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Paging technique in c.

code

```c
#include <stdio.h>

#include <stdlib.h>



#define frame 256 // 256 bytes per frame

#define num_frame 8 // 8 frames

#define num_pages 16 // 16 pages



int pageTable[num_pages];

char memory[num_frame][frame];



void initializePageTable() {

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

        pageTable[i] = -1;

    }

}



void loadPage(int pageNumber, int frameNumber) {

    if (pageNumber >= num_pages) {
```

```c
        printf("Error: Page number out of range.\n");

        return;

    }

    pageTable[pageNumber] = frameNumber;

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

        memory[frameNumber][i] = 'A' + pageNumber; // loading page content

    }

    printf("Page %d loaded into frame %d.\n", pageNumber, frameNumber);

}


void displayPageTable() {

    printf("Page Table:\n");

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

        if (pageTable[i] != -1) {

            printf("Page %d -> Frame %d\n", i, pageTable[i]);

        } else {

            printf("Page %d -> Not Loaded\n", i);

        }

    }

}


void accessPage(int pageNumber) {

    if (pageNumber >= num_pages) {

        printf("Error: Page number out of range.\n");

        return;

    }

    int frameNumber = pageTable[pageNumber];

    if (frameNumber == -1) {

        printf("Page %d is not loaded in memory.\n", pageNumber);
```

```c
    } else {

        printf("Accessing page %d in frame %d: Content starts with '%c'\n", pageNumber, frame

    }

}


int main() {

    initializePageTable();

    loadPage(0, 0);

    loadPage(1, 1);

    loadPage(2, 2);

    loadPage(3, 3);

    displayPageTable();

    accessPage(0);

    accessPage(2);

    accessPage(4);

    return 0;

}
```

output

```
Page 0 loaded into frame 0.
Page 1 loaded into frame 1.
Page 2 loaded into frame 2.
Page 3 loaded into frame 3.
Page Table:
Page 0 -> Frame 0
Page 1 -> Frame 1
Page 2 -> Frame 2
Page 3 -> Frame 3
Page 4 -> Not Loaded
Page 5 -> Not Loaded
Page 6 -> Not Loaded
```

```
Page 7 -> Not Loaded
Page 8 -> Not Loaded
Page 9 -> Not Loaded
Page 10 -> Not Loaded
Page 11 -> Not Loaded
Page 12 -> Not Loaded
Page 13 -> Not Loaded
Page 14 -> Not Loaded
Page 15 -> Not Loaded
Accessing page 0 in frame 0: Content starts with 'A'
Accessing page 2 in frame 2: Content starts with 'C'
Page 4 is not loaded in memory.
```