

Ex. No.: 11b)

Date: 18/4/25

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 main
```

```
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, pages, i, j, k, pageFaults = 0, pos, found,  
    time[10], counter = 0;
```

```
    int frame[10], page[30];
```

```
printf("Enter number of frames:");
```

```
scanf("%d", &frames);
```

```
printf("Enter number of pages:");
```

```
scanf("%d", &pages);
```

```
printf("Enter reference string:");
```

```
for(i=0; i<pages; i++){
```

```
    scanf("%d", &page[i]);
```

```
}
```

```
for(i=0; i<frames; i++){
```

```
    frame[i] = -1;
```

```
}
```

```
for(k=0; k<pages; k++){
```

```
    found = 0;
```

```
    for(j=0; j<frames; j++){
```

```
        if(frame[j] == page[k]){
```

```
            counter++;
```

```
            time[j] = counter;
```

```
            found = 1;
```

```
            break;
```

```
        }
```

```
    }
```

```
    if(!found){
```

```
        if(k<frames){
```

```
            frame[k] = page[k];
```

```
            counter++;
```

```
            time[k] = counter;
```

```
        } else {
```

```
            pos = findLRU(time, frames);
```

```
frame[pos] = page[i];
```

```
counter++;
```

```
time[pos] = counter;
```

```
}
```

```
PageFaults++;
```

```
}
```

```
for (k=0; k < frames; k++){
```

```
    printf("%d", frame[k]);
```

```
}
```

```
    printf("\n");
```

```
}
```

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

```
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~~

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:

Hence ~~the~~ LRU program using C has been
executed successfully.

S. K.