Outline for May 16, 2008

Reading: Text, §6, 7, 10

1. Greetings and felicitations!

2. Issues
   continued from last lecture
   a. Goals; what should a good process/device interface do?
   b. Device hardware; what does a device look like?
   c. Device interface; how are the devices connected to the computer?
   d. Device drivers; what do the kernel modules interacting with devices look like?
   e. Process interface; how do the processes access devices?

3. Goals
   a. Character code independence
   b. Device independence
   c. Efficiency
   d. Uniform treatment of devices

4. Device Hardware
   a. Disks: platters, tracks, cylinders, sectors, heads, arms; seek, rotational, and transfer latencies
   b. Drums: one head per track; use
   c. Magnetic tapes: nine-track tapes, frames, tape density, records, inter-record gaps, labels, headers, trailers; winding, transfer latencies
   d. Communication lines: simplex, half-duplex, full duplex; baud; protocols; bit stuffing, character stuffing (escapes)

5. Device Interface
   a. Device registers, controllers
   b. Channels, commands, channel programs
   c. Command chaining, data chaining (scatter-gather)
   d. Selector, multiplier channels

6. Device Drivers
   a. Standard interface; upper, lower part