

Problem Set 30

CS 411

Due at the beginning of class on the first class day of the following week.
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 two pros and two cons of each approach.