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EX.NO:11(B)

# LRU

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

Program:

```c
#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]);
   }
```

```c
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;
```

```c
        }
        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:

```
Enter number of frames: 3
Enter number of pages: 12
Enter reference string: 1 2 3 4 5 6 7 8 9 2 3 4
```

Output:

```
1 -1 -1
1 2 -1
1 2 3
4 2 3
4 5 3
4 5 6
7 5 6
7 8 6
7 8 9
2 8 9
2 3 9
2 3 4
Total Page Faults = 12
```