

OPTIMAL

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#include<stdio.h>
int main()
{
    int no_of_frames, no_of_pages, frames[10], pages[30], temp[10], flag1, flag2, flag3, i, j, k, pos,
max, faults = 0;
    printf("Enter number of frames: ");
    scanf("%d", &no_of_frames);

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

    printf("Enter page reference string: ");

    for(i = 0; i < no_of_pages; ++i){
        scanf("%d", &pages[i]);
    }

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

    for(i = 0; i < no_of_pages; ++i){
        flag1 = flag2 = 0;

        for(j = 0; j < no_of_frames; ++j){
            if(frames[j] == pages[i]){
                flag1 = flag2 = 1;
                break;
            }
        }

        if(flag1 == 0){
            for(j = 0; j < no_of_frames; ++j){
                if(frames[j] == -1){
                    faults++;
                    frames[j] = pages[i];
                    flag2 = 1;
                    break;
                }
            }
        }
    }

    if(flag2 == 0){
        flag3 = 0;

        for(j = 0; j < no_of_frames; ++j){
            temp[j] = -1;

            for(k = i + 1; k < no_of_pages; ++k){
                if(frames[j] == pages[k]){
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        temp[j] = k;
        break;
    }
}

for(j = 0; j < no_of_frames; ++j){
    if(temp[j] == -1){
        pos = j;
        flag3 = 1;
        break;
    }
}

if(flag3 == 0){
    max = temp[0];
    pos = 0;

    for(j = 1; j < no_of_frames; ++j){
        if(temp[j] > max){
            max = temp[j];
            pos = j;
        }
    }
}
frames[pos] = pages[i];
faults++;
}

printf("\n");

for(j = 0; j < no_of_frames; ++j){
    printf("%d\t", frames[j]);
}

printf("\n\nTotal Page Faults = %d", faults);

return 0;
}

```

OUTPUT

Enter number of frames: 3
Enter number of pages: 10
Enter page reference string: 2 3 4 2 1 3 7 5 4 3

2	-1	-1
2	3	-1
2	3	4
2	3	4
1	3	4

1	3	4
7	3	4
5	3	4
5	3	4
5	3	4

Total Page Faults = 6