

# Report Assignment 8

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## Implementation of FIFO, LRU and Random page replacement policies:

### Introduction:

#### **FIFO:**

Replaces the oldest page in memory when a new page needs to be brought into memory.

To implement FIFO, we have maintained a queue of memory pages, and when a new page needs to be brought into memory, the page at the front of the queue, i.e., the oldest page, is replaced.

#### **LRU:**

It replaces the least recently used page when a new page needs to be brought into memory.

To implement LRU, we have maintained a list of memory pages, and whenever a page is accessed, it is moved to the front of the list. When a new page needs to be brought into memory, the page at the end of the list, i.e., the least recently used page, is replaced.

#### **Random:**

A random page replacement algorithm replaces a randomly chosen page in memory when a new page needs to be brought into memory.

Random page replacement may not necessarily provide optimal performance and may result in higher page fault rates.

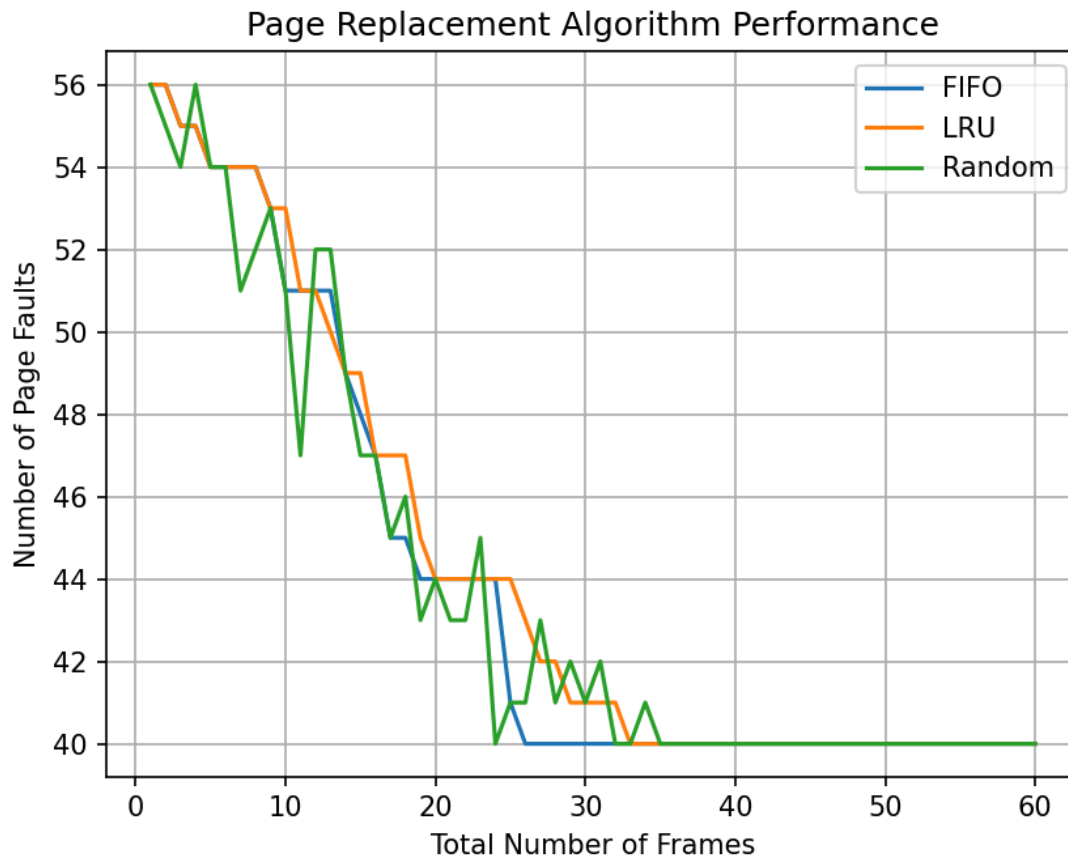
### Graphs:

Page Count: 60

Frame Count: varying from 1 to 60

Block Count: 60

Case 1 : (req1.dat)

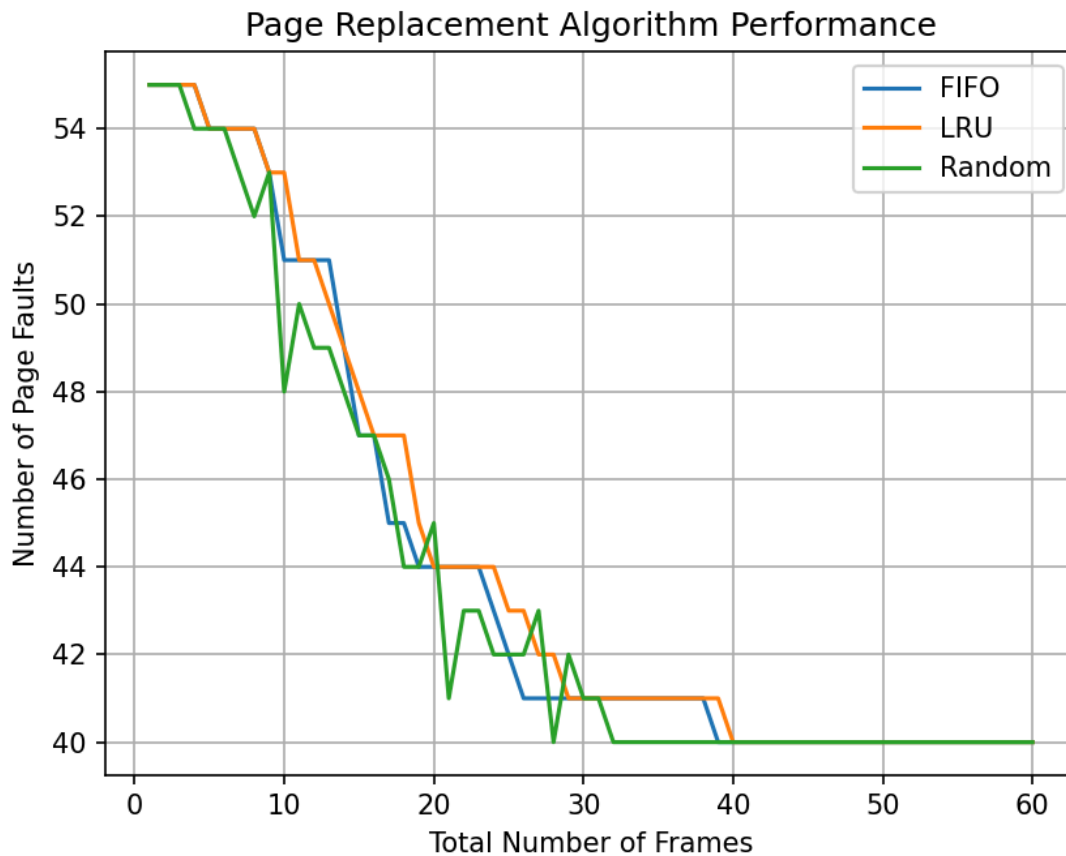


Observation :

- Generally, as the total number of frames increases, the number of page faults decreases for all algorithms.
- The Random algorithm shows fluctuating performance but still performs better than FIFO at higher frame counts.

## Case 2: (req2.dat)

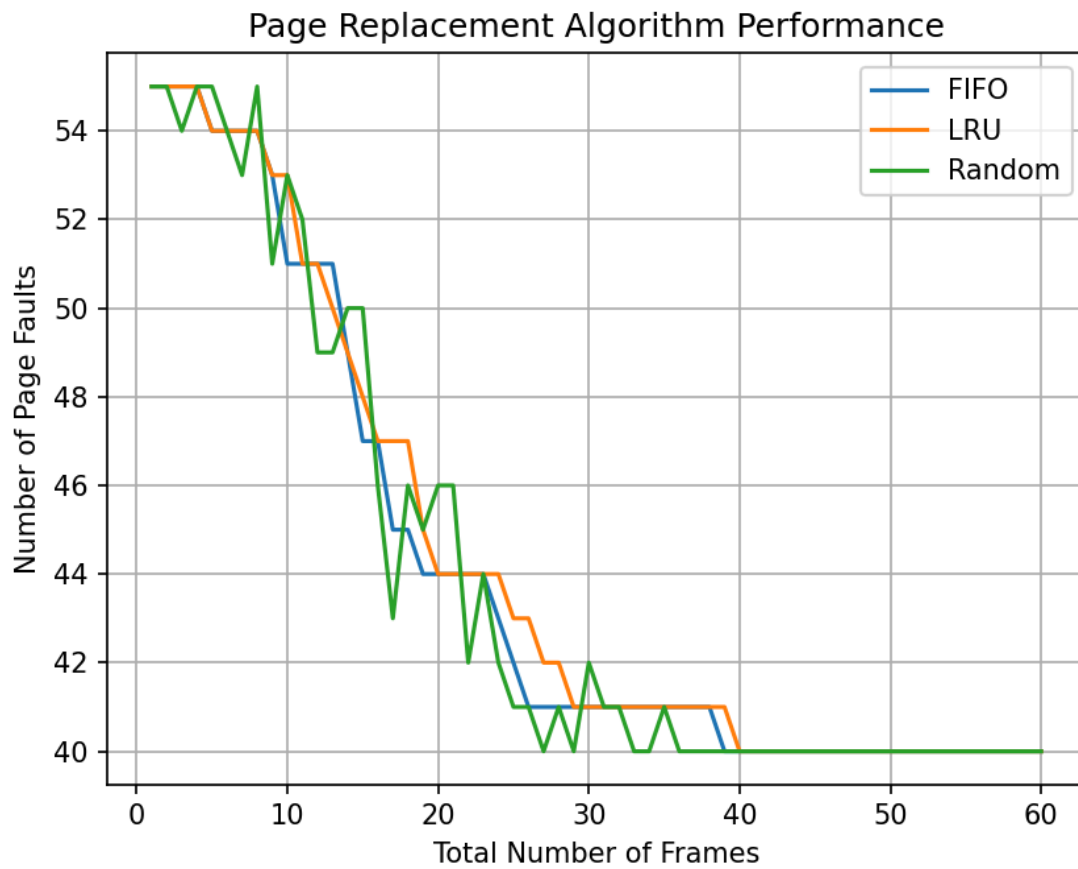
Close



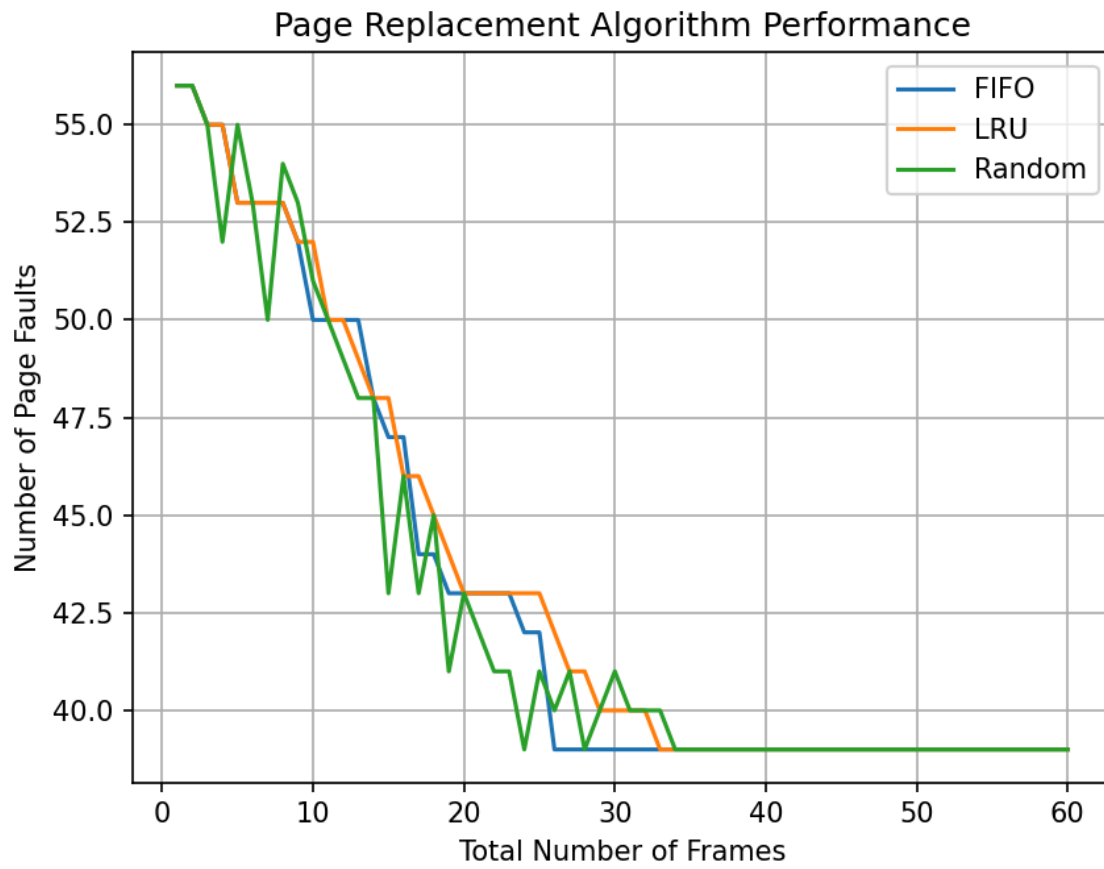
Observation:

- Initially, FIFO and LRU had similar performance, but later, FIFO outperformed LRU with fewer page faults.
- The Random algorithm shows fluctuating performance but performs better than FIFO at higher frame counts.

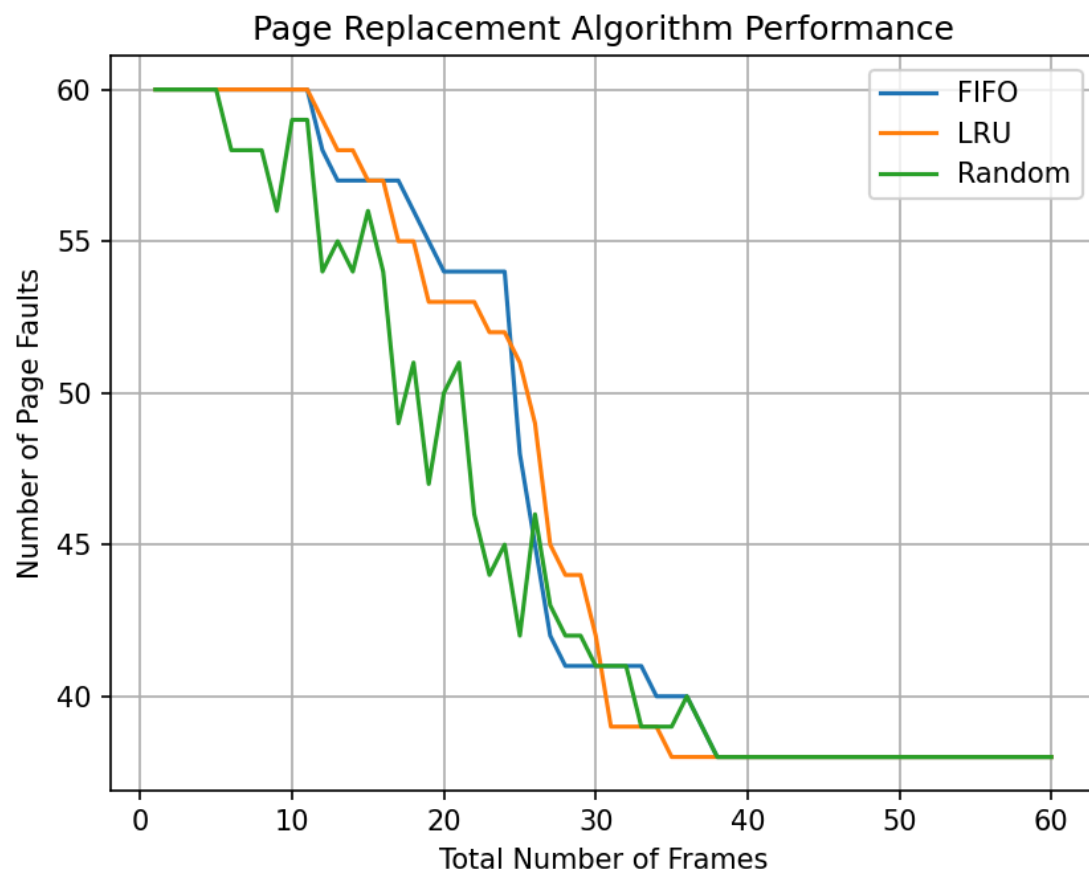
### Case 3: (req3.dat)



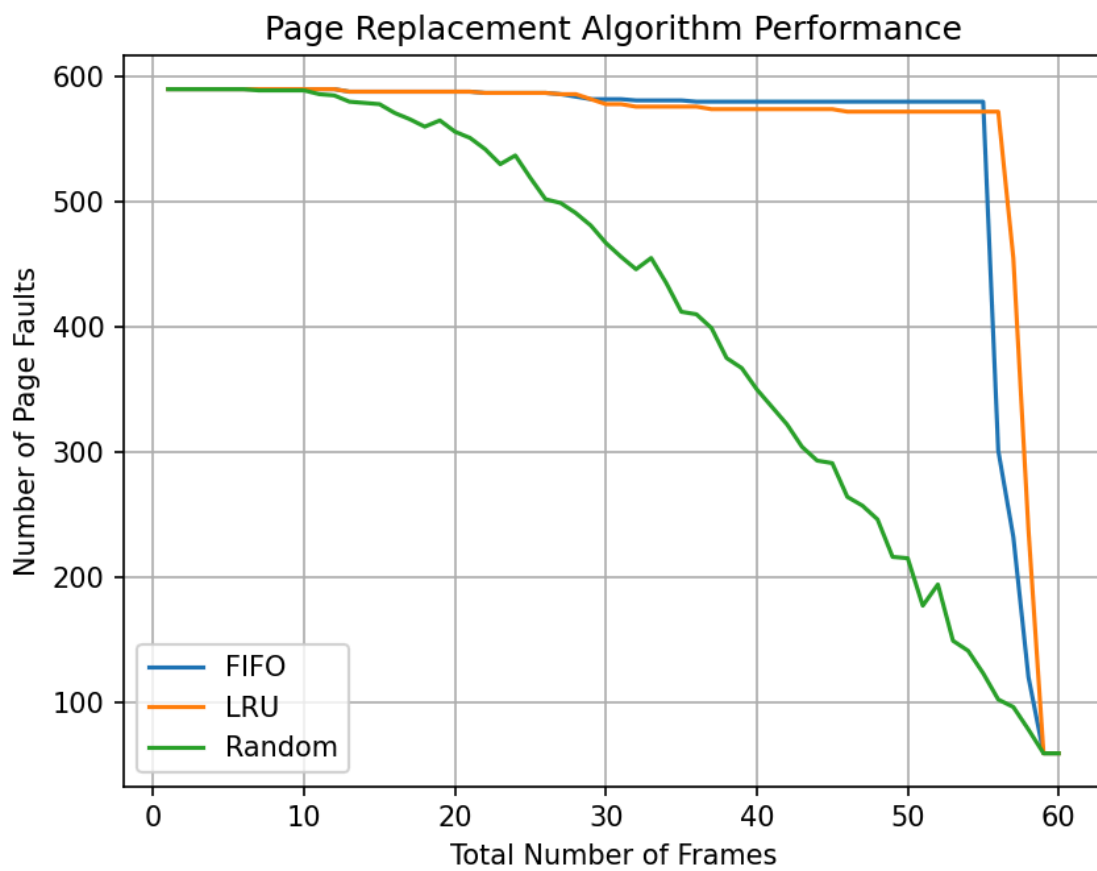
# Case 4: (req4.dat)



Case 5: (req5.dat)



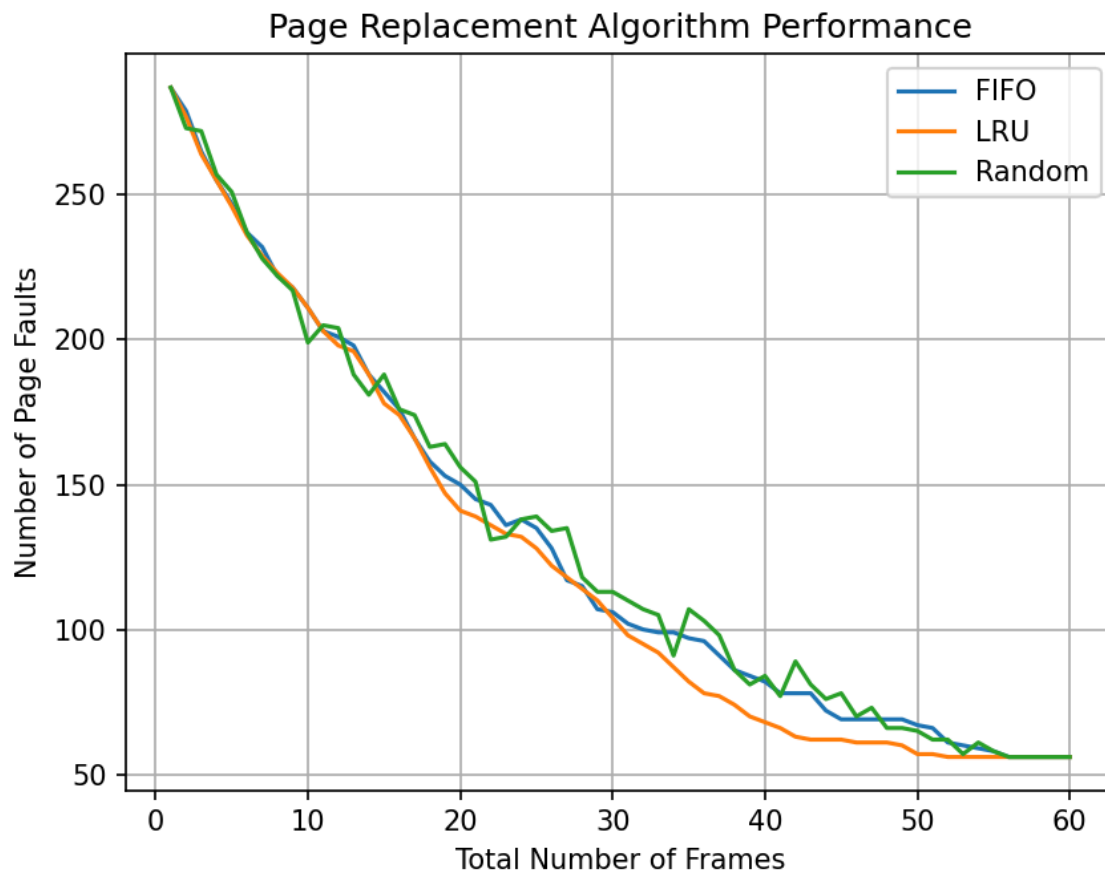
Case 6: (req6.dat)



Observation:

- When 1000 sequence of requests, then random performs the best.
- While LRU and FIFO performs best in range 30 to 60 then dips around 60.

Case 7:



Conclusion:

- We have tried various test cases on all algorithms sometimes, LRU performs better than FIFO and sometimes, FIFO performs better than LRU.