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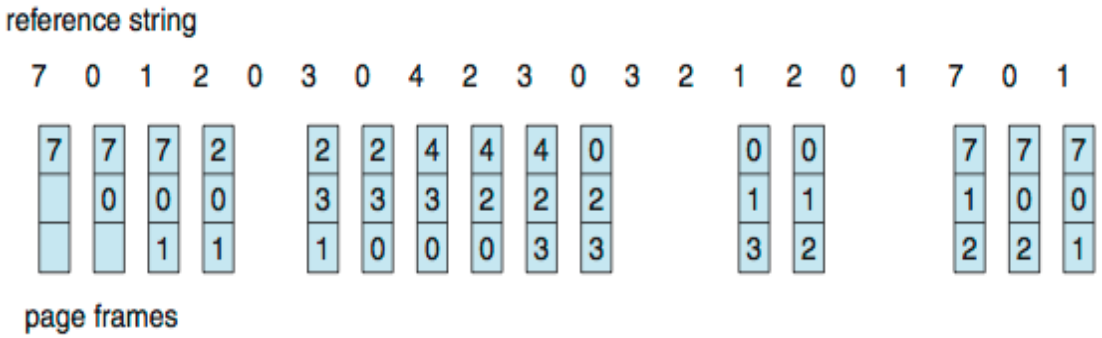
FIFO Page Replacement

First In First Out (FIFO) Algorithm

- Simplest algorithm
- Oldest page in memory is replaced.
- The page that is loaded in memory first is replaced first.

First In First Out (FIFO) Algorithm

- Reference string: **7,0,1,2,0,3,0,4,2,3,0,3,0,3,2,1,2,0,1,7,0,1**
- 3 frames (3 pages can be in memory at a time per process)



15 page faults

- How to track ages of pages?
  - Just use a FIFO queue
  - Replace at head of queue and insert at tail of queue

Belady's Anomaly

- Easy to understand and implement.
- But performance is not always good
- Consider the string 1,2,3,4,1,2,5,1,2,3,4,5
  - Adding more frames can cause more page faults!

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
PF	PF	PF	PF	PF	PF	PF	X	X	PF	PF	X

- 9 Page faults

Belady's Anomaly

- Consider the string 1,2,3,4,1,2,5,1,2,3,4,5
  - Adding more frames can cause more page faults!

1	**1**	**1**	**1**	**1**	**1**	**5**	**5**	**5**	**5**	**4**	**4**
	2	2	2	2	2	2	1	1	1	1	5
		3	3	3	3	3	3	2	2	2	2
			4	4	4	4	4	4	3	3	3
P	P	P	P	X	X	P	P	P	P	P	P

- Page faults -10
- Number of frames increases , no. of page faults also increases → Belady's Anomaly

Belady's Anomaly