Outline for April 16, 2007

Question: Web sites often ask you to register and supply a password. Do you think it is a good idea to use the same password for all your accounts, including the one on home, school, and work computers? Why or why not?

1. Greetings and felicitations!
2. Analog and digital
    a. Analog→digital: sample the signal at discrete intervals, output 1 if signal present, 0 if not (or values indicating intensity); precision based on frequency of sampling
    b. Digital→analog: output signal based on digital values
    c. Precision: how closely the converter can get the digital to match the analog
    d. Resolution: range of analog values converter can handle
3. Bandwidth
    a. Capacity of a channel: how much data can move through it
    b. Limited by type of channel, material making up the channel, processing in the channel, etc.
    c. Latency: overhead of moving data, for example address information, error correcting codes, etc.
    d. Multiplexing: split data into multiple parts, ship each part over separate channel
4. Ports: USB
    a. USB hubs, daisy chaining
    b. 4 wires: 2 for power, 2 for commands and data; on these, one at a time has signal, and which wire has the signal indicates whether it is a 1 or 0
    c. When first connected, device sends signal (on one wire for high speed, 12Mb/sec.; on other for low speed, 1.5Mb/sec.)
    d. System then acts like it does when booting; it queries device for type, assigns number
    e. Messages to device marked with token; all may see it, but only one whose token is there acts on it