

Introduction to Geospatial Information Science

A two-day, hands-on workshop to introduce users to the basic concepts of GIS

This one-day, hands-on workshop introduces the basic concepts of geospatial information science (GIS). It will present fundamental geographic and cartographic principles that are the foundation of GIS and current state-of-the-art information technology tools that bring GIS to users' desktops. The workshop will include hands-on use of ArcView 9.1 GIS software and various geospatial databases. Attendees will come away from the workshop with a general understanding of the science and technology behind GIS and a basic skill set for making maps with ArcView 9.1.

GEOSPATIAL INFORMATION SCIENCE

Geography 

Cartography and Surveying 

Photogrammetry 

Remote Sensing 

Geographic Information Systems (GIS)

 Geocoding/geoprocessing 

Global Positioning System (GPS) 

IT Infrastructure and Human Resources 

GEOSPATIAL FOUNDATION CONCEPTS

SPATIAL REPRESENTATION

- Maps

- Coordinate systems

- Projections

- Scale

SPATIAL FEATURES

- Vectors: points-lines-polygons

- Rasters

- Attributes

SPATIAL TOPOLOGY

- lines-nodes-segments

- TIGER

Spatial Representation

Maps  USGS

Coordinate systems  Dana

Projections  Dana

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MAP SCALE

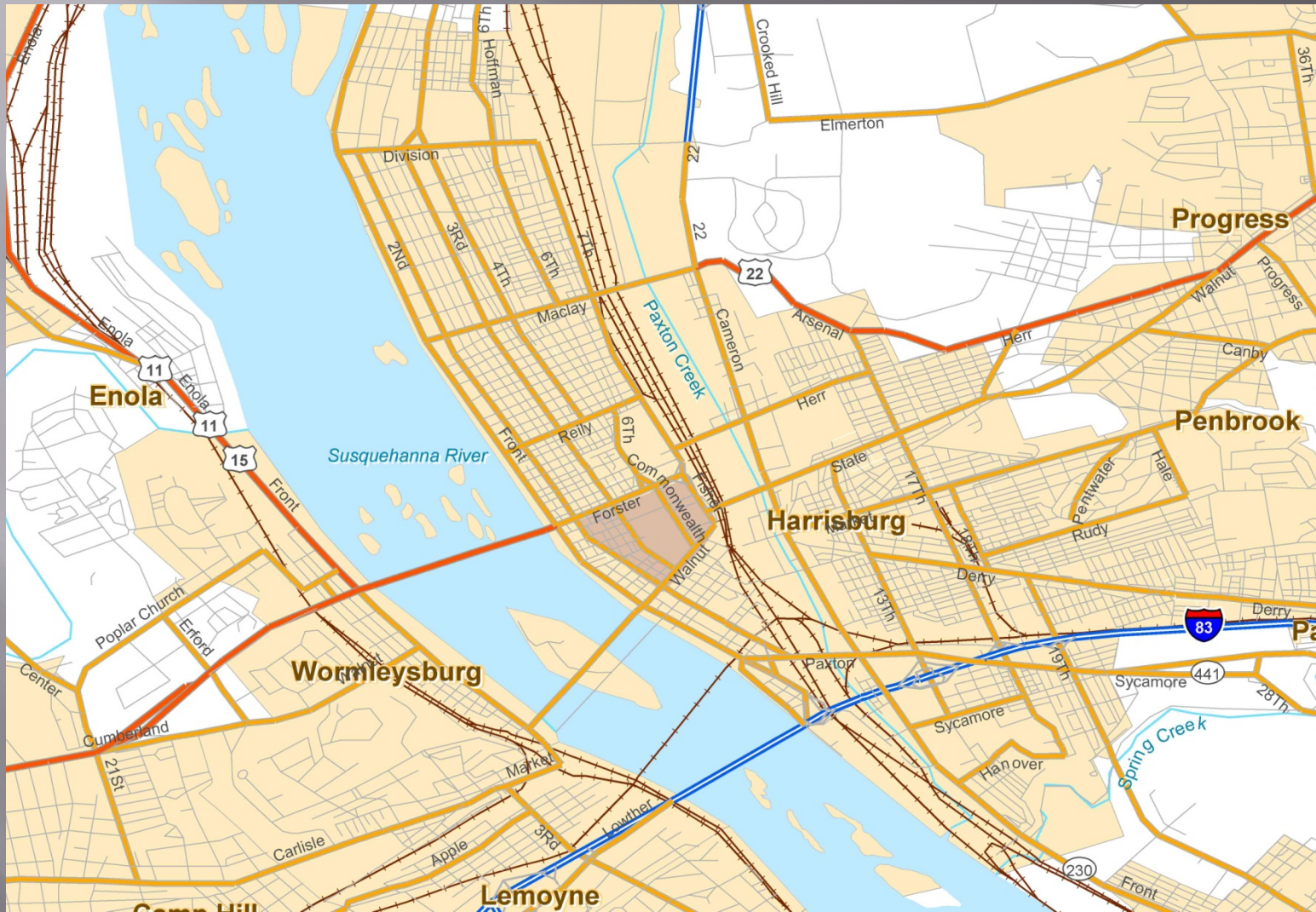
Think of map scale the following way.
If you have an 8.5'' x 11'' paper map...

Larger scale:

(e.g. 1:50,000 or 1'' = 0.789 miles)

Shows less area and more detail

1:50,000 scale map of Harrisburg



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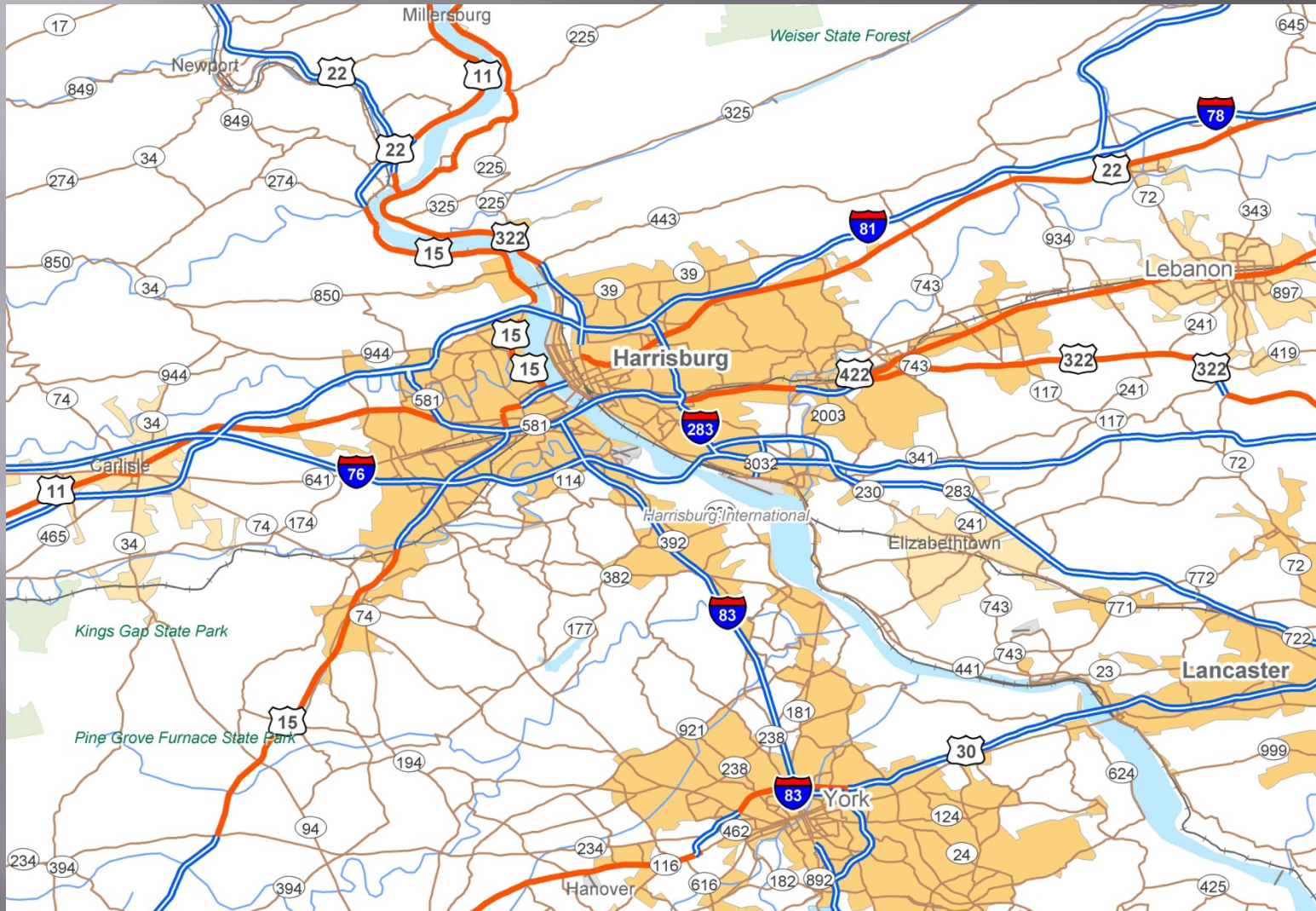
Shows less area and more detail

Smaller scale:

(e.g. 1:500,000 or 1" = 7.89 miles)

Shows more area and less detail

1:500,000 scale map of Harrisburg



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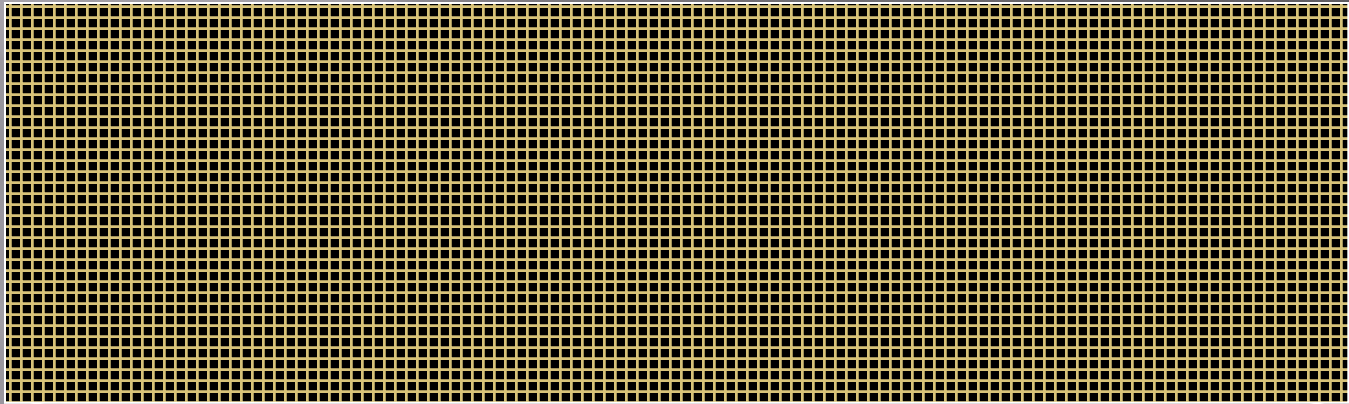
(e.g. 1:500,000 or 1" = 7.89 miles)

Shows more area and less detail

SPATIAL FEATURES

Vectors (points-lines-polygons)

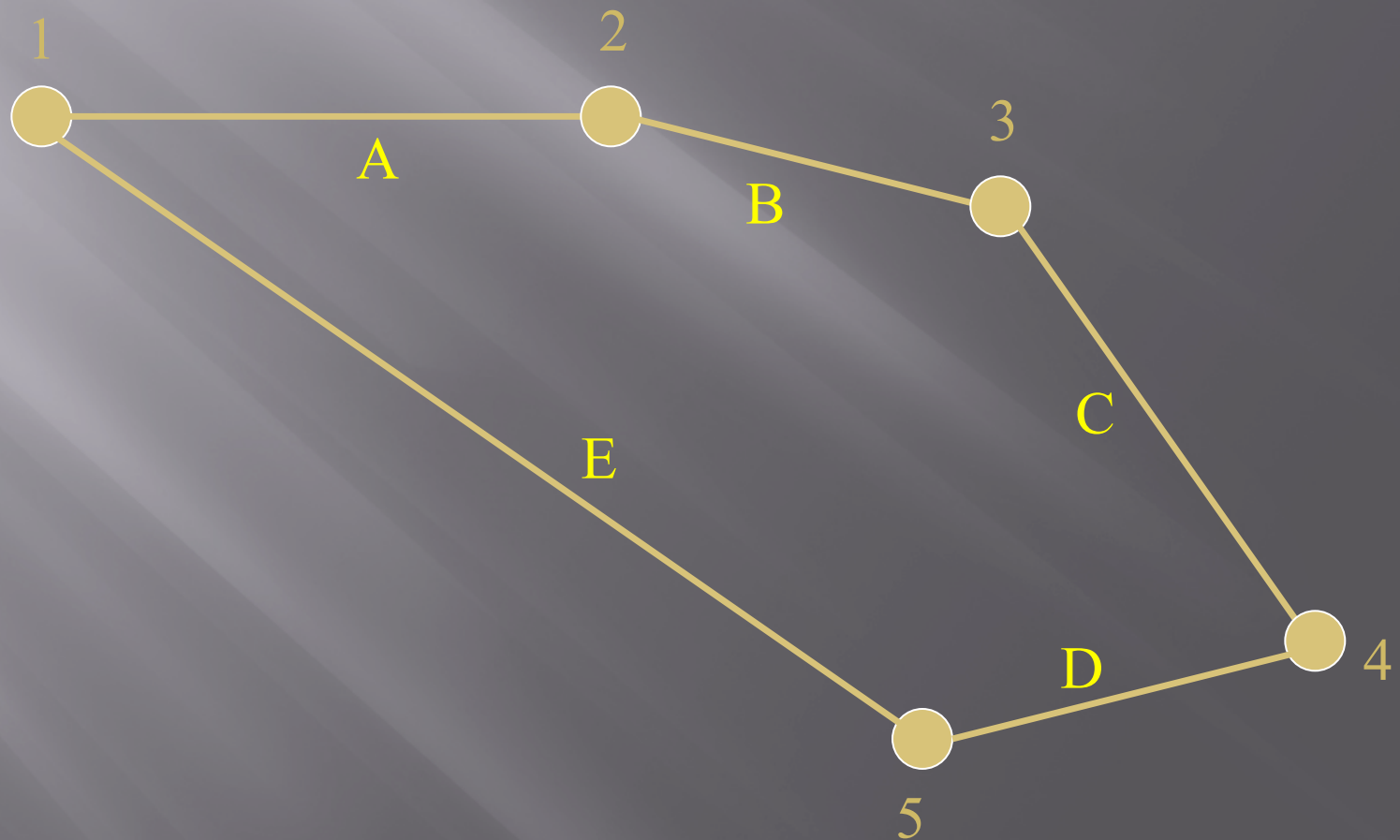
Rasters



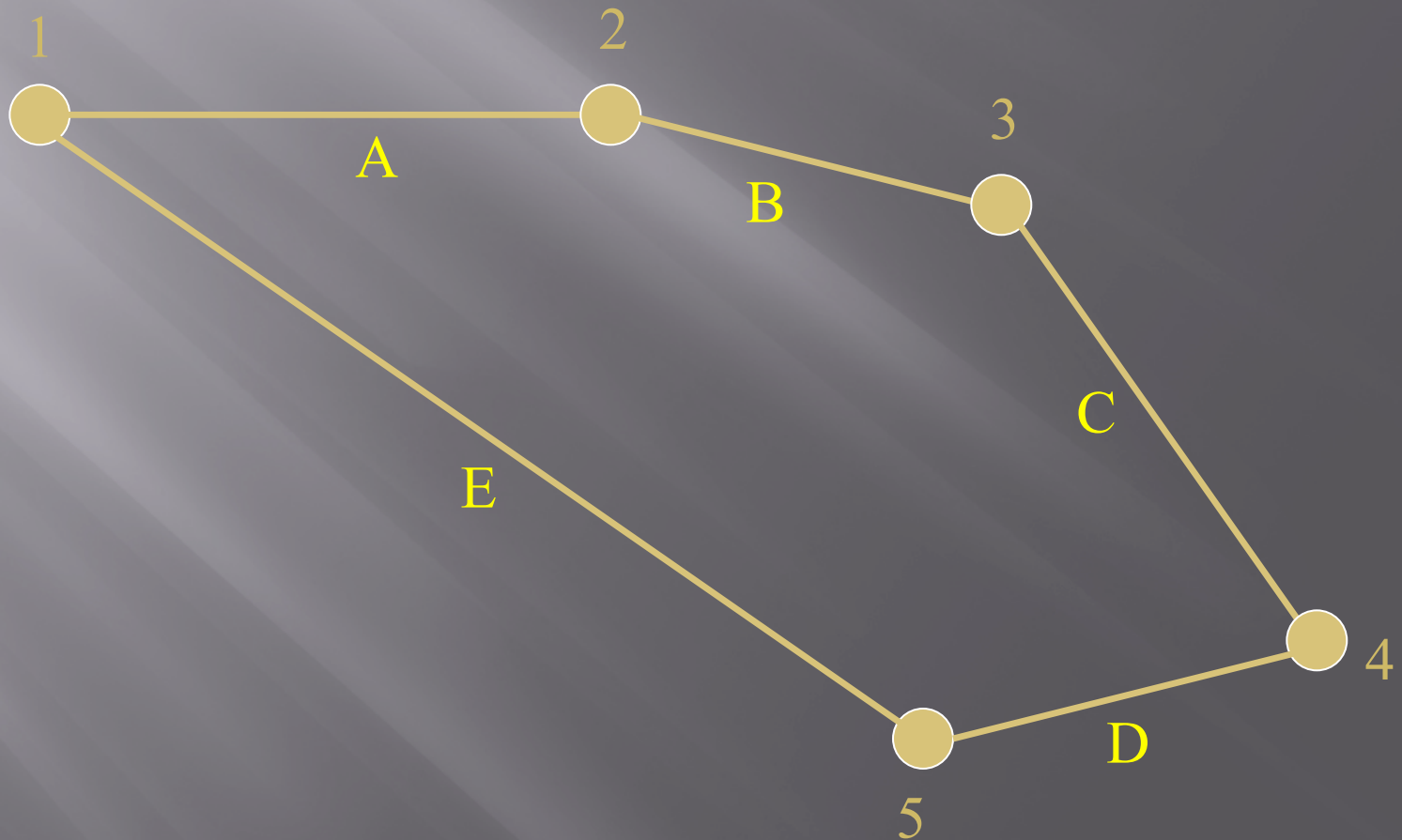
Attributes:

<u>Feature</u>	<u>Feature class</u>	<u>Attribute</u>
Point	Water wells	Depth to water
Line	State roads	Traffic volume
Polygon	Counties	Total population

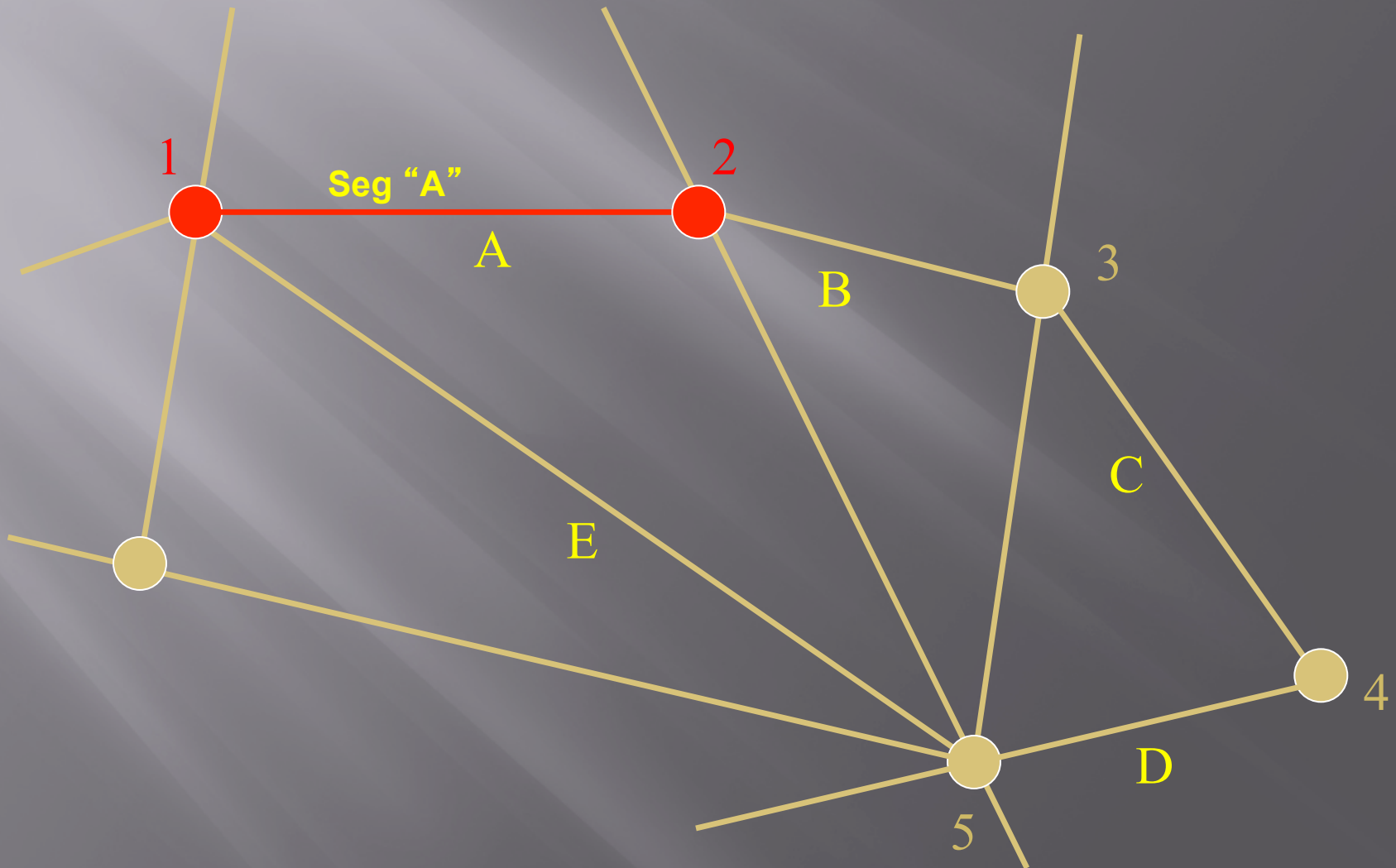
SPATIAL TOPOLOGY: lines-nodes-segments



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Relational Database Tables

Segments

Record ID	Street	Fnode	Tnode	Lfadd	Rfadd	Ltadd	Rtadd	Lzip	Rzip
Seg-A	Roosevelt	Node-1	Node-2	100	101	198	199	17111	17112
Seg-B								
Seg-C								
Seg-D								
Seg-E								

Join to Nodes

Nodes

Record ID	Latitude	Longitude
Node-1	41.90433	76.23594
Node-2	41.90567	76.23407
Node-3
Node-4
Node-5