CST 334: Operating Systems

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# OSTEP: chapters 21 and 22

**Swapping**. Read OSTEP chapters 21 and 22 and answer the following questions by editing [swapping.txt](https://drive.google.com/file/d/1D0YgKjXJhImWBnjCrZ72v6D-X_q_Ts5U/view?usp=sharing), which is attached to the assignment.

1. A page daemon in an operating system will swap out memory even if some memory is still available. Will it do this when the amount of available memory is: above (a), or below (b) -- the low watermark?
2. What do you call the piece of OS software that is run when it is discovered that a page of memory is on disk, and not in memory? a) the overlay, b) the background process, or c) the page-fault handler.
3. Swapping takes advantage of a ‘present bit’ to decide whether a page is in memory or in the swap space on disk. Where is the present bit? a) in the page table, b) in the process control block, or c) in the translation lookaside buffer.
4. In an 80/20 workload, which of these page replacement policies tends to work the best: a) random, b) FIFO, or c) LRU ?
5. Using the LRU replacement policy, fill in the blanks in the table below. The cache size is 3. (You will need to provide only evict column values in hw8.txt.)

access hit? evict resulting cache

0 no - 0

1 no - 0,1

1 yes - 0,1

2 no - 0,1,2

0 yes - 1,2,0

3 no 1 2,0,3

1 \_\_\_\_ \_\_\_\_ \_\_\_\_

0 \_\_\_\_ \_\_\_\_ \_\_\_\_

2 \_\_\_\_ \_\_\_\_ \_\_\_\_

1. Using the FIFO replacement policy, fill in the blanks in the table below. The cache size is 3.

access hit? evict resulting cache

0 no - 0

1 no - 0,1

1 yes - 0,1

2 no - 0,1,2

0 yes - 0,1,2

3 no 0 1,2,3

1 \_\_\_\_ \_\_\_\_ \_\_\_\_

0 \_\_\_\_ \_\_\_\_ \_\_\_\_

2 \_\_\_\_ \_\_\_\_ \_\_\_\_

**Submission**: Submit your edited swapping.txt on iLearn.

**Grading**: Each problem is worth 10 points.