

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 frames, pages, i, j, counter = 0, flag1, flag2, Page-faults = 0;
    printf("Enter number of frames: ");
    scanf("%d", &frames);
    printf("Enter number of pages: ");
    scanf("%d", &pages);
    int incoming [pages], temp [frames], time [frames];
```

```

printf("Enter Page reference string: ");
for (i = 0; i < Pages; i++)
    scanf("%d", &incoming[i]);
for (i = 0; i < frames; i++) {
    temp[i] = -1;
    time[i] = 0;
}
printf("\n Page 1t Frame 1 1t Frame 2 1t Frame 3 1t Page Faults\n");
for (i = 0; i < Pages; i++) {
    flag1 = flag2 = 0;
    for (j = 0; j < frames; j++) {
        if (temp[j] == incoming[i]) {
            counter++;
            time[j] = counter;
            flag1 = flag2 = 1;
            break;
        }
    }
    if (flag1 == 0) {
        for (j = 0; j < frames; j++) {
            if (temp[j] == -1) {
                counter++;
                Page-faults++;
                temp[j] = incoming[i];
                time[j] = counter;
                flag2 = 1;
                break;
            }
        }
        if (flag2 == 0) {
            int pos = findLRU(time, frames);
            counter++;

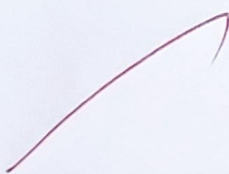
```



```

    page-faults++;
    temp[pos] = incoming[i];
    time[pos] = counter;
}
printf("%d\t", incoming[i]);
for (j=0; j < frames; j++) {
    if (temp[j] != -1)
        printf("%d\t", temp[j]);
    else
        printf("-\t");
}
if (flag == 0) {
    printf("1\n");
} else {
    printf("0\n");
}
printf("Total Page Faults: %d\n", page-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

Enter no. of frames : 4

Enter no. of pages : 8

Enter Page reference string :

4

1

6

3

1

5

6

Page	Frame 1	Frame 2	Frame 3	Page	Faults
1	1	-	-	-	1
4	1	4	-	-	1
1	1	4	-	-	0
6	1	4	6	-	1
3	1	4	6	3	1
1	1	4	6	3	0
5	1	5	6	3	1
6	1	5	6	3	0

Total Page Fault : 5

Result:

Thus the program to find out the number of page faults that occur using Least Recently Used (LRU) Page replacement technique has been executed successfully.

SLK