OS LAB MANUAL (CS23431)

Roll No:230701234

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:

```
pranav@Pranav:~$ vi elevenb.c
pranav@Pranav:~$ gcc elevenb.c
pranav@Pranav:~$ ./a.out
Enter number of frames: 4
Enter number of pages: 3
Enter reference string: 5
```

Output:

```
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
```