

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 to the selection.
- 8: Display the values
- 9: Stop the process

Program Code:

```
#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 frames[10], pages[30], time[10], counter = 0, faults = 0;
    int n, f, i, j, flag1, flag2, pos;

    printf("Enter number of frames: ");
    scanf("%d", &f);

    printf("Enter number of pages: ");
    scanf("%d", &n);

    printf("Enter reference string: ");
    for (i = 0; i < n; ++i) {
        scanf("%d", &pages[i]);
```

```

}

for (i = 0; i < f; ++i) {
    frames[i] = -1;
    time[i] = 0;
}

printf("\n");

for (i = 0; i < n; ++i) {
    flag1 = flag2 = 0;

    for (j = 0; j < f; ++j) {
        if (frames[j] == pages[i]) {
            counter++;
            time[j] = counter;
            flag1 = flag2 = 1;
            break;
        }
    }

    if (flag1 == 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("-1 ");
    }
}

```

```
    }  
    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:

Thus the algorithm is executed successfully.