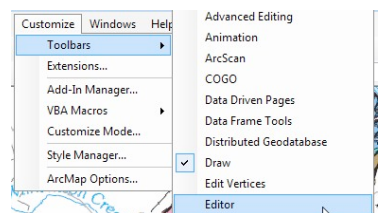


2

## Editor Toolbar

- Create/change **vector data** geometry and attribute values interactively (“digitizing”)
- Edit features in an existing layer or make a new layer for new features (via ArcCatalog!)
- Need to find the **Editor** toolbar
- Activate: Press **Ctrl+D** or **Customize-Toolbars-Editor**

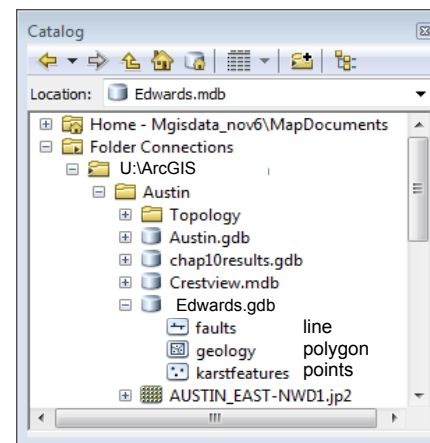
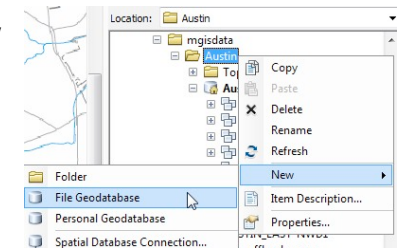
Editor Tool bar will be greyed out - that's OK!



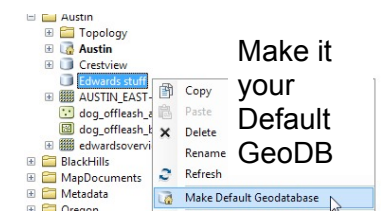
3

## Create a new layer for the new features (using Arc Catalog)

- Create a **new File Geodatabase** in **U:\ArcGIS\mgisdata\Austin** called **Edwards**



## Rename New File Geodatabase into Edwards



Make it your Default GeoDB

4

Make a new feature class ("layer") called **faults** inside the Edwards GeODB  
 Set faults coordinate system to NAD 1983 Texas State Plane Central

1. Right-click geodatabase

2. Enter name and feature type.

3. Import coordinate system from another layer (e.g. Environmental - Geology)

4. Accept default XY Tolerance and Resolution.

5. Create fields as needed:  
 Name: Text field  
 20 letters wide

Finish

5

# What about Coordinate systems?

- ArcMap can edit *across* coordinate systems, e.g.:
  - GPS points layer file has unprojected GCS
  - Editing is performed in the data frame's UTM and converted on the fly
  - But: Edited GPS points are permanently stored in GCS when edit mode is left.

Enter GPS points using degrees with the data frame set to GCS.

UTM  
 Points are saved in meters in the file with the UTM coordinate system.

6

## Start Editing mode

Start Editing

Create Features

Line

- Editor bar will get color (not be greyed out any more)
- An new Window called Create Feature will appear
- Create Feature shows the faults layer from the TOC
- The Construction Tools part shows different **Feature Templates** - use the simple Line for now

7

## The Editor toolbar

Menu, Sketching tools, Reshape, Split, Attributes, Create Features

Editor, Edit tool, Edit Vertices, Cut Polygon, Rotate, Sketch Prop.

Attributes

#	X	Y
0	3122512.335	10094299.071
1	3122415.981	10094244.383
2	3122455.043	10094166.258

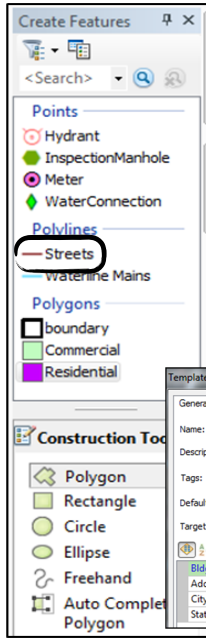
OBJECTID: 2  
 Bldgtype: Commercial  
 Address: <Null>  
 City: Austin  
 State: TX  
 SHAPE\_Length: 708.039734  
 SHAPE\_Area: 17921.096956

OBJECTID: Object ID  
 Null values not allowed

Alternative ways to the Editing Windows

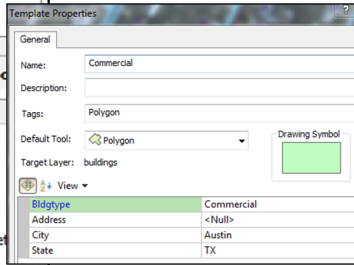
8

8



# Feature templates

- Feature templates store all info needed to add a feature to a feature class.
- They also have different construction tools that can be used to create new features.



- Created automatically or manually
- Can have multiple templates for each layer
- Can also enter values in attribute fields



Edit tool

# The Edit tool

The Edit tool is used to select features so they can be moved, deleted, or edited.



Select Features

Click on feature to select

Shift-click to add another feature

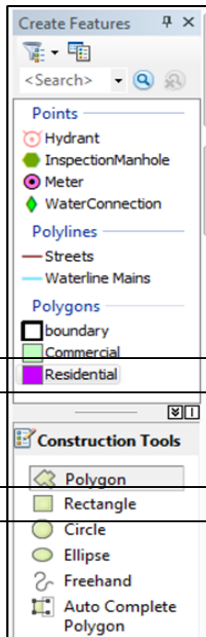
Drag a box around several features

Click on empty space to clear selection

Use Clear Selection



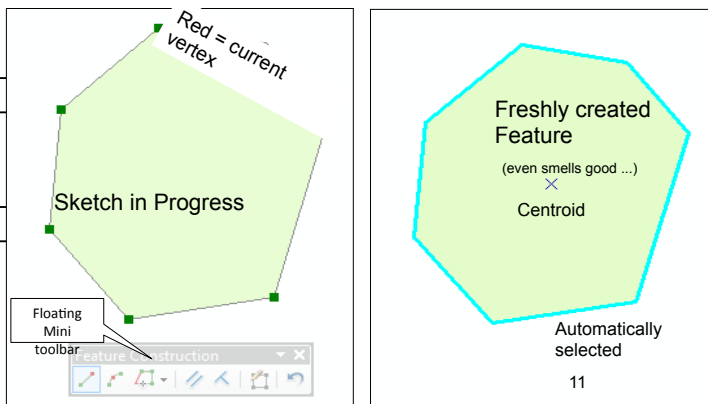
Clear Selection



# Adding features



- Choose template and construction tool
- With edit tool, click inside map to create vertices of a "sketch"
- You can Zoom, pan, etc., resume sketch with
- **Double-click or F2** to "finish the sketch."

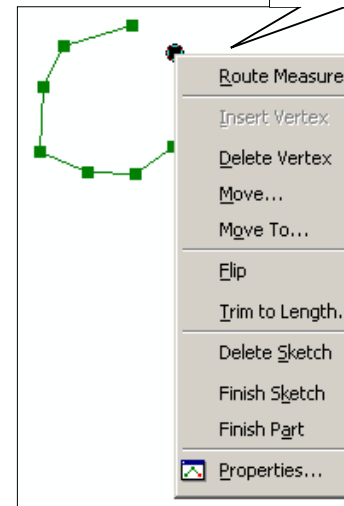


# Editing context menus

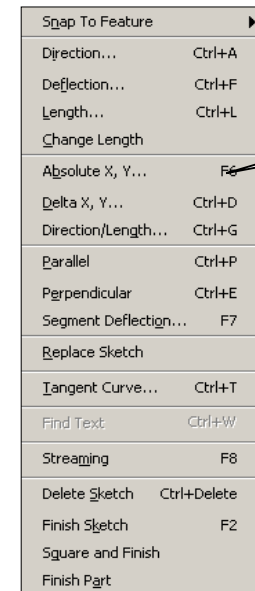
Sketch menu

Vertex menu

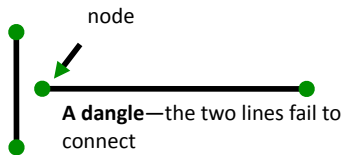
Right-click on sketch (vertex,line)



Right-click outside sketch

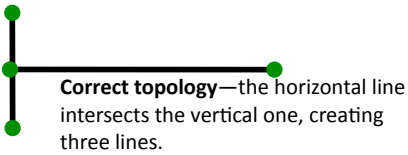


# Avoiding dangles

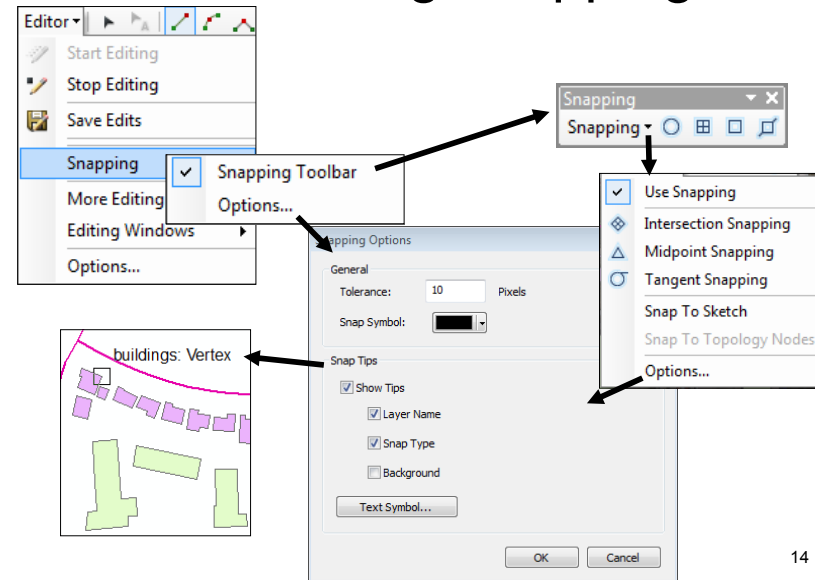


Automatically connects features and ensures logical consistency. Two approaches are used.

1. Let the vertex be placed anywhere and correct it afterwards.
2. Ensure that vertex is created in the right location.

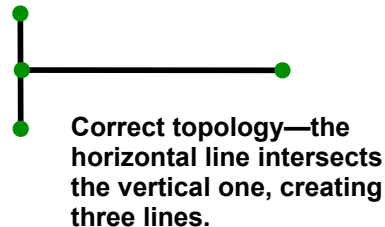
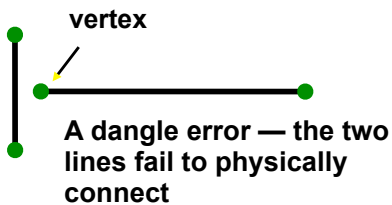


# Setting snapping

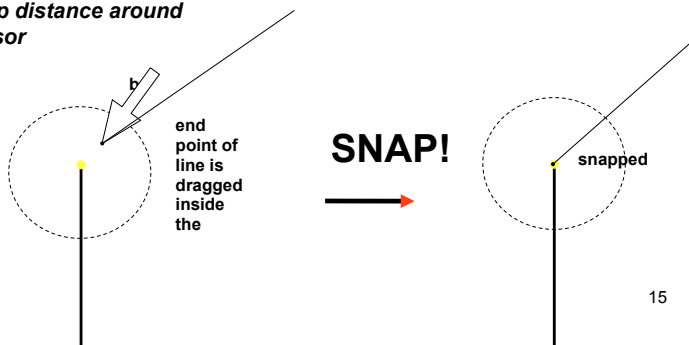


# Snapping

Automatically connects new point to existing point or line



Circle: Snap distance around mouse cursor



# Tolerance units

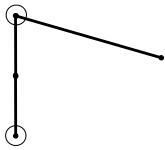
- Screen units
  - User sets the tolerance as the number of pixels on the screen.
  - Remains consistent regardless of the zoom level.
  - Easy to work with at all scales
- Map units
  - User sets the tolerance in map units (meters, feet, degrees)
  - Ensures consistent precision at all scales
  - May become difficult to work with when zoomed far in or far out from normal editing scale

Point snapping

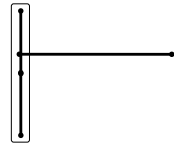


# Types of snapping

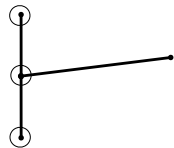
End snapping



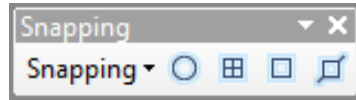
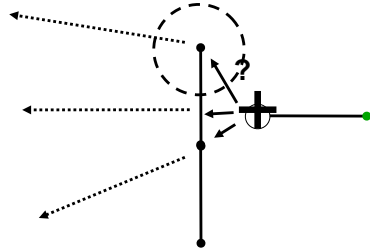
Edge snapping



Vertex snapping



Snapping tolerance

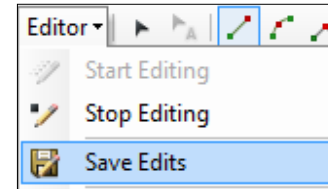


17 12-10

Copyright © 2011 by Maribeth H. Price

17

# Saving work



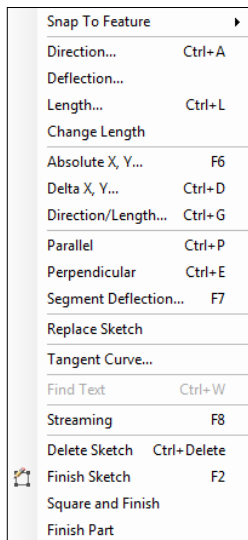
Stops editing and asks to save any unsaved edits

Saves and continues editing

**Save early, save often!!!**

18

# The Sketch menu



Contains functions for adding the next vertex:

- in a particular direction,
- with a particular length,
- parallel or perpendicular to a feature,
- at an angle to a feature,
- at an angle to a sketch segment,
- at a specific x-y location.

19 12-38

Copyright © 2011 by Maribeth H. Price

19

# Sketching - summary

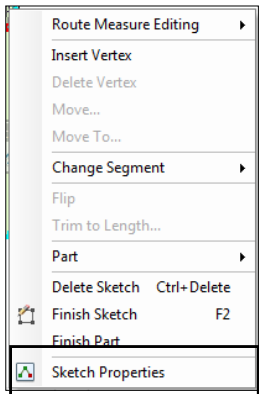
- Temporary sketch for creating new features
- Select layer to add feature to (target layer) and press pencil button
- You can use zoom, pan while sketching (click sketch button again to go back)
- Right-click: pulldown menu for context menus:
  - On vertex: vertex menu
  - Not on vertex: sketch menu
- Double click to end sketch and create actual new feature (newly made feature will be selected)
- Click on Select tool (Black Arrow) exits sketch mode
- Delete feature: Select - Hit Delete Key (Ctrl-Z Undo)

20

# Edit Sketch Properties



Use to view and/or edit vertex coordinates.



Vertex menu

#	X	Y
0	3122943.061	10093501.876
1	3122918.498	10093470.867
2	3122946.745	10093436.487
3	3123001.082	10093401.490
4	3123039.763	10093401.490
5	3123079.365	10093414.384
6	3123102.389	10093457.670
7	3123066.471	10093451.223
8	3123014.897	10093446.618
9	3123011.213	10093449.381

# Attributes window



Useful window for editing the attributes of selected features.

Shows the currently selected features

Right-click item for context menu

Edit the attributes of the highlighted feature

Edit the attributes here

OBJECTID	3
Bldgtype	Commercial
Address	<Null>
City	Austin
State	TX
SHAPE_Length	441.572368
SHAPE_Area	8826.985592

OBJECTID	Object ID
Object ID	Null values not allowed

# Editing attributes

Edit a single feature

1. Click to flash the feature and see which it is.

2. Edit the field.

OBJECTID	3
Bldgtype	Commercial
Address	<Null>
City	Austin
State	TX
SHAPE_Length	441.572368
SHAPE_Area	8826.985592

OBJECTID	Object ID
Object ID	Null values not allowed

Edit multiple features

1. Click layer name

2. Edit the field.

OBJECTID	
Bldgtype	
Address	
City	Austin
State	TX
SHAPE_Length	
SHAPE_Area	

OBJECTID	Object ID
Object ID	Null values not allowed

# Wrap up

- Ch 12 Tutorial - 31
- HW10 will be ex 1,2,3,4 extra 5 (due Nov 8)
- Mini proj 2 questions?
- Mini proj 3 questions?