7. Write a C program to illustrate the page replacement method where the current least recently used element is replaced and determine the number of page faults for the following test case:

No. of page frames: 3; Page reference sequence 1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4 and 3.

7 question

#include <stdio.h>

#define MAX\_FRAMES 3

int main() {

int reference\_sequence[] = {1, 2, 3, 2, 1, 5, 2, 1, 6, 2, 5, 6, 3, 1, 3, 6, 1, 2, 4, 3};

int n = sizeof(reference\_sequence) / sizeof(reference\_sequence[0]);

int frames[MAX\_FRAMES];

int faults = 0;

int i, j, k, min, flag;

// Initialize all frames as -1

for (i = 0; i < MAX\_FRAMES; i++) {

frames[i] = -1;

}

// Loop through the reference sequence

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

flag = 0;

// Check if page is already in frame

for (j = 0; j < MAX\_FRAMES; j++) {

if (frames[j] == reference\_sequence[i]) {

flag = 1;

break;

}

}

// If page is not in frame, find the least recently used element to replace

if (flag == 0) {

min = MAX\_FRAMES - 1;

for (j = 0; j < MAX\_FRAMES; j++) {

for (k = i - 1; k >= 0; k--) {

if (frames[j] == reference\_sequence[k]) {

if (k < min) {

min = k;

break;

}

}

}

}

frames[min] = reference\_sequence[i];

faults++;

}

// Print current frames

printf("%d:\t", reference\_sequence[i]);

for (j = 0; j < MAX\_FRAMES; j++) {

if (frames[j] == -1) {

printf("- ");

} else {

printf("%d ", frames[j]);

}

}

printf("\n");

}

// Print number of page faults

printf("Number of page faults: %d\n", faults);

return 0;

}

