#include <stdio.h>

#define MAX 3

typedef struct queue {

int irear, ifront;

int aiframe[MAX];

} queue;

void fnFIFO(int[], int);

int main() {

int size;

printf("\*\*\*\*\*\*\* Page Replacement Algorithms \*\*\*\*\*\*\*\n");

printf("Enter the size: \n");

scanf("%d", &size);

int arr[size];

printf("Enter the elements: ");

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

scanf("%d", &arr[i]);

}

fnFIFO(arr, size);

}

void fnFIFO(int arr[], int size) {

int pg = 0;

queue q;

q.irear = 0;

q.ifront = -1;

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

q.aiframe[i] = -1;

}

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

int flag = 0;

for (int j = 0; j < MAX; j++) {

if (q.aiframe[j] == arr[i]) {

flag = 1;

break;

}

}

if (flag == 0) {

q.aiframe[q.irear] = arr[i];

pg++;

q.irear = (q.irear + 1) % MAX;

if (q.irear == 0) {

q.ifront++;

}

}

if (q.ifront == MAX) {

q.ifront = 0;

}

printf("Frame: ");

for (int j = 0; j < MAX; j++) {

if (q.aiframe[j] != -1) {

printf("%d ", q.aiframe[j]);

} else {

printf("- ");

}

}

printf("\n");

}

printf("Total Number of Page faults : %d\n", pg);

printf("Page Fault Frequency : %f\n", (float)pg / size \* 100);

printf("Heap Frequency : %f\n", 100 - (float)pg / size \* 100);

}