Lab Practical 9 Submission

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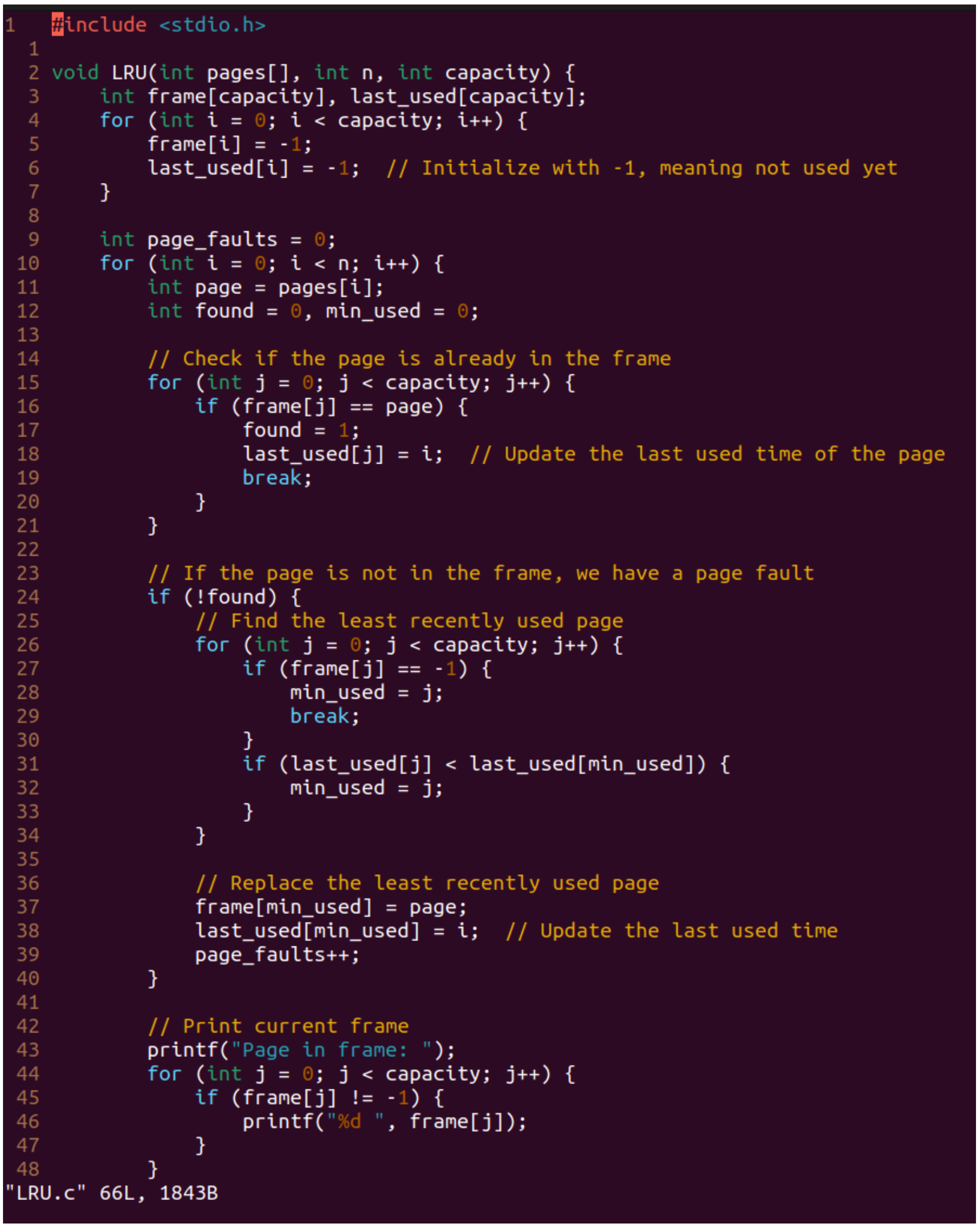
Course Code and Name: 2CSOE53 OS

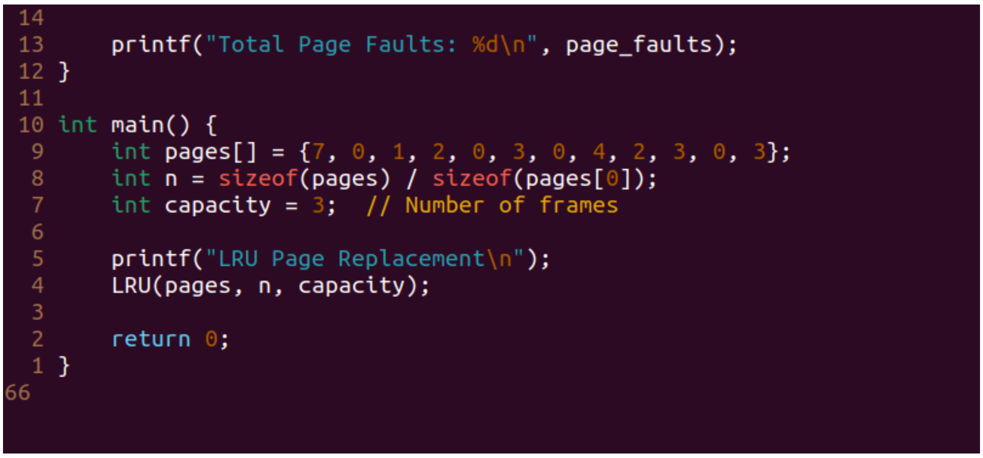
Aim:

Write a C program to implement Page Replacement Algorithms

code:

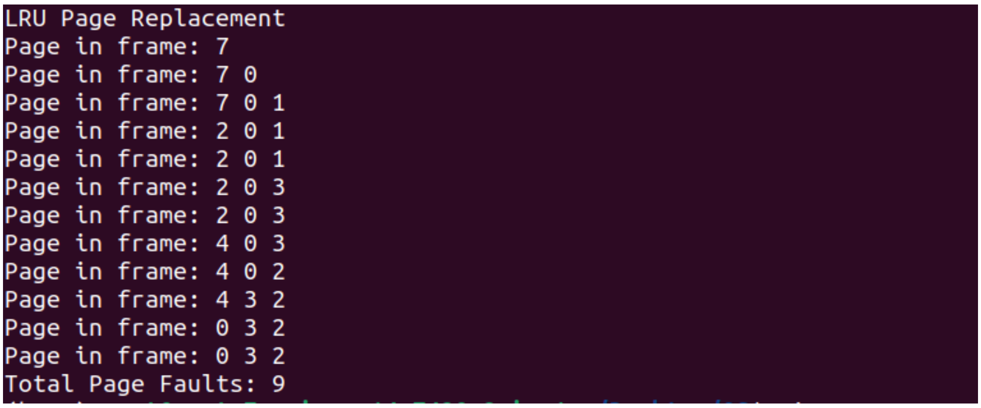


```c
#include <stdio.h>

void LRU(int pages[], int n, int capacity) {
    int frame[capacity], last_used[capacity];
    for (int i = 0; i < capacity; i++) {
        frame[i] = -1;
        last_used[i] = -1;  // Initialize with -1, meaning not used yet
    }

    int page_faults = 0;
    for (int i = 0; i < n; i++) {
        int page = pages[i];
        int found = 0, min_used = 0;

        // Check if the page is already in the frame
        for (int j = 0; j < capacity; j++) {
            if (frame[j] == page) {
                found = 1;
                last_used[j] = i;  // Update the last used time of the page
                break;
            }
        }

        // If the page is not in the frame, we have a page fault
        if (!found) {
            // Find the least recently used page
            for (int j = 0; j < capacity; j++) {
                if (frame[j] == -1) {
                    min_used = j;
                    break;
                }
                if (last_used[j] < last_used[min_used]) {
                    min_used = j;
                }
            }

            // Replace the least recently used page
            frame[min_used] = page;
            last_used[min_used] = i;  // Update the last used time
            page_faults++;
        }

        // Print current frame
        printf("Page in frame: ");
        for (int j = 0; j < capacity; j++) {
            if (frame[j] != -1) {
                printf("%d ", frame[j]);
            }
        }
"LRU.c" 66L, 1843B
```



```c

    printf("Total Page Faults: %d\n", page_faults);
}

int main() {
    int pages[] = {7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3};
    int n = sizeof(pages) / sizeof(pages[0]);
    int capacity = 3;  // Number of frames

    printf("LRU Page Replacement\n");
    LRU(pages, n, capacity);

    return 0;
}
```

output:



```
LRU Page Replacement
Page in frame: 7
Page in frame: 7 0
Page in frame: 7 0 1
Page in frame: 2 0 1
Page in frame: 2 0 1
Page in frame: 2 0 3
Page in frame: 2 0 3
Page in frame: 4 0 3
Page in frame: 4 0 2
Page in frame: 4 3 2
Page in frame: 0 3 2
Page in frame: 0 3 2
Total Page Faults: 9
```