Anatomy of a Computer

Hard Disk *not available*
Mouse / Keyboard *not available*
RAM / ROM
Solid State Disk
Monitors, resolution, pixels, and color
Cloud Computing
Software as a Service
Embedded Computers
Malware

- *Brief description (two **printed** 'slides')*
- *Evaluate as if for your boss*
  (Assume some competence)
  - *How _____ works (basics)*
  - *Pros and Cons*
  - *Performance and cost issues*
  - *Changes from 5 years ago & Changes / Challenges for next 5 years*
- *Submit one key "take-away" question to me*

Arduino, et al.
USB-C
Local Area Networking (1000 Base-T, Ethernet)
Multicore CPUs
WiFi
Bluetooth
Best (non-TV) Tech from CES
Speech interfaces
Server farms
Laser Printing
Cryptography
VoIP
Virtualization
CD/DVD Tech
Network Attached Storage
T.B.D.

## Avoid "noob" Questions   *(understand the ridiculousness)*

Mouse / Keyboard - *"I just bought a Firewire mouse"*
RAM - *"Should I buy more ROM?"*
Solid State Disk - *"My disk is tired; it wore out"*
Embedded Systems - *"My toaster runs Linux"*
Touch - *"My new desktop monitor has a touch keyboard"*
Network - *"My ISP offers 1Mbps download speeds for $30"*
Operating Systems - *"My toaster is multithreading"*
CPU - *"Let's put a desktop CPU in our laptops"*

Example:

Secondary Memory: Magnetic Disk Technology

Binary
  Two distinct states   (two *discrete* states)

Magnetic material
  Non-volatile
  Two magnetic states

Disk divided into logical tracks
  using 1's and 0's

Tracks divided into sectors
  more 1's and 0's

Files are written across multiple sectors
  not necessarily contiguous
  lots of overhead of bits
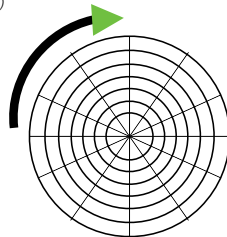
Magnetic Disk Technology

Cheap (<$50 per 1,000 Gigabytes)
  a commodity
Relatively slow:
  disk must rotate into position
  Read/write head then reads some information
Reliability can be improved by using redundancy
Always backup data and **move off-site**
Last 5 years
  Steady push to higher density and lower cost/Gb
  Access Speed is basically unchanged *(time to find and retrieve a file)*
Next 5 years
  Solid State disks will replace many magnetic disks
  Cloud storage will be used more for backups