

# 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

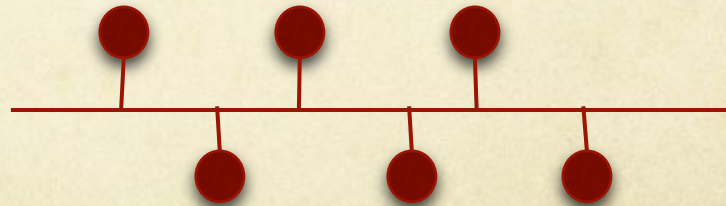
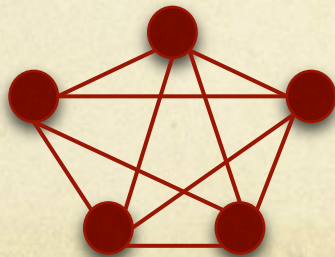
- ◆ Networks may use different communication media...
  - ◆ *Wired* network
    - ◆ Co-axial cables, fibre-optic cables, etc.
  - ◆ *Wireless* network
    - ◆ WiFi, bluetooth, etc.





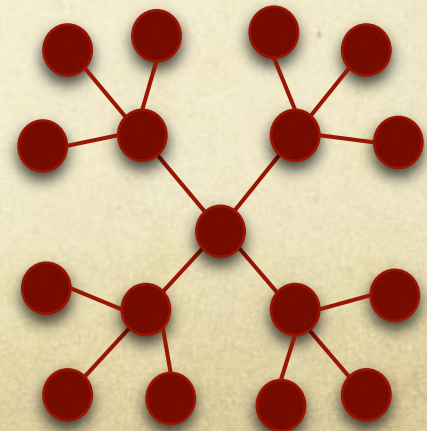
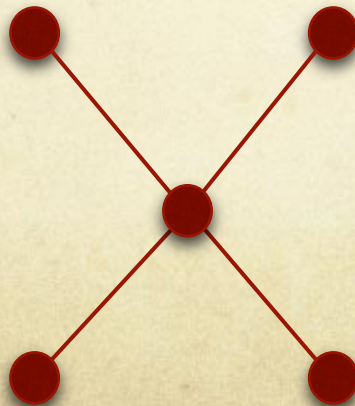
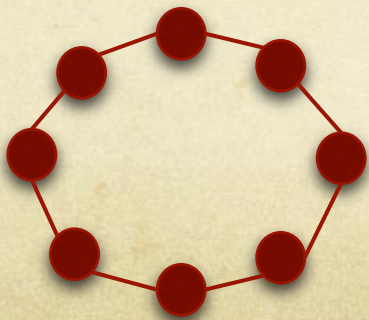
# Who is connected to whom?

- ◆ *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?

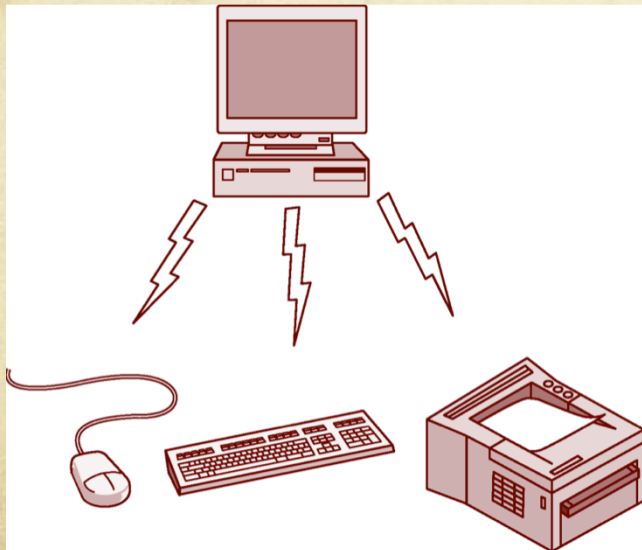
- ◆ We can always get to a computer *via* another
  - ◆ *Ring* topology
    - ◆ Each computer connected to two neighbors
  - ◆ *Star* topology
    - ◆ Computers connected to *central* hub/computer through spokes
  - ◆ *Extended star* (tree) topology
    - ◆ Improves scalability of star topology!





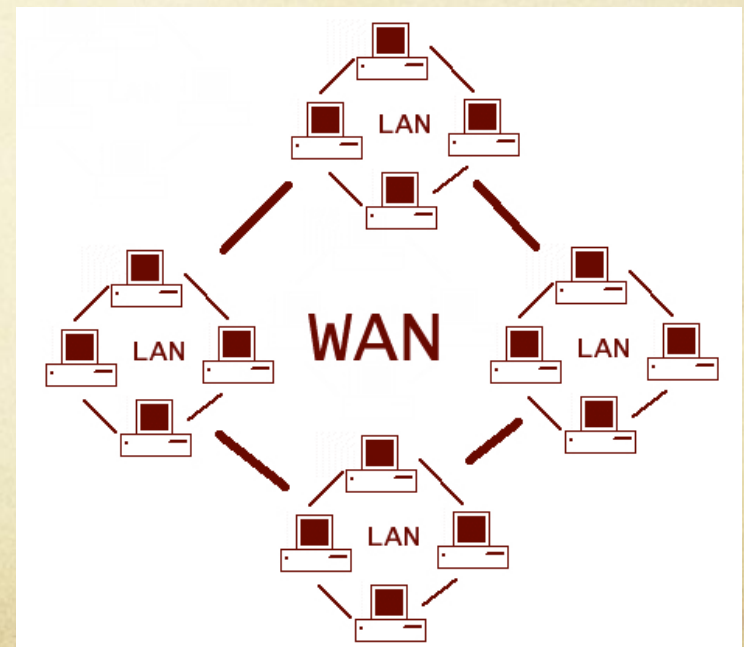
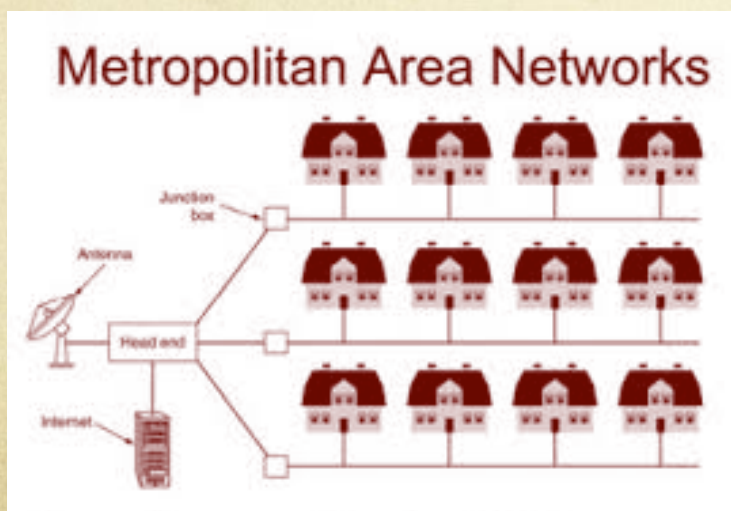
# How *large* is a computer network?

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



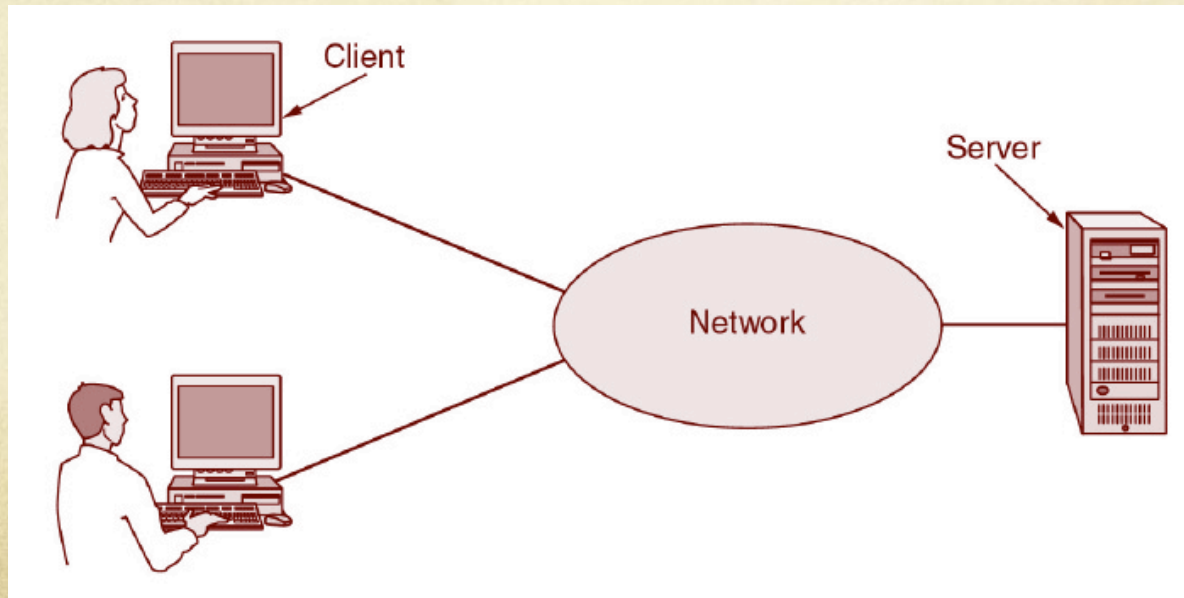
# How *large* is a computer network?

- ◆ 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)

