Ex. No.: 11b)
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LRU

Aim:

To write a c program to implement LRU page replacement algorithm.

Algorithm:

1: Start the process
2: Declare the size
3: Get the number of pages to be inserted
4: Get the value
5: Declare counter and stack
6: Select the least recently used page by counter value
7: Stack them according the selection.
8: Display the values
9: Stop the process

Program Code:

```
#include <stdio.h>
int findLRU(int t[], int n){
    int i, min=t[0], pos=0;
    for(i=1;i<n;i++){
        if(t[i]<min){
            min=t[i];
            pos=i;
        }
    }
    return pos;
}
int main(){
    int f,n,i,j,pos,pf=0,c=0,found;
    printf("Enter no of frames");
    scanf("%d",&f);
```

```
printf ("Enter no of pages ");
scanf ("%d", &n);
int p[n], fr[f], t[f];
printf ("Enter the page reference string: \n");
for(int i = 0; i<n; i++) {
    scanf ("%d", &p[i]);
}
for(i = 0; i<f; i++) {
    fr[i] = -1;
}
for (i=0; i<n; i++) {
    found = 0;
    for (j=0; j<f; j++) {
        if (fr[i] = p[i]) {
            c++;
            t[j] = c;
            found = 1;
            break;
        }}
    if (!found) {
        for (j=0; j<f; j++) {
            if (fr[j] == -1)
            { c++;
              pf++;
              fr[j] = p[i];
              t[j] = c;
              found = 1;
              break;
}}}}
```

```
if (!found) {
    pos = findLRU (t, f);
    c++;
    pf++;
    fr[pos] = p[i];
      f[pos] = c;

  }
  for (j = 0; j<f; j++) {
     printf ("%d ", fr[j]);
  }
  printf ("\n");
}
printf ("\n Total page faults = %d\n", pf);
}
```

Enter number of frames : 3
Enter number of pages : 12
Enter the page reference string : 1 2 3 4 1 2 5 1 2 3 4 5

Frame after page 1 : 1 - -
Frame after page 2 : 1 2 -
Frame after page 3 : 1 2 3
Frame after page 4 : 2 3 4
Frame after page 1 : 3 4 1
Frame after page 2 : 4 1 2
Frame after page 5 : 1 2 5
Frame after page 1 : 2 5 1
Frame after page 2 : 5 1 2
Frame after page 3 : 1 2 3
Frame after page 4 : 2 3 4
Frame after page 5 : 3 4 5

Total page faults : 10

Sample Output :

```
Enter number of frames: 3
Enter number of pages: 6
Enter reference string: 5 7 5 6 7 3
5 -1 -1
5 7 -1
5 7 -1
5 7 6
5 7 6
3 7 6
Total Page Faults = 4
```

Result:

Thus the C program to implement LRU has been executed successfully.