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 time[], int n){
    int i, min = time[0], pos=0;
    for (i=1; i<n; i++){
        if (time[i] < min){
            min = time[i];
            pos = i;
        }
    }
    return pos;
}
int main(){
    int frame[10], pages[30], time[10], counter=0,
    faults=0;
    int n, f, i, j, flag1, flag2, pos;
    printf("Enter number of frames: ");
    scanf("%d", &n);
    printf("Enter reference string:\n");
```

```
for(i=0; i<n; i++){
        scanf("%d", &pages[i]);
}
for (i=0; i<f; i++){
        frames[i] = -1;
        time[i] = 0;
}.
printf("Page Replacement Process :\n");
for(i=0; i<n; i++){
    flag1 = flag2 = 0;
    for(j=0; j<f; j++){
        if(frames[j] == pages[i]){
            if(frames[j] == pages[i]){
                counter++;
                time[j] = counter;
                flag1 = flag2 = 1;
                break;
            }
        }.
        if(flag == 0){
            for(j=0; j<f; j++){
                if(frames[j] == -1){
                    counter++;
                    faults++;
                    frames[j] = pages[i];
                    time[j] = counter;
                    flag2 = 1;
                    break;
                }
            }
        }.
        if(flag2 == 0){
            pos = findLRU(time, f);
            counter++;
            faults++;
```

```
            frames[pos] = pages[i];
            time[pos] = counter;
        }
        for(j=0; j<f; j++) {
            if(frames[j] != -1)
                printf("%d ", frames[j]);
            else
                printf("- ");
        }
        printf("\n");
    }
    printf("\nTotal page faults = %d\n", faults);
    return 0;
}
```

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:

The LRU page replacement algorithm has been successfully implemented