

Who are the *actors* involved?

- ◆ *Source* or *sender* [host/end system]
 - ◆ Generates data to be transmitted
- ◆ *Transmitter* [router/switch]
 - ◆ Converts data into transmittable form (signals)
- ◆ *Communication medium*
 - ◆ Carries data (in the form of signals)
- ◆ *Receiver* [router/switch]
 - ◆ Converts signals into data
- ◆ *Destination* or *receiver* [host/end system]
 - ◆ Receives data

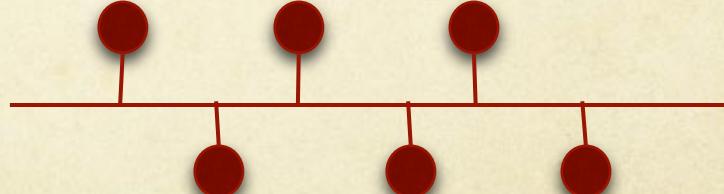
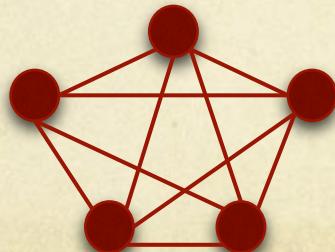
Medium of communication

- ◆ Networks may use different communication media...
 - ◆ *Wired* network
 - ◆ Co-axial cables, fibre-optic cables, etc.
 - ◆ *Wireless* network
 - ◆ WiFi, bluetooth, etc.



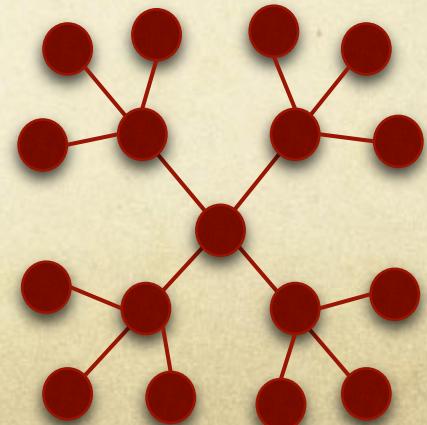
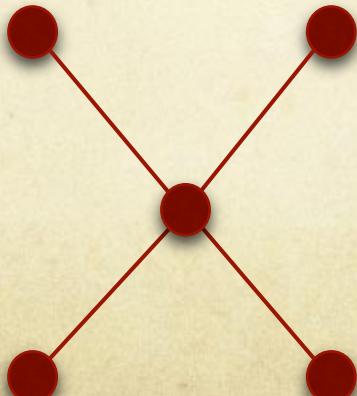
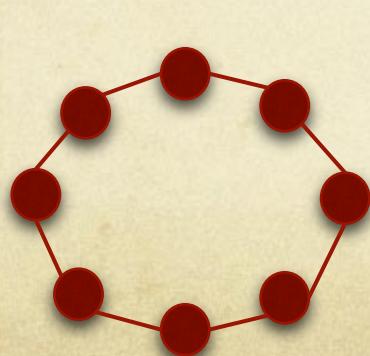
Who is connected to whom?

- ◆ *Every* comp can directly communicate with *every* other comp
 - ◆ *Mesh* topology
 - ◆ Each computer connected to every other computer
 - ◆ *Bus* topology
 - ◆ All computers connected to *common* bus



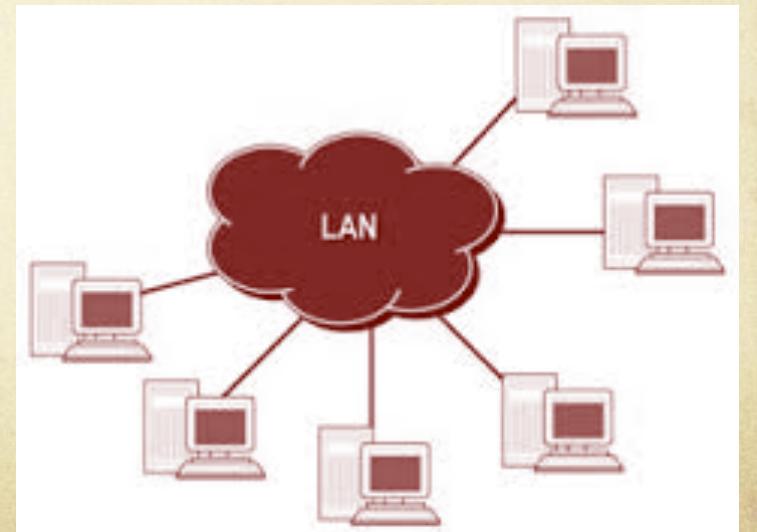
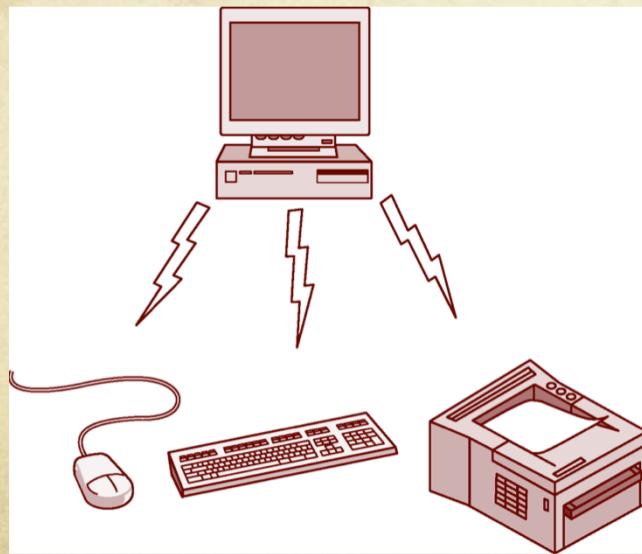
Who is connected to whom?

- ◆ We can always get to a computer *via* another
 - ◆ *Ring* topology
 - ◆ Each computer connected to two neighbors
 - ◆ *Star* topology
 - ◆ Computers connected to *central* hub/computer through spokes
 - ◆ *Extended star* (tree) topology
 - ◆ Improves scalability of star topology!



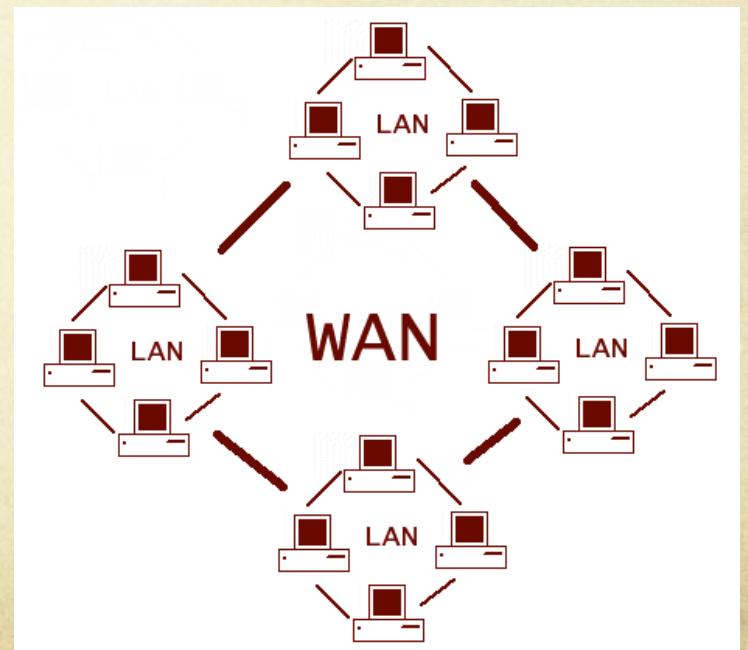
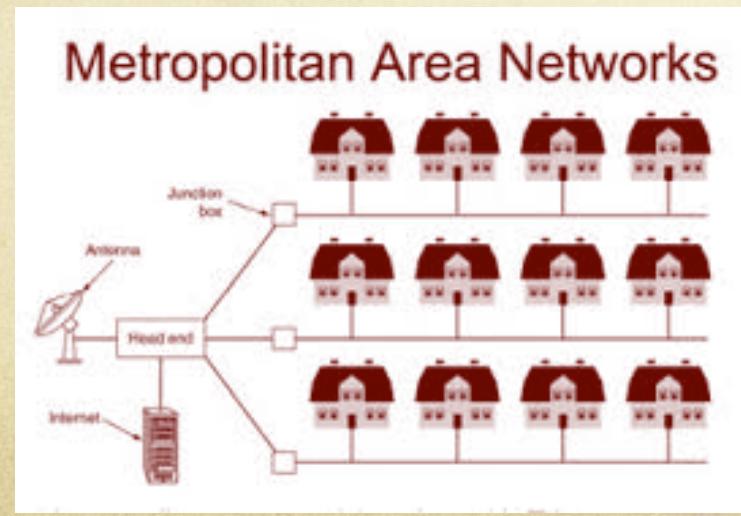
How *large* is a computer network?

- ◆ Network scale can vary...
 - ◆ Within 1 square meter or so
 - ◆ Personal Area Network (*PAN*)
 - ◆ Within room, building or single campus
 - ◆ Local Area Network (*LAN*)



How *large* is a computer network?

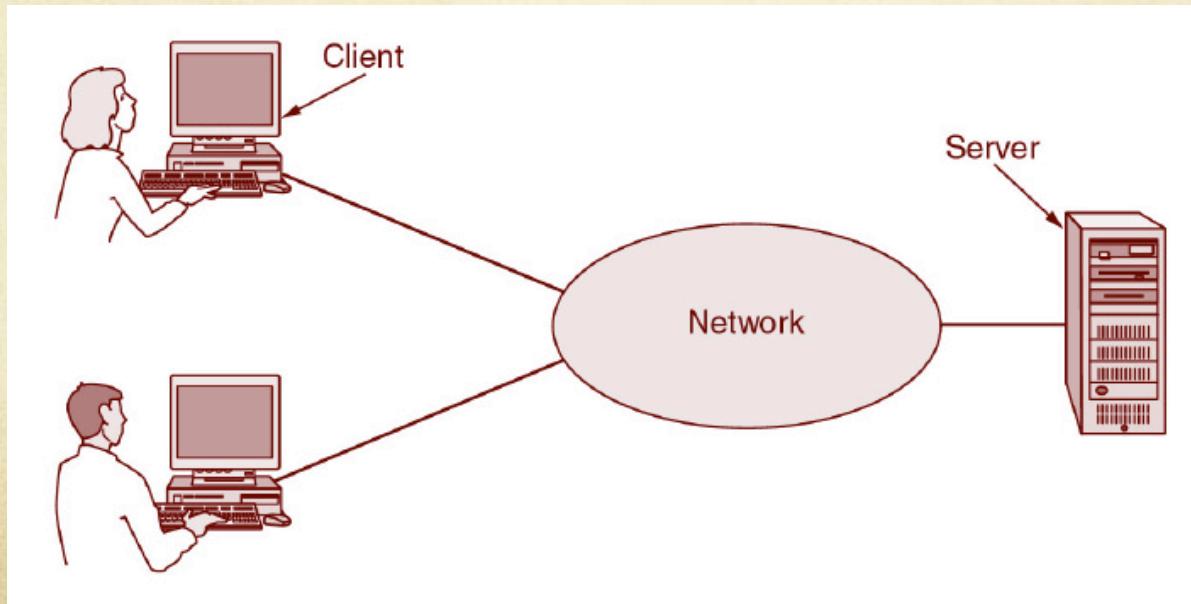
- ◆ Network scale can vary...
 - ◆ City wide
 - ◆ Metropolitan Area Network (**MAN**)
 - ◆ Country or continent wide and beyond
 - ◆ Wide Area Network (**WAN**)



Network architecture/model

- ◆ Central computer provides services & resources
- ◆ Other computers request for services & resources

→ *Client-server* model (e.g., online banking)



Network architecture/model

- ◆ All computers in network are equal...no hierarchy
- *Peer-to-peer* model (e.g., BitTorrent)

