

Page Replacement Algorithm

1) FIFO, 2) Optimal, 3) LRU.

FIFO

Consider the following page reference string 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 for a memory with 3 frames. How many page fault would occurs for the following page replacement algorithm FIFO.

— first In first Out.

1	2	3	4	1	2	5	1	2	3	4	5
1	1	1	4	4	4	5	5	5	5	5	5
	2	2	2	1	1	1	1	1	3	3	3
		3	3	3	2	2	2	2	3	4	2
F	F	F	F	F	F	F			F	F	

page hit
✓ ✓

Total No of Page fault = 9

2) Consider some string like above

Optimal Replacement algorithm

1	2	3	4	1	2	5	1	2	3	4	5
1	1	1	1	1	1	1	1	1	3	3	3
	2	2	2	2	2	2	2	2	2	4	4
		3	4	4	4	5	5	5	5	5	5
F	F	F	F	✓	✓	F	✓	✓	F	F	✓
				Hit	Hit		Hit	Hit			Hit

Total No. of Page fault = 7

3] LRU - Page Replacement

Consider the following page reference string
 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 for a memory
 with 3 frames. How many page fault would
 occur for following page replacement algo.
LRU - Least Recently Used

1	2	3	4	1	2	5	1	2	3	4	5
1	1	1	4	4	4	5	5	5	5	5	5
	2	2	2	1	1	1	1	1	3	3	3
		3	3	3	2	2	2	2	2	4	4
F	F	F	F	F	F	F			F	F	

Total No. of fault = 9
 page

* Consider the following page replacement string
 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5. Assume that
 frame size = 3. How many page fault would
 occur for FIFO, Dphinal & LRU

Y FIFO (First In First Out)

4	3	2	1	4	3	5	4	3	2	1	5
4	4	4	1	1	1	5	5	5	5	5	5
	3	3	3	4	4	4	4	4	2	2	2
		2	2	2	3	3	3	3	3	1	1
F	F	F	F	F	F	F			F	F	

Total No of page fault = 9

2) Optimal

4	3	2	1	4	3	5	4	3	2	1	5
4	4	4	4	4	4	4	4	4	2	2	2
	3	3	3	3	3	3	3	3	3	1	1
		2	1	1	1	5	5	5	5	5	5
F	F	F	F			F			F	F	

Total No. of page fault = 7

3) LRU - Least Recently Used

4	3	2	1	4	3	5	4	3	2	1	5
4	4	4	1	1	1	5	5	5	2	2	2
	3	3	3	4	4	4	4	4	4	1	1
		2	2	2	3	3	3	3	3	3	5
F	F	F	F	F	F	F			F	F	F

Total No. of page fault = 10