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| **Fr. Conceicao Rodrigues College of Engineering**  **Department of Computer Engineering** | | | |
| **Student’s Roll No** |  | **Students Name** |  |
| **Date of Performance** |  | **SE Computer – Div** | **A / B** |

**Aim:** Study Paging

**Lab Outcome:**

**CSL403.4:** Implement various memory management techniques and evaluate their performances.

**Problem Statements:**

Implement various page replacement policies

**(a)First In First Out (b)Least Recently Used**

1. Find the number of Page hits, Page Miss, Page hit ratio, Page Miss ratio.

2. Compare the results of both algorithms for a page reference string.

**References:**

https://www.youtube.com/watch?v=ET43MRKRuYM&list=PLIY8eNdw5tW-BxRY0yK3fYTYVqytw8qhp&index=4 https://www.youtube.com/watch?v=L8BEoRRUVRE&list=PLIY8eNdw5tW-BxRY0yK3fYTYVqytw8qhp&index=6 https://www.youtube.com/watch?v=LCPFjNxQIVU&list=PLIY8eNdw5tW-BxRY0yK3fYTYVqytw8qhp&index=7

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| **On time Submission(2)** | **Knowledge of Topic(4)** | **Implementation and Demonstraion(4)** | **Total (10)** |
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| **Signature of Faculty** |  | **Date of Submission** |  |

FIFO

#FIFO

queue=[]

replace=0

numberPageSlot=3

referenceString=[3,8,2,3,9,1,6,3,8,9,3,6,2,1,3]

pageMiss=0

pageHit=0

for i in range(len(referenceString)):

    if referenceString[i] not in queue and len(queue)<numberPageSlot:

        pageMiss+=1

        queue.append(referenceString[i])

    elif referenceString[i] in queue:

        pageHit+=1

    elif len(queue)==numberPageSlot and referenceString[i] not in queue:

        pageMiss+=1

        queue[replace]=referenceString[i]

        replace=(replace+1)%numberPageSlot

print(queue)

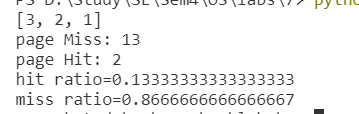
print(f'page Miss: {pageMiss}')

print(f'page Hit: {pageHit}')

print(f'hit ratio={pageHit/(pageHit+pageMiss)}')

print(f'miss ratio={pageMiss/(pageHit+pageMiss)}')

Output:



LRU:

from collections import deque

def lru(page\_list, frame\_count):

    page\_faults = 0

    page\_hits = 0

    frames = deque(maxlen=frame\_count)

    for page in page\_list:

        if page not in frames:

            page\_faults += 1

            if len(frames) == frames.maxlen:

                frames.popleft()

            frames.append(page)

        else:

            frames.remove(page)

            frames.append(page)

            page\_hits += 1

    print(f"Page hits: {page\_hits}, Page misses: {page\_faults}")

    print(f"Page hit ratio: {page\_hits/(page\_hits+page\_faults)}, Page miss ratio: {page\_faults/(page\_hits+page\_faults)}")

    return page\_faults

seq = [7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2]

nof = 4

lru(seq,nof)

Output:

