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31. Construct a C program to simulate the First in First Out paging technique of memory management.

AIM

To construct a C program to simulate the **First-In-First-Out (FIFO)** paging technique of memory management, which replaces the oldest page in memory when a new page needs to be loaded and all frames are full.

PROCEDURE

1. **Start**
2. Input the total number of pages, the sequence of page references, and the number of available frames.
3. Initialize the frames as empty (-1) and set the page fault counter to 0.
4. For each page in the reference sequence:
 - Check if the page is already present in any of the frames.
 - If the page is found in the frames, move to the next page (no page fault).
 - If the page is not found:
 - Replace the oldest page in the frames using the FIFO approach.
 - Increment the page fault counter.
 - Update the frame contents and display the current frame status.
5. Display the total number of page faults after processing all pages.
6. **Stop**

1. CODE:

```
#include <stdio.h>
```

```
void fifoPaging(int pages[], int n, int frames[], int f) {
```

```
    int pageFaults = 0, index = 0, found, i, j;
```

```
    printf("Page Reference\tFrames\n");
```

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

```
        found = 0;
```

```
for (j = 0; j < f; j++) {  
    if (frames[j] == pages[i]) {  
        found = 1;  
        break;  
    }  
}  
  
if (!found) {  
    frames[index] = pages[i];  
    index = (index + 1) % f;  
    pageFaults++;  
}
```

```

        printf("%d\t\t", pages[i]);
        for (j = 0; j < f; j++) {
            if (frames[j] != -1) {
                printf("%d ", frames[j]);
            } else {
                printf("- ");
            }
        }
        printf("\n");
    }

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

int main() {
    int n, f, i;

    printf("Enter the number of pages: ");
    scanf("%d", &n);

    int pages[n];
    printf("Enter the page reference sequence: ");
    for (i = 0; i < n; i++) {
        scanf("%d", &pages[i]);
    }

    printf("Enter the number of frames: ");
    scanf("%d", &f);

```

```

int frames[f];

for (i = 0; i < f; i++) {
    frames[i] = -1;
}

fifoPaging(pages, n, frames, f);

return 0;
}

```

OUTPUT:

```

Enter the number of pages: 10
Enter the page reference sequence: 2
1
4
6
5
3
8
9
7
10
Enter the number of frames: 3
Page Reference  Frames
2 - -
1 2 1 -
4 2 1 4
6 6 1 4
5 6 5 4
3 6 5 3
8 8 5 3
9 8 9 3
7 8 9 7
10 10 9 7
Total Page Faults: 10

...Program finished with exit code 0
Press ENTER to exit console.

```