**HATFD1020**

**Find the Majority Element in an Array**

Write a program to find the majority element in an array (an element that appears more than `n/2` times). For example, in the array `[3, 3, 4, 2, 4, 4, 2, 4, 4]`, the output should be `4`. Do not use any built-in functions for array manipulation or counting.

**Instructions**: Implement a manual count and comparison logic to find the majority element.

Program:

```
#include <stdio.h>
int fetchMajEle(int arr[], int n) {
    int c= arr[0];
    int cnt = 1;
    for (int i = 1; i < n; i++) {
        if (arr[i] == c) {
            cnt++;
        } else {
            cnt--;
        }
        if (cnt == 0) {
            c = arr[i];
            cnt= 1;
        }
    }
    cnt = 0;
    for (int i = 0; i < n; i++) {
        if (arr[i] == c) {
            cnt++;
        }
```

```
    }

    if (cnt> n / 2) {
        return c;
    } else {
        return -1;
    }
}

int main() {
    int arr[100], i, input;
  printf("Enter number of elements: ");
  scanf("%d", &input);

  for(i=0; i < input; ++i) {
    printf("Enter number%d: ",i+1);
    scanf("%d", &arr[i]);
  }
    int n = input-1 / sizeof(arr[0]);
    int majEle = fetchMajEle(arr, n);
    if (majEle != -1) {
        printf("The majority element is %d\n", majEle);
    } else {
        printf("There is no majority element in the array\n");
    }

    return 0;
```

}

Example 1:

```
Enter number of elements: 9
Enter number1: 3
Enter number2: 3
Enter number3: 4
Enter number4: 2
Enter number5: 4
Enter number6: 4
Enter number7: 2
Enter number8: 4
Enter number9: 4
The majority element is 4
```

Example 2:

```
Enter number of elements: 4
Enter number1: 2
Enter number2: 6
Enter number3: 8
Enter number4: 4
There is no majority element in the array
```

Example 3:

```
Enter number of elements: 5
Enter number1: 2
Enter number2: 2
Enter number3: 2
Enter number4: 2
Enter number5: 2
The majority element is 2
```