

Demand paging problems (page replacement algorithms):

1. For the following reference string apply the FIFO page replacement algorithm.

– Option 1 – according to Week 6 – Textbook Readings:

Reference string	2	4	5	6	1	5	3	4	5	2	3	6	5	3	4	7	3	5	6
Physical frame 0	2	2	2	2	1	1	1	1	1	2	2	2	2	2	2	7	7	7	7
Physical frame 1	4	4	4	4	4	3	3	3	3	3	6	6	6	6	6	6	5	5	5
Physical frame 2	5	5	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	6
Physical frame 3	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	4	4	4	4
Page faults	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Victim frames					2	4	5	6	1	3	4	5	2	6	3	4	5	2	3

OR

– Option 2 – according to Week 6 - Module Readings

Reference string	2	4	5	6	1	5	3	4	5	2	3	6	5	3	4	7	3	5	6
Physical frame 0	2	4	5	6	1	1	3	4	5	2	2	6	6	3	4	7	7	5	6
Physical frame 1	2	4	5	6	6	1	3	4	5	5	2	2	6	3	4	4	7	5	5
Physical frame 2	2	4	5	5	6	1	3	4	4	5	5	2	6	3	3	4	7	7	7
Physical frame 3	2	4	4	5	6	1	3	3	3	3	3	3	3	3	3	3	3	3	4
Page faults	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Victim frames					2	4	5	6	1	3	4	5	2	6	3	4	5	2	3

2. For the following reference string apply the OPT page replacement algorithm.

Reference string	2	4	5	6	1	5	3	4	5	2	3	6	5	3	4	7	3	5	6
Physical frame 0	2	2	2	2	2	2	2	2	2	2	2	6	6	6	6	6	6	6	6
Physical frame 1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	7	7
Physical frame 2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Physical frame 3	6	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Page faults	F	F	F	F	F	F						F				F			
Victim frames					6	1					2				4				

3. For the following reference string apply the LRU page replacement algorithm.

Reference string	2	4	5	6	1	5	3	4	5	2	3	6	5	3	4	7	3	5	6
Physical frame 0	2	2	2	2	1	1	1	1	1	2	2	2	2	2	2	4	4	4	6
Physical frame 1	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3
Physical frame 2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Physical frame 3	6	6	6	6	6	4	4	4	4	4	6	6	6	6	6	7	7	7	7
Page faults	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Victim frames					2	4	6	1	4			2	6			4			

4. For the following reference string apply the LFU page replacement algorithm.

Reference string	2	4	5	6	1	5	3	4	5	2	3	6	5	3	4	7	3	5	6
Physical frame 0	2	2	2	2	1	1	3	3	3	2	3	3	3	3	3	7	3	3	3
Physical frame 1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Physical frame 2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Physical frame 3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Page faults	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Victim frames					2	1			3	2					3	7			

1																			
2	1		1																
3																			
4		1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3
5		1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	4	5	5
6		1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3