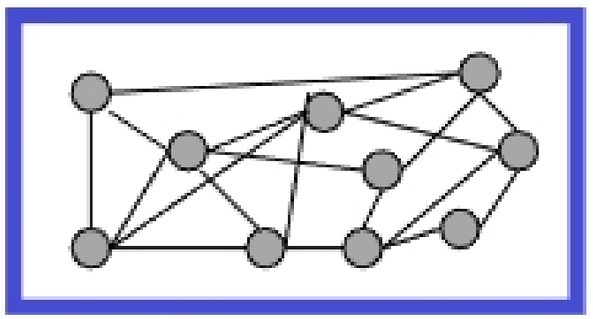
Today's topics

- Graphs
  - Basics & types
  - Properties
  - Connectivity
  - Hamilton & Euler Paths
- Reading: Sections 8.1-8.5

Simple Graphs

- Correspond to symmetric, irreflexive binary relations *R*.
- A *simple graph* $G=(V,E)$ consists of:
  - a set *V* of *vertices* or *nodes* (*V* corresponds to the universe of the relation *R*),
  - a set *E* of *edges / arcs / links*: unordered pairs of [distinct] elements $u,v \in V$, such that *uRv*.

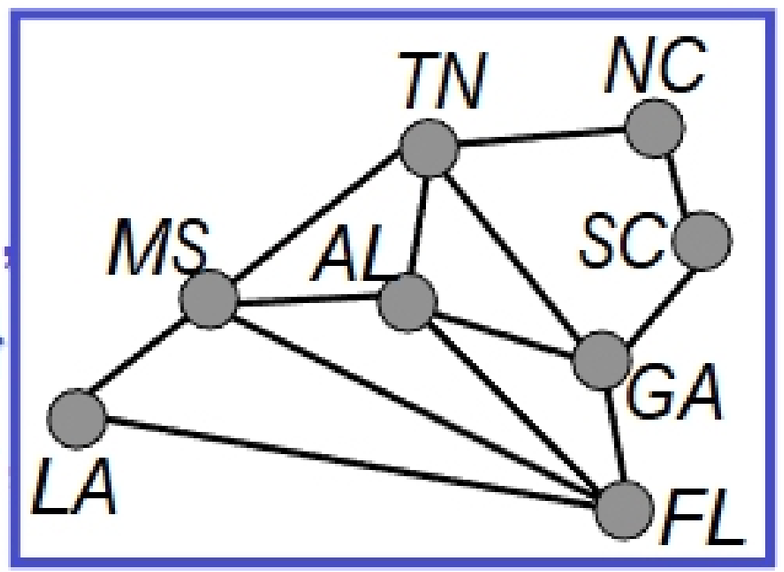


Visual Representation of a Simple Graph

Example of a *Simple Graph*

- Let *V* be the set of states in the far-southeastern U.S.:
  - *I.e.*, *V*={FL, GA, AL, MS, LA, SC, TN, NC}
- Let *E*={{*u*,*v*}|*u* adjoins *v*}

  ={{FL,GA},{FL,AL},{FL,MS},
  {FL,LA},{GA,AL},{AL,MS},
  {MS,LA},{GA,SC},{GA,TN},
  {SC,NC},{NC,TN},{MS,TN}
  {MS,AL}}



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