COM S 352 Homework 8

Alec Meyer

April 8, 2021

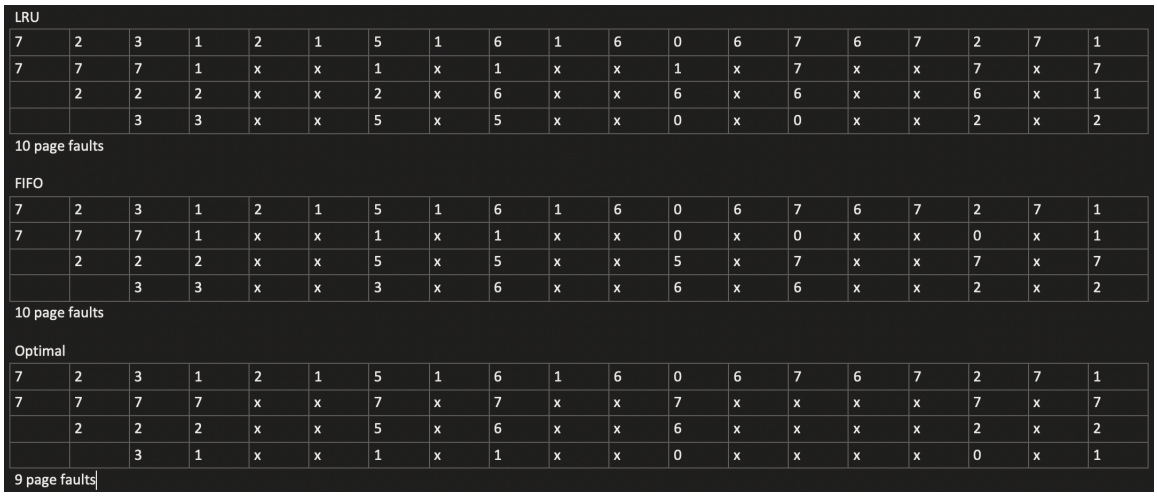
Question 1

- **a.** Yes, the state will change from running to blocked.
- **b.** No, because an address reference is resolved in the page table. The state will stay running.

Question 2

- **a.** Offset: 0xDD
  Page num: 0x2
  Page 2 = Frame 10 = 0xA
  Physical adress: 0xADD
- **b.** Offset: 0xE6
  Page num: 0x4
  page 4 = page fault
  set to 9
  Physical address: 0x9E6
- **c.** Offset: 0x4A
  Page num: 0x9
  page 9 = frame 1 = 0x1
  Physical address: 0x14A
- **d.** Offset: 0x16
  Page num: 0x3
  Page 3 = page fault = 15 = 0xF
  Physical address: 0xF16

Question 3



LRU

7	2	3	1	2	1	5	1	6	1	6	0	6	7	6	7	2	7	1
7	7	7	1	x	x	1	x	1	x	x	1	x	7	x	x	7	x	7
	2	2	2	x	x	2	x	6	x	x	6	x	6	x	x	6	x	1
		3	3	x	x	5	x	5	x	x	0	x	0	x	x	2	x	2

10 page faults

FIFO

7	2	3	1	2	1	5	1	6	1	6	0	6	7	6	7	2	7	1
7	7	7	1	x	x	1	x	1	x	x	0	x	0	x	x	0	x	1
	2	2	2	x	x	5	x	5	x	x	5	x	7	x	x	7	x	7
		3	3	x	x	3	x	6	x	x	6	x	6	x	x	2	x	2

10 page faults

Optimal

7	2	3	1	2	1	5	1	6	1	6	0	6	7	6	7	2	7	1
7	7	7	7	x	x	7	x	7	x	x	7	x	x	x	x	7	x	7
	2	2	2	x	x	5	x	6	x	x	6	x	x	x	x	2	x	2
		3	1	x	x	1	x	1	x	x	0	x	x	x	x	0	x	1

9 page faults

Question 4

Thrashing occurs when a process does not have the minimum number of pages allocated resulting in it to continuously page fault. The system detects thrashing by comparing the CPU utilization to the degree of multiprogramming and determines if the CPU utilization is too high compared to the multiprogramming. To Stop thrashing we need to decrease the degree of multiprogramming taking place.

Question 5

If Δ is a very small value, then the processes pages are not all in memory and will get scheduled because all pages are in the working set. The number of page faults will increase. If Δ is a very large value, then the process doesn't have enough pages and prevents the process from getting scheduled. This will result in an incease in page faults.s