#include <stdio.h>

#define MAX 3

typedef struct queue {

int aiframe[MAX];

int last\_used[MAX];

} queue;

void fnLRU(int[], int);

int main() {

int size;

printf("\*\*\*\*\*\*\* LRU Page Replacement Algorithm \*\*\*\*\*\*\*\n");

printf("Enter the size: ");

scanf("%d", &size);

int arr[size];

printf("Enter the elements: ");

for (int i = 0; i < size; i++)

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

fnLRU(arr, size);

return 0;

}

void fnLRU(int arr[], int size) {

int pg = 0;

queue q;

for (int i = 0; i < MAX; i++) {

q.aiframe[i] = -1;

q.last\_used[i] = -1;

}

int time = 0;

for (int i = 0; i < size; i++) {

int flag = 0;

for (int j = 0; j < MAX; j++) {

if (q.aiframe[j] == arr[i]) {

flag = 1;

q.last\_used[j] = time++;

break;

}

}

if (flag == 0) {

int lru\_index = 0;

for (int j = 1; j < MAX; j++) {

if (q.last\_used[j] < q.last\_used[lru\_index]) {

lru\_index = j;

}

}

q.aiframe[lru\_index] = arr[i];

q.last\_used[lru\_index] = time++;

pg++;

}

printf("Frame: ");

for (int j = 0; j < MAX; j++) {

if (q.aiframe[j] != -1)

printf("%d ", q.aiframe[j]);

else

printf("- ");

}

printf("\n");

}

printf("Total Number of Page faults (LRU): %d\n", pg);

printf("Page Fault Frequency (LRU): %.2f%%\n", (float)pg / size \* 100);

printf("Hit Frequency (LRU): %.2f%%\n", 100 - (float)pg / size \* 100);

}

#output

\*\*\*\*\*\*\* LRU Page Replacement Algorithm \*\*\*\*\*\*\*

Enter the size: 8

Enter the elements: 0 1 2 3 0 1 4 0

Frame: 0 - -

Frame: 0 1 -

Frame: 0 1 2

Frame: 3 1 2

Frame: 3 0 2

Frame: 3 0 1

Frame: 4 0 1

Frame: 4 0 1

Total Number of Page faults (LRU): 7

Page Fault Frequency (LRU): 87.50%

Hit Frequency (LRU): 12.50%