

### A.Y. 2022-2023

**Subject: Process Organization and Architecture SAP ID: 60004220253 – Devansh Mehta** 

## **Experiment No: 04**

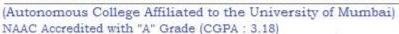
Aim: To study and implement FIFO and LRU Page Replacement policy.

Code:

### **FIFO**

```
from queue import Queue
def pageFaults(incomingStream, n, frames):
  print("Incoming \t pages")
  s = set()
  queue = Queue()
  page_faults = 0
  for i in range(n):
     if len(s) < frames:
       if incomingStream[i] not in s:
          s.add(incomingStream[i])
          page faults += 1
          queue.put(incomingStream[i])
     else:
       if incomingStream[i] not in s:
          val = queue.queue[0]
          queue.get()
          s.remove(val)
          s.add(incomingStream[i])
          queue.put(incomingStream[i])
          page faults += 1
     print(incomingStream[i], end="\t\t")
     for q item in queue.queue:
       print(q item, end="\t")
     print()
  return page_faults
incomingStream = [7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1]
n = len(incomingStream)
frames = 3
page faults = pageFaults(incomingStream, n, frames)
hits = n - page faults
print("\nPage Faults: " + str(page faults))
print("Hit: " + str(hits))
```

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```
PS C:\Users\devan\OneDrive\Desktop\College\Sem 5 Docs\Data Mining>
1/python.exe "c:/Users/devan/OneDrive/Desktop/College/Sem 5 Docs/D
Incoming
                   pages
7
                  7
0
                  7
                           0
1
                  7
                           0
                                    1
2
                  0
                           1
                                    2
0
                           1
                                    2
                  0
3
                           2
                                    3
                  1
0
                  2
                           3
                                    0
                  3
                           0
4
                                    4
2
                  0
                           4
                                    2
3
                 4
                           2
                                    3
                  2
0
                           3
                                    0
3
                  2
                          3
                                    0
2
                  2
                           3
                                    0
1
                  3
                           0
                                    1
Page Faults: 11
Hit: 3
```

### LRU:

```
def pageFaults(pages seq, n, C):
 s = set()
 indexes = \{\}
 faults = 0
 for i in range(n):
  if len(s) < C:
   if pages seq[i] not in s:
     s.add(pages seq[i])
     faults += 1
   indexes[pages\_seq[i]] = i
  else:
   if pages_seq[i] not in s:
     lru = float('inf')
     for p in s:
      if indexes[p] < lru:
       lru = indexes[p]
        v = p
     s.remove(v)
```



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```
s.add(pages seq[i])
     faults += 1
   indexes[pages seq[i]] = i
  print('s = ', s)
 return faults
pages seq = [7,0,1,2,0,3,0,4,2,3,0,3,2,1]
n = len(pages seq)
print('The total number of page faults is: ', pageFaults(pages seq, n, C))
```

```
PS C:\Users\devan\OneDrive\Desktop\College\Sem 5 Docs\Data Mining
1/python.exe "c:/Users/devan/OneDrive/Desktop/College/Sem 5 Docs,
s = \{7\}
s = \{0, 7\}
s = \{0, 1, 7\}
s = \{0, 1, 2\}
s = \{0, 2, 3\}
s = \{0, 2, 3\}
s = \{0, 3, 4\}
s = \{0, 2, 4\}
s = \{2, 4, 3\}
s = \{0, 2, 3\}
s = \{0, 2, 3\}
The total number of page faults is: 10
```