

OS LAB MANUAL (CS23431)

Roll No:230701246

EX.NO:11(B)

LRU

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

Program:

```
#include <stdio.h>

int findLRU(int time[], int n) {
    int i, minimum = time[0], pos = 0;
    for (i = 1; i < n; ++i) {
        if (time[i] < minimum) {
            minimum = time[i];
            pos = i;
        }
    }
    return pos;
}

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

```

for (i = 0; i < no_of_frames; ++i) {
    frames[i] = -1;
}
for (i = 0; i < no_of_pages; ++i) {
    flag1 = flag2 = 0;
    for (j = 0; j < no_of_frames; ++j) {
        if (frames[j] == pages[i]) {
            counter++;
            time[j] = counter;
            flag1 = flag2 = 1;
            break;
        }
    }
    if (flag1 == 0) {
        for (j = 0; j < no_of_frames; ++j) {
            if (frames[j] == -1) {
                counter++;
                faults++;
                frames[j] = pages[i];
                time[j] = counter;
                flag2 = 1;
                break;
            }
        }
    }
    if (flag2 == 0) {
        pos = findLRU(time, no_of_frames);
        counter++;
        faults++;
        frames[pos] = pages[i];
        time[pos] = counter;
    }
}

```

```

    }

    for (j = 0; j < no_of_frames; ++j) {
        if (frames[j] != -1)
            printf("%d ", frames[j]);

        else
            printf("-1 ");
    }

    printf("\n");
}

printf("Total Page Faults = %d\n", faults);

return 0;
}

```

Input:

```

praveen@LAPTOP-Q0D806DB:~$ vi lru.c
praveen@LAPTOP-Q0D806DB:~$ gcc lru.c
praveen@LAPTOP-Q0D806DB:~$ ./a.out
Enter number of frames: 4
Enter number of pages: 3
Enter reference string: 5

```

Output:

```

praveen@LAPTOP-Q0D806DB:~$ vi lru.c
praveen@LAPTOP-Q0D806DB:~$ gcc lru.c
praveen@LAPTOP-Q0D806DB:~$ ./a.out
Enter number of frames: 4
Enter number of pages: 3
Enter reference string: 5
1
8
5 -1 -1 -1
5 1 -1 -1
5 1 8 -1
Total Page Faults = 3

```