

# Problem Set 30

CS 311

Due May 5, 2014

Due at the beginning of class in hardcopy.

Sections 13.4–7

1. Consider the following I/O scenarios on a workstation:
  - (a) A mouse used with a graphical user interface
  - (b) A tape-drive on a multitasking operating system (with no device preallocation available)
  - (c) A disk drive containing user files
  - (d) A graphics card with direct bus connection, accessible through memory-mapped I/O

For each of these scenarios, would you design the operating system to use buffering, spooling, caching, or a combination? Would you use polled I/O or interrupt-driven I/O? Give reasons for your choices.

2. UNIX coordinates the activities of the kernel I/O components by manipulating shared in-kernel data structures, whereas Windows uses object-oriented message passing between kernel I/O components. Discuss three pros and three cons of each approach.