

ASHNA SHAIKH

[DT-22019]

OPERATING SYSTEM LAB

[CT-353]

LAB 012

CODE:

FIFO:

```

1  #include <stdio.h>
2  #include <conio.h>
3
4  int main()
5  {
6      int i, j, k, f, pf = 0, count = 0, rs[25], m[10], n;
7      // clrscr();
8
9      printf("\n Enter the length of reference string -- ");
10     scanf("%d", &n);
11
12     printf("\n Enter the reference string -- ");
13     for (i = 0; i < n; i++)
14         scanf("%d", &rs[i]);
15
16     printf("\n Enter no. of frames -- ");
17     scanf("%d", &f);
18
19     for (i = 0; i < f; i++)
20         m[i] = -1;
21
22     printf("\n The Page Replacement Process is -- \n");
23     for (i = 0; i < n; i++)
24     {
25         for (k = 0; k < f; k++)
26         {
27             if (m[k] == rs[i])
28                 break;
29         }
30
31         if (k == f)
32         {
33             m[count++] = rs[i];
34             pf++;
35         }
36
37         for (j = 0; j < f; j++)
38             printf("\t%d", m[j]);
39
40         if (k == f)
41             printf("\tDPF No. %d", pf);
42
43         printf("\n");
44
45         if (count == f)
46             count = 0;
47     }
48
49     printf("\n The number of Page Faults using FIFO are %d", pf);
50     getch();

```

Activate Windows
Go to Settings to activate Windows.

```
C:\Users\marya\Downloads\O x + v

Enter the length of reference string -- 12
Enter the reference string -- 1 2 3 4 5 6 7 8 9 1 2 3
Enter no. of frames -- 3

The Page Replacement Process is --
  1      -1      -1      PF No. 1
  1       2      -1      PF No. 2
  1       2       3      PF No. 3
  4       2       3      PF No. 4
  4       5       3      PF No. 5
  4       5       6      PF No. 6
  7       5       6      PF No. 7
  7       8       6      PF No. 8
  7       8       9      PF No. 9
  1       8       9      PF No. 10
  1       2       9      PF No. 11
  1       2       3      PF No. 12

The number of Page Faults using FIFO are 12
```

LRU:

```

1  #include <stdio.h>
2  #include <conio.h>
3
4  int main()
5  {
6      int i, j, k, min, rs[25], m[10], count[10], flag[25], n, f, pf = 0, next = 1;
7      // clrscr();
8
9      printf("Enter the length of reference string -- ");
10     scanf("%d", &n);
11
12     printf("Enter the reference string -- ");
13     for (i = 0; i < n; i++)
14     {
15         scanf("%d", &rs[i]);
16         flag[i] = 0;
17     }
18
19     printf("Enter the number of frames -- ");
20     scanf("%d", &f);
21
22     for (i = 0; i < f; i++)
23     {
24         count[i] = 0;
25         m[i] = -1;
26     }
27
28     printf("\nThe Page Replacement process is -- \n");
29     for (i = 0; i < n; i++)
30     {
31         for (j = 0; j < f; j++)
32         {
33             if (m[j] == rs[i])
34             {
35                 flag[i] = 1;
36                 count[j] = next;
37                 next++;
38                 break;
39             }
40         }
41
42         if (flag[i] == 0)
43         {
44             if (i < f)
45             {
46                 m[i] = rs[i];
47                 count[i] = next;
48                 next++;
49             }
50             else

```

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Go to Se

```

50     else
51     {
52         min = 0;
53         for (j = 1; j < f; j++)
54         {
55             if (count[min] > count[j])
56                 min = j;
57         }
58         m[min] = rs[i];
59         count[min] = next;
60         next++;
61     }
62     pf++;
63 }
64
65 for (j = 0; j < f; j++)
66     printf("%d\t", m[j]);
67
68 if (flag[i] == 0)
69     printf("PF No. -- %d", pf);
70
71 printf("\n");
72 }
73
74 printf("\nThe number of page faults using LRU are %d", pf);
75 getch();
76 return 0;
77 }

```

```

Enter the length of reference string -- 12
Enter the reference string -- 1 2 3 4 1 2 3 4 5 6 7 12
Enter the number of frames -- 3

```

The Page Replacement process is --

1	-1	-1	PF No. -- 1
1	2	-1	PF No. -- 2
1	2	3	PF No. -- 3
4	2	3	PF No. -- 4
4	1	3	PF No. -- 5
4	1	2	PF No. -- 6
3	1	2	PF No. -- 7
3	4	2	PF No. -- 8
3	4	5	PF No. -- 9
6	4	5	PF No. -- 10
6	7	5	PF No. -- 11
6	7	12	PF No. -- 12

The number of page faults using LRU are 12|

OPTIMAL:

```

1  #include <stdio.h>
2
3  int main()
4  {
5      int no_of_frames, no_of_pages, frames[10], pages[30], temp[10];
6      int flag1, flag2, flag3, i, j, k, pos, max, faults = 0;
7
8      printf("Enter number of frames: ");
9      scanf("%d", &no_of_frames);
10
11     printf("Enter number of pages: ");
12     scanf("%d", &no_of_pages);
13
14     printf("Enter page reference string: ");
15     for (i = 0; i < no_of_pages; ++i)
16     {
17         scanf("%d", &pages[i]);
18     }
19
20     for (i = 0; i < no_of_frames; ++i)
21     {
22         frames[i] = -1;
23     }
24
25     for (i = 0; i < no_of_pages; ++i)
26     {
27         flag1 = flag2 = 0;
28
29         for (j = 0; j < no_of_frames; ++j)
30         {
31             if (frames[j] == pages[i])
32             {
33                 flag1 = flag2 = 1;
34                 break;
35             }
36         }
37
38         if (flag1 == 0)
39         {
40             for (j = 0; j < no_of_frames; ++j)
41             {
42                 if (frames[j] == -1)
43                 {
44                     faults++;
45                     frames[j] = pages[i];
46                     flag2 = 1;
47                     break;
48                 }
49             }
50         }

```

```

52     if (flag2 == 0)
53     {
54         flag3 = 0;
55
56         for (j = 0; j < no_of_frames; ++j)
57         {
58             temp[j] = -1;
59
60             for (k = i + 1; k < no_of_pages; ++k)
61             {
62                 if (frames[j] == pages[k])
63                 {
64                     temp[j] = k;
65                     break;
66                 }
67             }
68         }
69
70         for (j = 0; j < no_of_frames; ++j)
71         {
72             if (temp[j] == -1)
73             {
74                 pos = j;
75                 flag3 = 1;
76                 break;
77             }
78         }
79
80         if (flag3 == 0)
81         {
82             max = temp[0];
83             pos = 0;
84
85             for (j = 1; j < no_of_frames; ++j)
86             {
87                 if (temp[j] > max)
88                 {
89                     max = temp[j];
90                     pos = j;
91                 }
92             }
93         }
94
95         frames[pos] = pages[i];
96         faults++;
97     }

```

```

95         frames[pos] = pages[i];
96         faults++;
97     }
98
99     printf("\n");
100     for (j = 0; j < no_of_frames; ++j)
101     {
102         printf("%d\t", frames[j]);
103     }
104 }
105
106 printf("\n\nTotal Page Faults = %d", faults);
107
108 return 0;
109 }
110

```

```

C:\Users\marya\Downloads\C++>
Enter number of frames: 10
Enter number of pages: 1 2 3 4 5 6 7 8 9 10
Enter page reference string:
2      -1      -1      -1      -1      -1      -1      -1      -1      -1

Total Page Faults = 1
-----
Process exited after 12.56 seconds with return value 0
Press any key to continue . . .

```