

```
1 #include<bits/stdc++.h>
2 using namespace std;
3 int present(int table_frame[], int nf, int page)
4 {
5     for(int i=0; i<nf; i++)
6         if(page == table_frame[i])
7             return 1;
8     return 0;
9 }
10
11 void printtable(int table_frame[], int nf)
12 {
13     for(int i=0; i<nf; i++)
14     {
15         if(table_frame[i] == -1)
16             printf("-- ");
17         else
18             printf("%2d ", table_frame[i]);
19     }
20     printf("||");
21 }
22
23
24 int findpos(int table_frame[], int nf, int pages[], int curr, int np)
25 {
26     for(int i=0; i<nf; i++)
27         if(table_frame[i] == -1)
28             return i;
29
30     int pos[nf] = {0};
31     for(int i=0; i<nf; i++)
32     {
33         pos[i] = -1e9;
34         for(int j=curr-1; j>=0; j--)
35             if(pages[j] == table_frame[i])
36             {
37                 pos[i] = j;
38                 break;
39             }
40     }
41
42     int min1 = 1000000, retPos = -1;
43     for(int i=0; i<nf; i++)
44         if(min1 > pos[i])
45         {
46             min1 = pos[i];
47             retPos = i;
48         }
49
50     return retPos;
51 }
52
53 int main()
54 {
55     //nf-number of frames
56     int n,nf,i,pos=0;
57
58     printf("Enter number of frames\n");
59     cin>>nf;
```

```
60     int table_frame[nf];
61     for(i=0;i<nf;i++)
62     {
63         table_frame[i]=-1;
64     }
65
66     printf("Enter total number of page requests\n");
67     cin>>n;
68     int pages[n];
69     printf("Enter pages\n");
70     for(i=0;i<n;i++)
71     {
72         cin>>pages[i];
73     }
74
75     int count1=0;
76     printf("Position of frame table after each request\n\n");
77     for(i=0;i<n;i++)
78     {
79         printf("Page table after request from %2d || ",pages[i]);
80         if(!present(table_frame,nf,pages[i]))
81         {
82             int pos = findpos(table_frame,nf,pages,i,n);
83             table_frame[pos]=pages[i];
84
85             printtable(table_frame,nf);
86             printf("page fault\n");
87             count1++;
88             continue;
89         }
90         printtable(table_frame,nf);
91         printf("\n");
92     }
93
94     float average=(float)count1/(float)n;
95     printf("\nNumber of page faults : %d\n\n", count1);
96     printf("\nAverage page faults : %0.4f\n\n", average);
97
98 }
```

```
~/De/4th-semester/o/p13 on main !3 ?2
cd "/home/anzal/Desktop/4th-semester/os lab/p14/" && g++ lru.cpp -o lru && "/home/anzal/Desktop/4th-semester/os lab/p14/"lru
Enter number of frames
4
Enter total number of page requests
13
Enter pages
7 0 1 2 0 3 0 4 2 3 0 3 2
Position of frame table after each request

Page table after request from 7 || 7 -- -- -- ||page fault
Page table after request from 0 || 7 0 -- -- ||page fault
Page table after request from 1 || 7 0 1 -- ||page fault
Page table after request from 2 || 7 0 1 2 ||page fault
Page table after request from 0 || 7 0 1 2 ||
Page table after request from 3 || 3 0 1 2 ||page fault
Page table after request from 0 || 3 0 1 2 ||
Page table after request from 4 || 3 0 4 2 ||page fault
Page table after request from 2 || 3 0 4 2 ||
Page table after request from 3 || 3 0 4 2 ||
Page table after request from 0 || 3 0 4 2 ||
Page table after request from 3 || 3 0 4 2 ||
Page table after request from 2 || 3 0 4 2 ||

Number of page faults : 6

Average page faults : 0.4615

~/Desktop/4th-semester/os lab/p14 on main !3 ?3 took 25s at 10:17:05 am
```