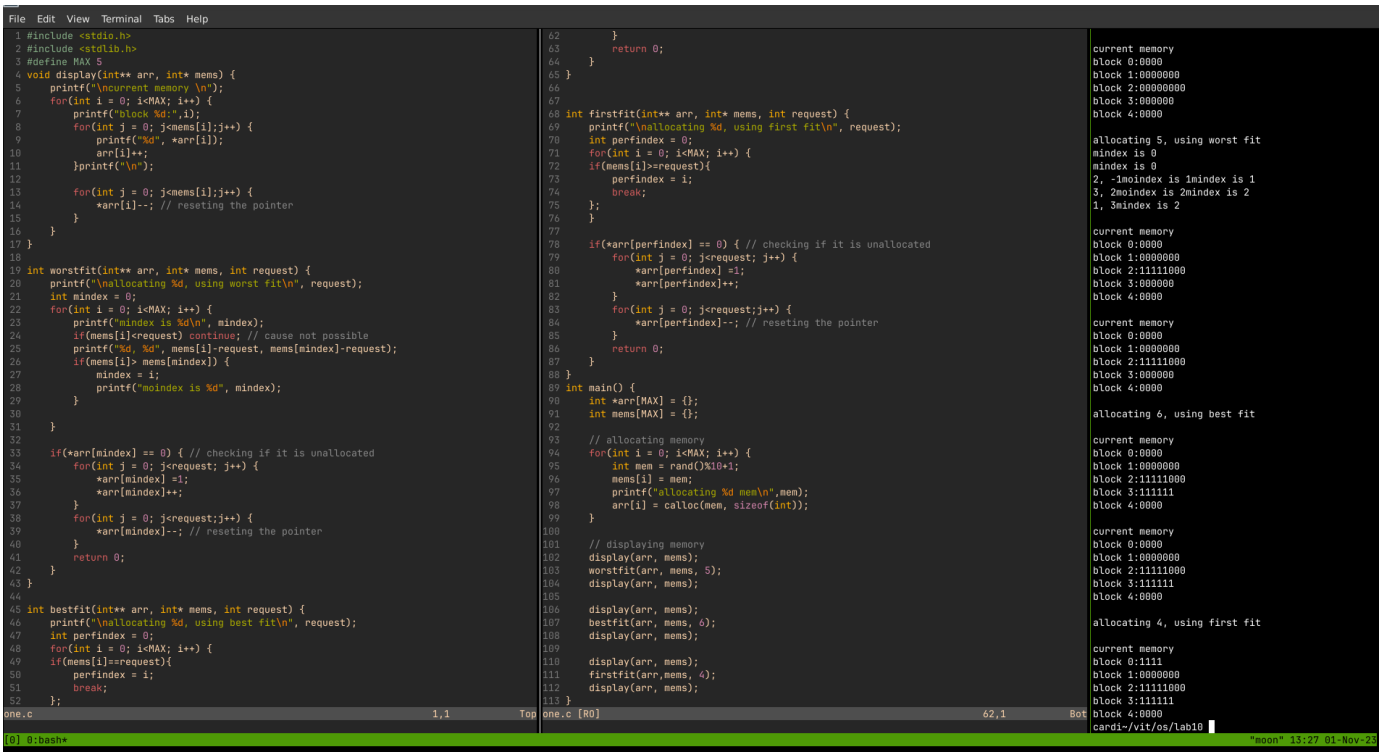
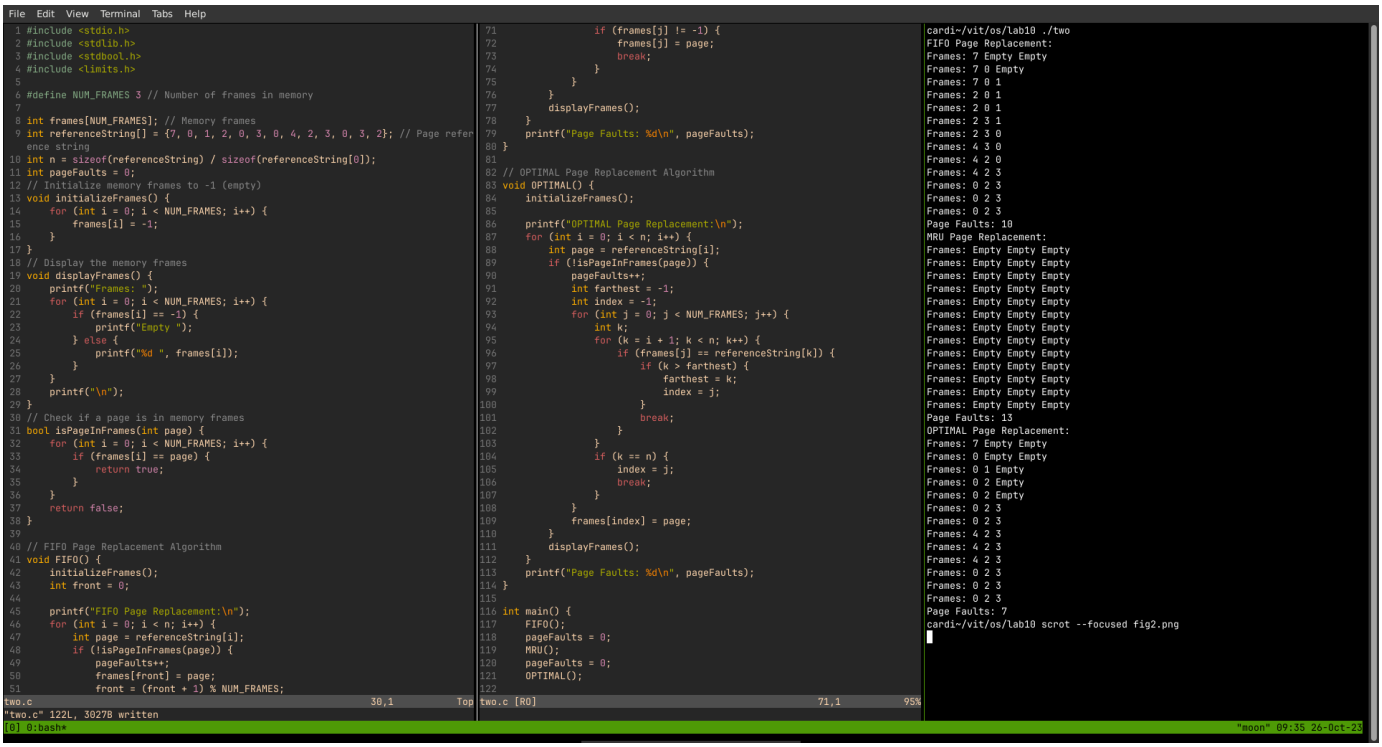
$22bps1059$

one



two


File Edit View Terminal Tabs Help
#include <stdio.h>
#include <stdlib.h>
#include <stdbool.h>
#include <limits.h>
#define NUM_FRAMES 3 // Number of frames in memory
int frames[NUM_FRAMES]; // Memory frames
int referenceString[] = {7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2}; // Page reference string
int n = sizeof(referenceString) / sizeof(referenceString[0]);
int pageFaults = 0;
// Initialize memory frames to -1 (empty)
void initializeFrames() {
for (int i = 0; i < NUM_FRAMES; i++) {
frames[i] = -1;
}
}
// Display the memory frames
void displayFrames() {
printf("Frames: ");
for (int i = 0; i < NUM_FRAMES; i++) {
if (frames[i] == -1) {
printf("Empty ");
} else {
printf("%d ", frames[i]);
}
}
printf("\n");
}
// Check if a page is in memory frames
bool isPageInFrames(int page) {
for (int i = 0; i < NUM_FRAMES; i++) {
if (frames[i] == page) {
return true;
}
}
return false;
}
// FIFO Page Replacement Algorithm
void FIFO() {
initializeFrames();
int front = 0;
printf("FIFO Page Replacement:\n");
for (int i = 0; i < n; i++) {
int page = referenceString[i];
if (!isPageInFrames(page)) {
pageFaults++;
frames[front] = page;
front = (front + 1) % NUM_FRAMES;
two.c 30,1 Top
"two.c" 122L, 3027B written
if (frames[j] != -1) {
frames[j] = page;
break;
}
}
displayFrames();
}
printf("Page Faults: %d\n", pageFaults);
}
// OPTIMAL Page Replacement Algorithm
void OPTIMAL() {
initializeFrames();
printf("OPTIMAL Page Replacement:\n");
for (int i = 0; i < n; i++) {
int page = referenceString[i];
if (!isPageInFrames(page)) {
pageFaults++;
int farthest = -1;
int index = -1;
for (int j = 0; j < NUM_FRAMES; j++) {
int k;
for (k = i + 1; k < n; k++) {
if (frames[j] == referenceString[k]) {
if (k > farthest) {
farthest = k;
index = j;
}
break;
}
}
if (k == n) {
index = j;
break;
}
}
frames[index] = page;
}
displayFrames();
}
printf("Page Faults: %d\n", pageFaults);
}
int main() {
FIFO();
pageFaults = 0;
MRU();
pageFaults = 0;
OPTIMAL();
two.c [RO] 71,1 95%
cardi~/vit/os/lab10 ./two
FIFO Page Replacement:
Frames: 7 Empty Empty
Frames: 7 0 Empty
Frames: 7 0 1
Frames: 2 0 1
Frames: 2 0 1
Frames: 2 3 1
Frames: 2 3 0
Frames: 4 3 0
Frames: 4 2 0
Frames: 4 2 3
Frames: 0 2 3
Frames: 0 2 3
Frames: 0 2 3
Page Faults: 10
MRU Page Replacement:
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Frames: Empty Empty Empty
Page Faults: 13
OPTIMAL Page Replacement:
Frames: 7 Empty Empty
Frames: 0 Empty Empty
Frames: 0 1 Empty
Frames: 0 2 Empty
Frames: 0 2 Empty
Frames: 0 2 3
Frames: 0 2 3
Frames: 4 2 3
Frames: 4 2 3
Frames: 4 2 3
Frames: 0 2 3
Frames: 0 2 3
Frames: 0 2 3
Page Faults: 7
cardi~/vit/os/lab10 scrot --focused fig2.png
[0] 0:bash* "moon" 09:35 26-Oct-23