

CS162, Spring 2004  
Section 11 Quiz 1  
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Directions: Complete the following questions as best you can. You're encouraged to discuss these questions with the people around you. This quiz IS NOT GRADED. Its only intended to help you understand the material.

1. Consider the following events during a memory access:

- i) Detecting a protection fault
- ii) TLB miss
- iii) Replacing a dirty page
- iv) Replacing a clean page

Order these events by cost (time taken).

2. Suppose a disk has 5000 cylinders (numbered 0 - 4999). Suppose also that the drive is currently servicing 143, and previously serviced 125.

Given that the pending requests in FIFO order are:

86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

a) Rank the following algorithms from most to least fair:

- FCFS
- SSTF
- SCAN
- C-SCAN

b) For each of the above algorithms, what is the seek order?

c) What is the total distance moved by the disk head (in cylinders)?

3. Given a "flat" file system (i.e. one with only a single directory), a reasonable design decision is to place the directory on the middle cylinder of the disk.

a) Why?

b) Why doesn't the UNIX FFS put all of its directories (directory inodes) on the middle cylinder(s)? (Hint: think of some common disk access patterns.)