

Name:

CSE 421/521 – Quiz 3

(Fall 2014)

Consider the following page-reference string:

1, 2, 3, 4, 5, 6, 7, 8, 5, 6, 2, 3, 6, 2, 3, 7, 8, 3, 2, 1, 5, 6, 2, 4

(a) (12.5 pts) Show the page assignments to frames assuming LRU-Clock algorithm is used. Please fill in all frames. Consider the following rules:

1. When a page is brought to the memory the first time, initialize reference bit to 0.
2. Advance the next victim pointer only if you need to find a victim page to replace.
3. Use FIFO to break the ties whenever necessary.

1	2	3	4	5	6	7	8	5	6	2	3	6	2	3	7	8	3	2	1	5	6	2	4
1	1	1	1	5	5	5	5	5	5	5	5	5	5	5	7	7	7	7	1	1	1	1	4
	2	2	2	2	6	6	6	6	6	6	6	6	6	6	8	8	8	8	5	5	5	5	5
		3	3	3	3	7	7	7	7	2	2	2	2	2	2	2	2	2	2	6	6	6	6
			4	4	4	4	8	8	8	8	3	3	3	3	3	3	3	3	3	3	3	2	2
m m m m r r r r h h r r h h h r r h h r r r r r																							

(PS: Every replacement is also a miss)

Calculate the following for the above page assignments:

- Number of page faults (misses): 17
- Number of page hits: 7
- Number of page replacements: 13

(b) (12.5 pts) What would be these values if you used the OPTIMAL algorithm instead? Use FIFO to break the ties whenever necessary.

1	2	3	4	5	6	7	8	5	6	2	3	6	2	3	7	8	3	2	1	5	6	2	4
1	1	1	1	1	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	6	6	6
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		3	3	3	3	7	8	8	8	8	8	8	8	8	8	8	8	8	1	1	1	1	4
			4	5	5	5	5	5	5	5	3	3	3	3	3	3	3	3	3	5	5	5	5
m m m m r r r r h h h r h h h r h h h r r r h r																							

(PS: Every replacement is also a miss)

Calculate the following for the above page assignments:

- Number of page faults: 14
- Number of page hits: 10
- Number of page replacements: 10