TARLAC STATE UNIVERSITY
COLLEGE OF COMPUTER STUDIES
COMPUTER PROGRAMMING 2 – CC3
2nd Semester – A.Y. 2024-2025

Simulation and Analysis of a Page-Replacement Algorithm in a Virtual Memory System

A web-based program that implements the FIFO, LRU, and (OPT)
Page-Replacement Algorithm

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Results

To test, we ran multiple sample inputs using the three algorithms simultaneously: FIFO, LRU, and OPT. For each run, we recorded the reference string, number of frames, and the resulting number of page faults.

Run 1

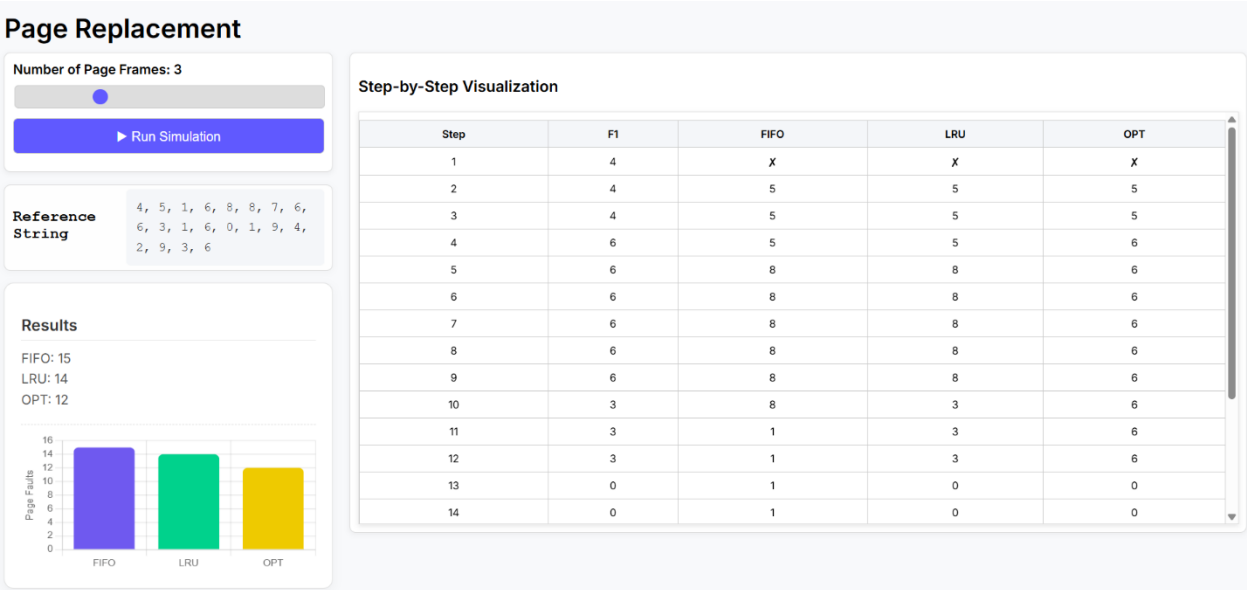
Reference String: 4, 5, 1, 6, 8, 8, 7, 6, 6, 3, 1, 6, 0, 1, 9, 4, 2, 9, 3, 6

Frames: 3

Algorithm: FIFO, LRU, OPT

Page Faults:

- FIFO: 15
- LRU: 14
- OPT: 12



Step	F1	FIFO	LRU	OPT
1	4	✗	✗	✗
2	4	5	5	5
3	4	5	5	5
4	6	5	5	6
5	6	8	8	6
6	6	8	8	6
7	6	8	8	6
8	6	8	8	6
9	6	8	8	6
10	3	8	3	6
11	3	1	3	6
12	3	1	3	6
13	0	1	0	0
14	0	1	0	0

Figure 1 RUN1

Run 2

Reference String: 8, 8, 0, 3, 5, 4, 1, 4, 2, 4, 1, 0, 9, 5, 2, 3, 1, 5, 6, 0

Frames: 4

Algorithm: FIFO, LRU, OPT

Page Faults:

- FIFO: 14
- LRU: 15
- OPT: 11

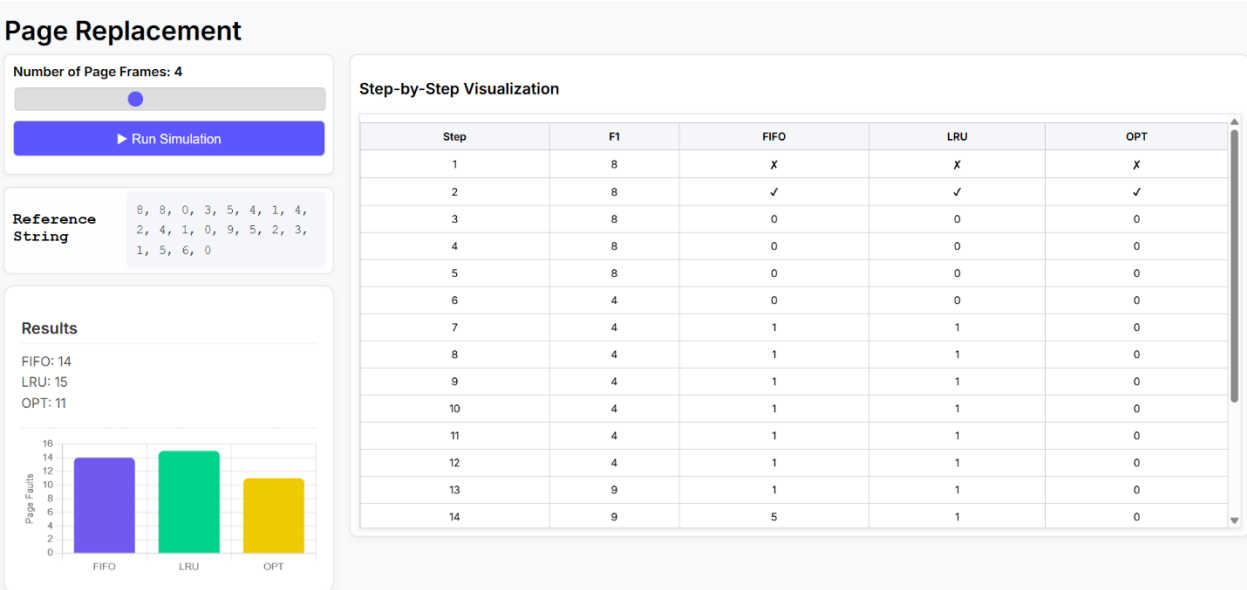


Figure 2 RUN2

Run 2

Reference String: 8, 3, 5, 0, 5, 9, 4, 3, 0, 2, 4, 6, 7, 5, 6, 2, 8, 3, 6, 7

Frames: 5

Algorithm: FIFO, LRU, OPT

Page Faults:

- FIFO: 12
- LRU: 13
- OPT: 10

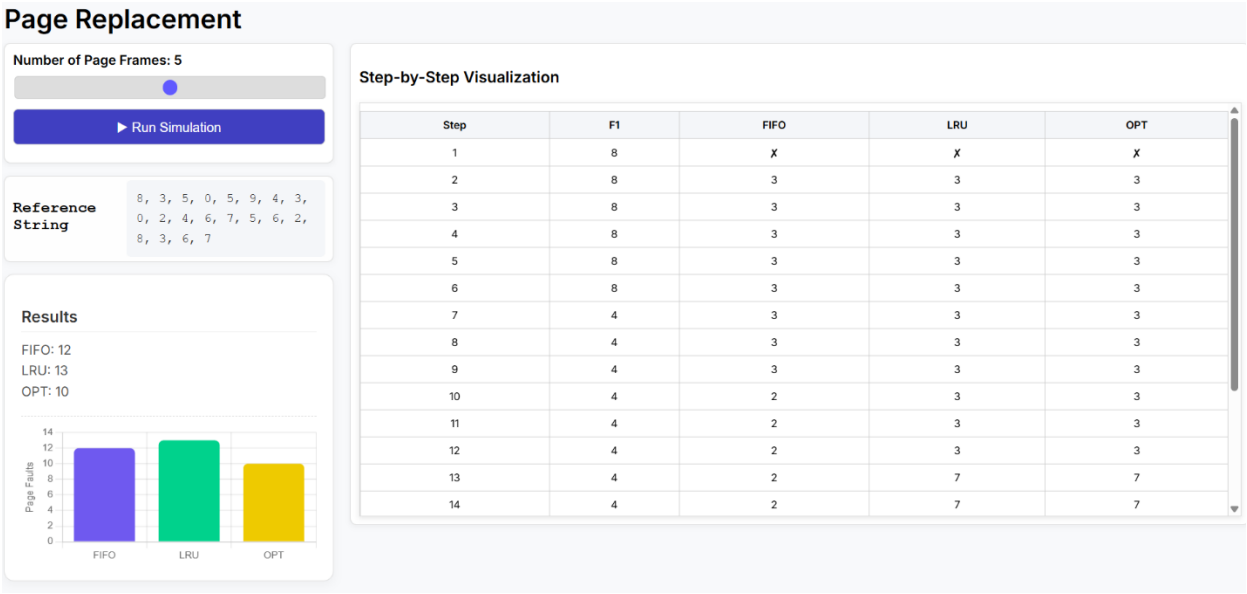


Figure 4 RUN3