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#include <stdio.h>

int main() {
    int pages[50], frame[10];
    int n, f, i, j, k, page_fault = 0;
    int index = 0, found;

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

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

    printf("Enter the number of frames (minimum 3): ");
    scanf("%d", &f);

    if (f < 3) {
        printf("Error: Minimum frame size should be 3!\n");
        return 0;
    }

    // Initialize frames to -1 (empty)
    for (i = 0; i < f; i++)
        frame[i] = -1;

    printf("\nPage Replacement Process (FCFS):\n");

    // Traverse each page
    for (i = 0; i < n; i++) {
        found = 0;
```

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// Check if page is already present in frame
for (j = 0; j < f; j++) {
    if (frame[j] == pages[i]) {
        found = 1;
        break;
    }
}

// If page not found → page fault occurs
if (!found) {
    frame[index] = pages[i]; // Replace oldest page
    index = (index + 1) % f; // Move to next frame in circular order
    page_fault++;

    printf("Page %d caused a fault\tFrames: ", pages[i]);
    for (k = 0; k < f; k++) {
        if (frame[k] != -1)
            printf("%d ", frame[k]);
        else
            printf("- ");
    }
    printf("\n");
} else {
    printf("Page %d already in frame\tFrames: ", pages[i]);
    for (k = 0; k < f; k++) {
        if (frame[k] != -1)
            printf("%d ", frame[k]);
        else
            printf("- ");
    }
}

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        printf("\n");
    }
}

printf("\nTotal Page Faults = %d\n", page_fault);
printf("Page Fault Rate = %.2f%%\n", ((float)page_fault / n) * 100);

return 0;
}

```

OUTPUT

Enter the number of pages: 12

Enter the page reference string: 1 2 3 4 1 2 5 1 2 3 4 5

Enter the number of frames (minimum 3): 3

Page Replacement Process (FCFS):

Page 1 caused a fault Frames: 1 - -

Page 2 caused a fault Frames: 1 2 -

Page 3 caused a fault Frames: 1 2 3

Page 4 caused a fault Frames: 4 2 3

Page 1 caused a fault Frames: 4 1 3

Page 2 caused a fault Frames: 4 1 2

Page 5 caused a fault Frames: 5 1 2

Page 1 already in frame Frames: 5 1 2

Page 2 already in frame Frames: 5 1 2

Page 3 caused a fault Frames: 5 3 2

Page 4 caused a fault Frames: 5 3 4

Page 5 already in frame Frames: 5 3 4

Total Page Faults = 9

Page Fault Rate = 75.00%