

Mark Luis Jefferson G. Figueroa
BSCS 3B
FT_OS

Page Replacement Algorithms: FIFO, LRU, OPT

Number of Page Frames (max 9):

Random Page Reference String:

3 3 5 1 9 2 4 8 4 7 9 9 6 5 4 5 8 9 9 7

Results:

FIFO (Page Faults: 11)				LRU (Page Faults: 12)				Optimal (OPT) (Page Faults: 10)			
Step	Page	Frames	Page Fault	Step	Page	Frames	Page Fault	Step	Page	Frames	Page Fault
1	3	3	Yes	1	3	3	Yes	1	3	3	Yes
2	3	3	No	2	3	3	No	2	3	3	No
3	5	3, 5	Yes	3	5	3, 5	Yes	3	5	3, 5	Yes
4	1	3, 5, 1	Yes	4	1	3, 5, 1	Yes	4	1	3, 5, 1	Yes
5	9	3, 5, 1, 9	Yes	5	9	3, 5, 1, 9	Yes	5	9	3, 5, 1, 9	Yes
6	2	3, 5, 1, 9, 2	Yes	6	2	3, 5, 1, 9, 2	Yes	6	2	3, 5, 1, 9, 2	Yes
7	4	5, 1, 9, 2, 4	Yes	7	4	5, 1, 9, 2, 4	Yes	7	4	5, 1, 9, 2, 4	Yes
8	8	1, 9, 2, 4, 8	Yes	8	8	1, 9, 2, 4, 8	Yes	8	8	5, 9, 2, 4, 8	Yes
9	4	1, 9, 2, 4, 8	No	9	4	1, 9, 2, 8, 4	No	9	4	5, 9, 2, 4, 8	No
10	7	9, 2, 4, 8, 7	Yes	10	7	9, 2, 8, 4, 7	Yes	10	7	5, 9, 4, 8, 7	Yes
11	9	9, 2, 4, 8, 7	No	11	9	2, 8, 4, 7, 9	No	11	9	5, 9, 4, 8, 7	No
12	9	9, 2, 4, 8, 7	No	12	9	2, 8, 4, 7, 9	No	12	9	5, 9, 4, 8, 7	No
13	6	2, 4, 8, 7, 6	Yes	13	6	8, 4, 7, 9, 6	Yes	13	6	5, 9, 4, 8, 6	Yes
14	5	4, 8, 7, 6, 5	Yes	14	5	4, 7, 9, 6, 5	Yes	14	5	5, 9, 4, 8, 6	No
15	4	4, 8, 7, 6, 5	No	15	4	7, 9, 6, 5, 4	No	15	4	5, 9, 4, 8, 6	No
16	5	4, 8, 7, 6, 5	No	16	5	7, 9, 6, 4, 5	No	16	5	5, 9, 4, 8, 6	No
17	8	4, 8, 7, 6, 5	No	17	8	9, 6, 4, 5, 8	Yes	17	8	5, 9, 4, 8, 6	No
18	9	8, 7, 6, 5, 9	Yes	18	9	6, 4, 5, 8, 9	No	18	9	5, 9, 4, 8, 6	No
19	9	8, 7, 6, 5, 9	No	19	9	6, 4, 5, 8, 9	No	19	9	5, 9, 4, 8, 6	No
20	7	8, 7, 6, 5, 9	No	20	7	4, 5, 8, 9, 7	Yes	20	7	9, 4, 8, 6, 7	Yes

Page Replacement Algorithms: FIFO, LRU, OPT

Number of Page Frames (max 9):

Random Page Reference String:

8 7 5 3 9 5 5 1 2 6 8 0 4 6 5 4 9 7 0 4

Results:

FIFO (Page Faults: 11)				LRU (Page Faults: 11)				Optimal (OPT) (Page Faults: 10)			
Step	Page	Frames	Page Fault	Step	Page	Frames	Page Fault	Step	Page	Frames	Page Fault
1	8	8	Yes	1	8	8	Yes	1	8	8	Yes
2	7	8, 7	Yes	2	7	8, 7	Yes	2	7	8, 7	Yes
3	5	8, 7, 5	Yes	3	5	8, 7, 5	Yes	3	5	8, 7, 5	Yes
4	3	8, 7, 5, 3	Yes	4	3	8, 7, 5, 3	Yes	4	3	8, 7, 5, 3	Yes
5	9	8, 7, 5, 3, 9	Yes	5	9	8, 7, 5, 3, 9	Yes	5	9	8, 7, 5, 3, 9	Yes
6	5	8, 7, 5, 3, 9	No	6	5	8, 7, 3, 9, 5	No	6	5	8, 7, 5, 3, 9	No
7	5	8, 7, 5, 3, 9	No	7	5	8, 7, 3, 9, 5	No	7	5	8, 7, 5, 3, 9	No
8	1	8, 7, 5, 3, 9, 1	Yes	8	1	8, 7, 3, 9, 5, 1	Yes	8	1	8, 7, 5, 3, 9, 1	Yes
9	2	8, 7, 5, 3, 9, 1, 2	Yes	9	2	8, 7, 3, 9, 5, 1, 2	Yes	9	2	8, 7, 5, 3, 9, 1, 2	Yes
10	6	8, 7, 5, 3, 9, 1, 2, 6	Yes	10	6	8, 7, 3, 9, 5, 1, 2, 6	Yes	10	6	8, 7, 5, 3, 9, 1, 2, 6	Yes
11	8	8, 7, 5, 3, 9, 1, 2, 6	No	11	8	7, 3, 9, 5, 1, 2, 6, 8	No	11	8	8, 7, 5, 3, 9, 1, 2, 6	No
12	0	7, 5, 3, 9, 1, 2, 6, 0	Yes	12	0	3, 9, 5, 1, 2, 6, 8, 0	Yes	12	0	7, 5, 3, 9, 1, 2, 6, 0	Yes
13	4	5, 3, 9, 1, 2, 6, 0, 4	Yes	13	4	9, 5, 1, 2, 6, 8, 0, 4	Yes	13	4	7, 5, 9, 1, 2, 6, 0, 4	Yes
14	6	5, 3, 9, 1, 2, 6, 0, 4	No	14	6	9, 5, 1, 2, 8, 0, 4, 6	No	14	6	7, 5, 9, 1, 2, 6, 0, 4	No
15	5	5, 3, 9, 1, 2, 6, 0, 4	No	15	5	9, 1, 2, 8, 0, 4, 6, 5	No	15	5	7, 5, 9, 1, 2, 6, 0, 4	No
16	4	5, 3, 9, 1, 2, 6, 0, 4	No	16	4	9, 1, 2, 8, 0, 6, 5, 4	No	16	4	7, 5, 9, 1, 2, 6, 0, 4	No
17	9	5, 3, 9, 1, 2, 6, 0, 4	No	17	9	1, 2, 8, 0, 6, 5, 4, 9	No	17	9	7, 5, 9, 1, 2, 6, 0, 4	No
18	7	3, 9, 1, 2, 6, 0, 4, 7	Yes	18	7	2, 8, 0, 6, 5, 4, 9, 7	Yes	18	7	7, 5, 9, 1, 2, 6, 0, 4	No
19	0	3, 9, 1, 2, 6, 0, 4, 7	No	19	0	2, 8, 6, 5, 4, 9, 7, 0	No	19	0	7, 5, 9, 1, 2, 6, 0, 4	No
20	4	3, 9, 1, 2, 6, 0, 4, 7	No	20	4	2, 8, 6, 5, 9, 7, 0, 4	No	20	4	7, 5, 9, 1, 2, 6, 0, 4	No

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Step	Page	Frames	Page Fault	Step	Page	Frames	Page Fault	Step	Page	Frames	Page Fault
1	8	8	Yes	1	8	8	Yes	1	8	8	Yes
2	7	8, 7	Yes	2	7	8, 7	Yes	2	7	8, 7	Yes
3	5	8, 7, 5	Yes	3	5	8, 7, 5	Yes	3	5	8, 7, 5	Yes
4	3	8, 7, 5, 3	Yes	4	3	8, 7, 5, 3	Yes	4	3	8, 7, 5, 3	Yes
5	9	8, 7, 5, 3, 9	Yes	5	9	8, 7, 5, 3, 9	Yes	5	9	8, 7, 5, 3, 9	Yes
6	5	8, 7, 5, 3, 9	No	6	5	8, 7, 3, 9, 5	No	6	5	8, 7, 5, 3, 9	No
7	5	8, 7, 5, 3, 9	No	7	5	8, 7, 3, 9, 5	No	7	5	8, 7, 5, 3, 9	No
8	1	8, 7, 5, 3, 9, 1	Yes	8	1	8, 7, 3, 9, 5, 1	Yes	8	1	8, 7, 5, 3, 9, 1	Yes
9	2	8, 7, 5, 3, 9, 1, 2	Yes	9	2	8, 7, 3, 9, 5, 1, 2	Yes	9	2	8, 7, 5, 3, 9, 1, 2	Yes
10	6	8, 7, 5, 3, 9, 1, 2, 6	Yes	10	6	8, 7, 3, 9, 5, 1, 2, 6	Yes	10	6	8, 7, 5, 3, 9, 1, 2, 6	Yes
11	8	8, 7, 5, 3, 9, 1, 2, 6	No	11	8	7, 3, 9, 5, 1, 2, 6, 8	No	11	8	8, 7, 5, 3, 9, 1, 2, 6	No
12	0	7, 5, 3, 9, 1, 2, 6, 0	Yes	12	0	3, 9, 5, 1, 2, 6, 8, 0	Yes	12	0	7, 5, 3, 9, 1, 2, 6, 0	Yes
13	4	5, 3, 9, 1, 2, 6, 0, 4	Yes	13	4	9, 5, 1, 2, 6, 8, 0, 4	Yes	13	4	7, 5, 9, 1, 2, 6, 0, 4	Yes
14	6	5, 3, 9, 1, 2, 6, 0, 4	No	14	6	9, 5, 1, 2, 8, 0, 4, 6	No	14	6	7, 5, 9, 1, 2, 6, 0, 4	No
15	5	5, 3, 9, 1, 2, 6, 0, 4	No	15	5	9, 1, 2, 8, 0, 4, 6, 5	No	15	5	7, 5, 9, 1, 2, 6, 0, 4	No
16	4	5, 3, 9, 1, 2, 6, 0, 4	No	16	4	9, 1, 2, 8, 0, 6, 5, 4	No	16	4	7, 5, 9, 1, 2, 6, 0, 4	No
17	9	5, 3, 9, 1, 2, 6, 0, 4	No	17	9	1, 2, 8, 0, 6, 5, 4, 9	No	17	9	7, 5, 9, 1, 2, 6, 0, 4	No
18	7	3, 9, 1, 2, 6, 0, 4, 7	Yes	18	7	2, 8, 0, 6, 5, 4, 9, 7	Yes	18	7	7, 5, 9, 1, 2, 6, 0, 4	No
19	0	3, 9, 1, 2, 6, 0, 4, 7	No	19	0	2, 8, 6, 5, 4, 9, 7, 0	No	19	0	7, 5, 9, 1, 2, 6, 0, 4	No
20	4	3, 9, 1, 2, 6, 0, 4, 7	No	20	4	2, 8, 6, 5, 9, 7, 0, 4	No	20	4	7, 5, 9, 1, 2, 6, 0, 4	No