FIFO Page Replacement algorithm

F3			1	1	1	1	0	0	0	3	3	3	3	2	2
F2		0	0	0	0	3	3	3	2	2	2	2	1	1	1
F1	7	7	7	2	2	2	2	4	4	4	0	0	0	0	0

Hit   Hit   Hit

Reference String   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 1, 2, 0

Page Hit = 3
Page fault / miss = 12

$$\text{Hit Ratio} = \frac{\text{No of Hits}}{\text{No of Reference}} \times 100$$

$$\text{Miss Ratio} = \frac{\text{No of Miss}}{\text{No of Reference}} \times 100$$

Optimal Page Replacement algorithm

Replace the page which is not used in longest dimension of time in future

F4				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
F3			1	1	1	1	1	4	4	4	4	4	4	1	1	1	1	1	1	1
F2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F1	7	7	7	7	7	3	3	3	3	3	3	3	3	3	3	3	7	7	7

			Hit		Hit		Hit	Hit	Hit	Hit	Hit		Hit	Hit	Hit		Hit	Hit

Reference String   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

Page Hit = 12
Page fault / miss = 8

$$\text{Hit Ratio} = \frac{\text{No of Hits}}{\text{No of Reference}} \times 100$$

$$\text{Miss Ratio} = \frac{\text{No of Miss}}{\text{No of Reference}} \times 100$$

Least Recently used Page Replacement algorithm

Replace the least recently used page in past

F4				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
F3			1	1	1	1	1	4	4	4	4	4	4	1	1	1	1	1	1	1
F2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F1	7	7	7	7	7	3	3	3	3	3	3	3	3	3	3	3	3	7	7	7

| | | | | Hit | | Hit | | Hit | Hit | Hit | Hit | Hit | | Hit | Hit | Hit | | Hit | Hit |

Reference String   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

Page Hit = 11
Page fault / miss = 8

Most Recently used Page Replacement algorithm

Replace the Most recently used page in past

					2	2	2	2	2	2	3	0	3	2	2	2	0	0	0	0	0
F4					2	2	2	2	2	2	3	0	3	2	2	2	0	0	0	0	0
F3			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
F2		0	0	0	0	3	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4
F1	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

Hit   Hit   Hit Hit   Hit   Hit   Hit   Hit

Reference String   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

Page Hit = 8
Page fault / miss = 12

Question 5 – Page replacement algorithm

Given page reference string:
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

LRU
FIFO
Optimal