```
anupam@anupam:~$ cc fifo.c -o a
anupam@anupam:~$ ./a
Enter the size of frames allocated for a process : 3
Enter the page numbers required by the process (enter -1 to stop)
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 -1
Enter the corrosponding modify status for each page
Enter the page numbers which are already in memory (enter -1 to stop):
- 1
Enter the page replacement algorithm to be used.
1.FIF0
2.Optimal
3.LRU
4.LFU
5.MFU
6.Second chance: First method
         Second method
7.
         Third method
9.Enhanced Second chance
10.Stop
______
Next page number required = 7
Current page numbers in memory
                                -1 -1 -1
Page fault
 ______
Next page number required = 0
Current page numbers in memory
                            7
                                      - 1
                                          - 1
Page fault
______
Next page number required = 1
Current page numbers in memory
                                          - 1
Page fault
Next page number required = 2
Current page numbers in memory
                                           1
Page fault
 ______
Next page number required = 0
Current page numbers in memory
                                           1
No page fault
```

4 2

3

Next page number required = 0

Current page numbers in memory

Page fault

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Next page number required = 3			
Current page numbers in memory	0	2	3
No page fault			
Next page number required = 2	0	2	2
,	U	2	3
No page fault			
Next page number required = 1			
Current page numbers in memory	0	2	3
Page fault			
Next are control or and a			
Next page number required = 2	•		2
Current page numbers in memory	Θ	1	3
Page fault			
Next page number required = 0			
Current page numbers in memory	0	1	2
No page fault			
Next page number required = 1		_	
	Θ	1	2
No page fault			
Next page number required = 7			
Current page numbers in memory	0	1	2
Page fault			

7

0

- 1

Current page numbers in memory

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Page fault			
Next page number required = 2			
	7	0	1
Page fault	,	U	1
rage rautt			
Next page number required = 0			
Current page numbers in memory	2	0	1
No page fault			
Next page number required = 3			
	2	0	1
Page fault	_		_
Tage Taute			
Next page number required = 0			
Current page numbers in memory	2	0	3
No page fault			
Next page number required = 4			
Current page numbers in memory	2	0	3
Page fault			
Next page number required = 2			_
,	2	4	3
No page fault			

Next page number required = 3			
Current page numbers in memory	2	4	3
No page fault			
Next page number required = 0			
	2	4	3
Page fault			
Next page number required = 3			
Current page numbers in memory	2	0	3
No page fault			
Next page number required = 2			
Current page numbers in memory	2	Θ	3
No page fault			
Next page number required = 1	2		2
, ,	2	0	3
Page fault			
Next page number required = 2			
Current page numbers in memory	2	0	1
No page fault			
Next page number required = 0		 -	
Current page numbers in memory	2	0	1
No page fault		-	

______ Next page number required = 1Current page numbers in memory 1 No page fault _____ -----Next page number required = 7Current page numbers in memory 2 Page fault ______ -----Next page number required = 0Current page numbers in memory 1 No page fault ______ Next page number required = 1 Current page numbers in memory 7 1 No page fault -----No more pages required Current page numbers in memory Total pagefaults = 9Enter the page replacement algorithm to be used. 1.FIF0 2.Optimal 3.LRU 4.LFU 5.MFU 6.Second chance: First method Second method Third method 9.Enhanced Second chance 10.Stop 3 Next page number required = 7Current page numbers in memory -1 -1 - 1

Page fault			
Next page number required = θ			
Current page numbers in memory	7	-1	-1
Page fault			
Next page number required = 1			
Current page numbers in memory	7	0	-1
Page fault			
Next page number required = 2			
Current page numbers in memory	7	0	1
Page fault			
Next page number required = 0			
Current page numbers in memory	2	0	1
No page fault			
Next page number required = 3			
Current page numbers in memory	2	0	1
Page fault			
Next page number required = θ			
Current page numbers in memory	2	0	3
No page fault			

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Page Tault			
Next page number required = 2			
Current page numbers in memory	1	3	2
No page fault			
Next page number required = 0			
Current page numbers in memory	1	3	2
Page fault			
Next page number required = 1			
Current page numbers in memory	1	0	2
No page fault			
Next page number required = 7			
Current page numbers in memory	1	0	2
Page fault			
Next page number required = 0			
Current page numbers in memory	1	0	7
No page fault			
Next page number required = 1			
Current page numbers in memory	1	0	7
No page fault			
No more pages required			

```
7
Current page numbers in memory
                                 1 0
Total pagefaults = 12
Enter the page replacement algorithm to be used.
1.FIF0
2.Optimal
3.LRU
4.LFU
5.MFU
6.Second chance: First method
        Second method
         Third method
8.
9.Enhanced Second chance
10.Stop
4
______
Next page number required = 7
Current page numbers in memory
                             -1 -1 -1
Count for each page used
Page fault
______
Next page number required = 0
Current page numbers in memory
Count for each page used
(7, 1)
Page fault
______
Next page number required = 1
                                7
Current page numbers in memory
                                        - 1
Count for each page used
(7, 1)
         (0, 1)
Page fault
Next page number required = 2
Current page numbers in memory
Count for each page used
         (0, 1)
(7, 1)
                (1, 1)
Page fault
```

least used times array is(indices in frames) : 0

2

```
______
Next page number required = 0
Current page numbers in memory
                    2 0 1
Count for each page used
(7, 1) (0, 1) (1, 1)
                 (2, 1)
No page fault
______
______
Next page number required = 3
                  2 0 1
Current page numbers in memory
Count for each page used
(7, 1)
    (0, 2) (1, 1)
                 (2, 1)
Page fault
______
least used times array is(indices in frames) : 0 2
------
Next page number required = 0
Current page numbers in memory
                  2
Count for each page used
           (1, 1)
                 (2, 1) (3, 1)
(7, 1) (0, 2)
No page fault
______
______
Next page number required = 4
                 2
Current page numbers in memory
Count for each page used
(7, 1)
    (0, 3) (1, 1)
                 (2, 1) (3, 1)
Page fault
______
least used times array is(indices in frames) : 0 2
.....
Next page number required = 2
Current page numbers in memory
Count for each page used
     (0, 3) (1, 1)
                 (2, 1) (3, 1)
(7, 1)
                                (4, 1)
Page fault
```

least used times array is(indices			
Next page number required = 3			
Current page numbers in memory	Δ	0 2	
Count for each page used (7, 1) (0, 3) (1, 1) Page fault			(4, 1)
least used times array is(indices	in frames) :	0	
Next page number required = 0			
Current page numbers in memory	3	0 2	
Count for each page used (7, 1) (0, 3) (1, 1) No page fault 0	(2, 2)	(3, 2)	(4, 1)
Next page number required = 3			
Current page numbers in memory	3	0 2	
Count for each page used (7, 1) (0, 4) (1, 1) No page fault 3	(2, 2)	(3, 2)	(4, 1)
Next page number required = 2			
Current page numbers in memory	3	0 2	
Count for each page used (7, 1) (0, 4) (1, 1) No page fault 2	(2, 2)	(3, 3)	(4, 1)
Next page number required = 1			
Current page numbers in memory	3	0 2	
Count for each page used (7, 1) (0, 4) (1, 1) Page fault	(2, 3)	(3, 3)	(4, 1)

least used times array is(indices					
Next page number required = 2					
Current page numbers in memory	3	0	1		
Count for each page used (7, 1) (0, 4) (1, 2) Page fault	(2, 3)	(3,	3)	(4, 1))
least used times array is(indices					
Next page number required = 0					
Current page numbers in memory	3	0	2		
Count for each page used (7, 1) (0, 4) (1, 2) No page fault 0	(2, 4)	(3,	3)	(4, 1))
Next page number required = 1					
Current page numbers in memory	3	0	2		
Count for each page used (7, 1) (0, 5) (1, 2) Page fault	(2, 4)	(3,	3)	(4, 1))
least used times array is(indices	in frames) :	0			
Next page number required = 7					
Current page numbers in memory	1	0	2		
Count for each page used (7, 1) (0, 5) (1, 3) Page fault	(2, 4)	(3,	3)	(4, 1))
least used times array is(indices	in frames) :	0			

```
Next page number required = 0
Current page numbers in memory
                         7
                                      2
Count for each page used
(7, 2)
      (0, 5)
               (1, 3)
                        (2, 4) (3, 3)
                                         (4, 1)
No page fault
______
Next page number required = 1
Current page numbers in memory
Count for each page used
                         (2, 4) (3, 3)
(7, 2)
        (0, 6)
                 (1, 3)
                                         (4, 1)
Page fault
-----
least used times array is(indices in frames) : 0
No more pages required
Current page numbers in memory
                                  0
                                      2
Total pagefaults = 13
Enter the page replacement algorithm to be used.
1.FIF0
2.Optimal
3.LRU
4.LFU
5.MFU
6.Second chance: First method
        Second method
7.
        Third method
8.
9.Enhanced Second chance
10.Stop
______
Next page number required = 7
Current page numbers in memory
                         -1 -1 -1
Count for each page used
Page fault
.....
Next page number required = 0
Current page numbers in memory
                         7 -1 -1
Count for each page used
(7, 1)
Page fault
```

```
Next page number required = 1
Current page numbers in memory
                      7 0 -1
Count for each page used
(7, 1)
       (0, 1)
Page fault
______
Next page number required = 2
Current page numbers in memory
Count for each page used
(7, 1)
       (0, 1) (1, 1)
Page fault
-----
MAX used times array is(indices in frames) : 0 1 2
______
Next page number required = 0
Current page numbers in memory
                       2 0 1
Count for each page used
            (1, 1)
                    (2, 1)
(7, 1)
      (0, 1)
No page fault
______
Next page number required = 3
Current page numbers in memory
Count for each page used
(7, 1)
       (0, 2) (1, 1)
                    (2, 1)
Page fault
-----
MAX used times array is(indices in frames) : 1
Next page number required = 0
Current page numbers in memory
                      2 3 1
Count for each page used
(7, 1) (0, 2) (1, 1)
                     (2, 1) (3, 1)
Page fault
```

MAX used times array is(indices i			
Next page number required = 4			
Current page numbers in memory	2	3 0	
Count for each page used (7, 1) (0, 3) (1, 1) Page fault	(2, 1)	(3, 1)	
MAX used times array is(indices i	n frames) :	2	
Next page number required = 2			
Current page numbers in memory	2	3 4	
Count for each page used (7, 1) (0, 3) (1, 1) No page fault	(2, 1)	(3, 1)	(4, 1)
Next page number required = 3	2	2 4	
Count for each page used (7, 1) (0, 3) (1, 1) No page fault	_	3 4	(4, 1)
Next page number required = 0			
Current page numbers in memory	2	3 4	
Count for each page used (7, 1) (0, 3) (1, 1) Page fault	(2, 2)	(3, 2)	(4, 1)
MAX used times array is(indices i	n frames) :	0 1	
Next page number required = 3			

current page numbers in memory	U	3 4	
Count for each page used (7, 1) (0, 4) (1, 1) No page fault	(2, 2)	(3, 2)	(4, 1)
Next page number required = 2			
Current page numbers in memory	0	3 4	
Count for each page used (7, 1) (0, 4) (1, 1) Page fault			
MAX used times array is(indices i	n frames) :	0	
Next page number required = 1			
Current page numbers in memory	2	3 4	
Count for each page used (7, 1) (0, 4) (1, 1) Page fault	(2, 3)	(3, 3)	(4, 1)
MAX used times array is(indices i			
Next page number required = 2			
Current page numbers in memory	2	1 4	
Count for each page used $(7, 1)$ $(0, 4)$ $(1, 2)$ No page fault	(2, 3)	(3, 3)	(4, 1)
Next page number required = 0			
Current page numbers in memory	2	1 4	
Count for each page used $(7, 1)$ $(0, 4)$ $(1, 2)$ Page fault	(2, 4)	(3, 3)	(4, 1)

MAX used times array is(indices in frames) : 0

Next page number required = 1 Current page numbers in memory Count for each page used (0, 5) (1, 2)(2, 4) (3, 3) (4, 1)(7, 1)No page fault ______ Next page number required = 7Current page numbers in memory Count for each page used (1, 3)(2, 4) (3, 3) (4, 1)(7, 1)(0, 5)Page fault MAX used times array is(indices in frames) : 0 -----Next page number required = 0Current page numbers in memory Count for each page used (7, 2)(0,5) (1,3) (2,4) (3,3) (4,1)Page fault MAX used times array is(indices in frames) : 1 Next page number required = 1 Current page numbers in memory 7 0 4 Count for each page used (0, 6) (1, 3) (2, 4) (3, 3)(7, 2)(4, 1) Page fault ______ MAX used times array is(indices in frames) : 1 No more pages required Current page numbers in memory 7 1 4 Total pagefaults = 14

Enter the page replacement algorithm to be 1.FIFO 2.Optimal 3.LRU 4.LFU 5.MFU 6.Second chance: First method 7. Second method 8. Third method 9.Enhanced Second chance 10.Stop 6		i.	
Next page number required = 7			
Current page numbers in memory	-1	-1	-1
Use status	0	0	0
Page fault			
Next page number required = 0			
Current page numbers in memory	7	-1	-1
Use status	0	0	0
Page fault			
Next page number required = 1			
Current page numbers in memory	7	0	-1
Use status	0	Θ	0
Page fault			
Next page number required = 2			
Current page numbers in memory	7	0	1
Use status	0	0	0
Page fault			
Next page number required = 0			
Current page numbers in memory	2	0	1
Use status	0	0	0

No page fault				
Next page number required = 3				
Current page numbers in memory	2	0	1	
Jse status	0	1	0	
Page fault				
Next page number required = 0				
Current page numbers in memory	2	0	3	
Jse status	0	0	0	
No page fault				
Next page number required = 4				
Current page numbers in memory	2	0	3	
Jse status	Θ	1	0	
Page fault				
Next page number required = 2				
Current page numbers in memory	4	0	3	
Jse status	0	1	0	
Page fault				
Next page number required = 3				
Current page numbers in memory	4	0	2	
Jse status	0	0	0	
Page fault				

Page fault

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Next page number required = 1			
Current page numbers in memory	0	1	2
Use status	0	0	0
No page fault			
Next page number required = 7			
Current page numbers in memory	Θ	1	2
Use status	0	1	0
Page fault			
Next page number required = 0			
Current page numbers in memory	0	1	7
Use status	0	0	0
No page fault			
Next page number required = 1			
Current page numbers in memory	Θ	1	7
Use status	1	0	0
No page fault			
No more pages required			
Current page numbers in memory	Θ	1	7
Use status	1	1	0
Total pagefaults = 11			

Enter the page replacement algorithm to be used.

^{1.}FIF0

^{2.}Optimal

^{3.}LRU

^{4.}LFU

^{5.}MFU

^{6.}Second chance: First method

7. Second method 8. Third method 9.Enhanced Second chance 10.Stop 7					
Next page number required = 7					
Current page numbers in memory	-1	- 1	-1		
Use status	0	0	0		
Page fault					
Next page number required = 0					
Current page numbers in memory	7	-1	-1		
Use status	0	0			
Page fault					
Next page number required = 1					
Current page numbers in memory	7	0	-1		
Use status	0	0	0		
Page fault					
Next page number required = 2					
Current page numbers in memory	7	0	1		
Use status	0	0	0		
Page fault					
Next page number required = 0					
Current page numbers in memory	2	0	1		
Use status	0	Θ	Θ		
No page fault					

Use status

No page fault

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File: Untitled Document 1

No page fault			
Next page number required = 0			
Current page numbers in memory	1	2	3
Use status	0	1	0
Page fault			
Next page number required = 1			
Current page numbers in memory	1	2	0
Use status	0	1	0
No page fault			
Next page number required = 7			
Current page numbers in memory	1	2	0
Use status	1	1	0
Page fault			
Next page number required = 0			
Current page numbers in memory	1	2	7
Use status	0	0	0
Page fault			
Next page number required = 1			

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Next page number required = 2

Current page numbers in memory	7	0	1
Use status	1	1	1
Page fault			
Next page number required = 0			
Current page numbers in memory	2	0	1
Use status	1	0	0
No page fault			
Next page number required = 3			
Current page numbers in memory	2	0	1
Use status	1		
Page fault			
Next page number required = 0	_	_	
Current page numbers in memory	_	0	_
Use status	1	0	1
No page fault			
Next page number required = 4			
Current page numbers in memory	2	0	3
Use status	1	1	1
Page fault			
Next page number required = 2			
Current page numbers in memory	4	0	3
Use status	1	0	0
Page fault			

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File: Untitled Document 1

Next page number required = 2

Page fault

No more pages required					
Current page numbers in memory	Θ	7	1		
Use status	1	1	1		
Total pagefaults = 14					
Enter the page replacement algorithm to 1.FIFO 2.Optimal 3.LRU 4.LFU 5.MFU 6.Second chance: First method 7. Second method 8. Third method 9.Enhanced Second chance 10.Stop 9					
Current page numbers in memory	-1	-1	-1		
Use status	0	0			
Modify status	0	0	0		
Page fault	Ū	U	O		
Tage Tage					
Next page number required					
Current page numbers in memory	7	-1	-1		
Use status	1	0	0		
Modify status	Θ	0	0		
Page fault					
Next page number required					
Current page numbers in memory	7	0	-1		
Use status	1	1	0		
Modify status	0	1	0		
Page fault					

Next page number required = 2

File: Untitled Document 1

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Next page number required = 2			
Current page numbers in memory	4	0	3
Use status	1	0	0
Modify status	0	0	1
Page fault			
Next page number required = 3			
Current page numbers in memory	4	2	3
Use status		1	
Modify status	0	0	1
No page fault	O	U	1
No page rautt			
Next page number required = θ			
Current page numbers in memory	4	2	3
Use status	1	1	1
Modify status	0	0	0
Page fault			
Next page number required = 3			
Current page numbers in memory	4	2	0
Use status	Θ	Θ	1
Modify status	Θ	Θ	0
Page fault			
Next page number required = 2			
Current page numbers in memory	3	2	0
Use status	1	Θ	1
Modify status	0	0	0
No page fault			

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Page fault						
						-
						-
Next page number requi	ired = 0)				
Current page numbers	in memor	У	0	7	1	
Use status			0	1	0	
Modify status			0	0	1	
No page fault						
						_
						_
Next page number requi	ired = 1					
Current page numbers	in memor	ту	0	7	1	
Use status			1	1	0	
Modify status			0	0	1	
No page fault						
						-
No more pages required Current page numbers i		27	0	7	1	
Use status	LII IIIEIIIOI	У	1			
Modify status			0	0	0	
Total pagefaults = 12			Ū	Ū	Ü	
Total pagerautts = 12						
Enter the page replacement algorithm to be used. 1.FIFO 2.Optimal 3.LRU 4.LFU 5.MFU 6.Second chance: First method 7. Second method 8. Third method 9.Enhanced Second chance 10.Stop 10						
Summary : Total page † FIFO	:	15				
Optimal	:	9				
LRU	:	12				
LFU	:	13				
MFU	:	14				
Second chance: first	:	11				
Second chance: first	:	12				

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Second chance: third : 14

Enhanced second chance: 12

anupam@anupam:~\$