----------arrays----------

1

```
#include<stdio.h>
#define SIZE 10
#include<math.h>
volatile int diff=0;
int main(){
   int arr[SIZE]={20,25,40,67,89,54,32,21,12,8};
   int max=0;
   double min=INFINITY;
   for(int i=0;i<SIZE;i++){
      if(arr[i]>max){
         max=arr[i];
      }
   }
   for(int i=0;i<SIZE;i++){
      if(arr[i]<min){
         min=arr[i];
      }
   }
   diff=max-min;
   printf("the max element is %d\n",max);
   printf("the min element is %f\n",min);
   printf("the difference between max and min is %d",diff);
   return 0;
}
```

2

```
#include <stdio.h>
#define SIZE 10
int main() {
   int arr1[SIZE] = {-20, 10, -45, 12, 45, 67, -80, 50, -70, 23};
   int pos[SIZE] = {};
   int neg[SIZE] = {};

   int pos_count = 0;
   int neg_count = 0;
   for (int i = 0; i < SIZE; i++) {
      if (arr1[i] < 0) {
         neg[neg_count] = arr1[i];
         neg_count++;
      } else if (arr1[i] > 0) {
         pos[pos_count] = arr1[i];
         pos_count++;
      }
   }
   printf("Positive elements are: ");
   for (int i = 0; i < pos_count; i++) {
      printf("%d ", pos[i]);
   }
   printf("\n");
   printf("Negative elements are: ");
   for (int i = 0; i < neg_count; i++) {
      printf("%d ", neg[i]);
   }
   printf("\n");
```

```
    return 0;
}
```

3

```
#include<stdio.h>
#define size 5
static int grand_total=0;
void sum(){
    int sum=0;
    int arr[size]={20,30,40,50,60};
    for(int i=0;i<size;i++){
        sum+=arr[i];
    }
    grand_total+=sum;
    printf("the sum of this iteration is %d\n",sum);
    printf("the sum of the grand_total is %d\n",grand_total);
}
int main(){

    sum();
    sum();
    return 0;
}
```

4

```
#include<stdio.h>
#include<stdbool.h>
#define SIZE 10
```

```
bool is_prime(int n){
     for(int i=2;i<n;i++){
        if(n%i!=0){
           return true;
        }else{
           return false;
        }
     }
}

int main(){
   int arr[SIZE]={2,3,4,5,6,7,8,9,10,11};
   for(int i=0;i<SIZE;i++){
      if(is_prime(arr[i])){
         printf("%d is a prime number.\n",arr[i]);
      }
   }
}
```

5

```
#include <stdio.h>
#define N 3
int main() {

   int arr[] = {1, 2, 3, 4, 5};
   int size = sizeof(arr) / sizeof(arr[0]);
   static int rotated_arr[5];
   int i = 0;
```

```
    while (i < size) {
        int new_pos = (i + (size - N)) % size;
        rotated_arr[new_pos] = arr[i];
        i++;
    }
    printf("Rotated array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", rotated_arr[i]);
    }
    printf("\n");

    return 0;
}
```

6

```
#include <stdio.h>
#define SIZE 10
int main() {
    int arr[SIZE] = {10, 20, 10, 30, 20, 20, 40, 10, 50, 30};
    static int freq[SIZE] = {0};
    for (int i = 0; i < SIZE; i++) {
        if (freq[i] != 0) {
            continue;
        }
        int count = 1;
        for (int j = i + 1; j < SIZE; j++) {
            if (arr[i] == arr[j]) {
                count++;
```

```
            freq[j] = -1;
        }
    }
    freq[i] = count;
  }
  printf("Element - Frequency\n");
  for (int i = 0; i < SIZE; i++) {
    if (freq[i] != -1) {
        printf("%d - %d\n", arr[i], freq[i]);
    }
  }
  return 0;
}
```

7

```
#include<stdio.h>
#define size 6
int main(){
  int arr[size]={2,4,3,5,6,7};
  for(int i=0;i<size-1;i++){
    for(int j=0;j<size-i-1;j++){
      if(arr[j]<arr[j+1]){
        int temp=arr[j];
        arr[j]=arr[j+1];
        arr[j+1]=temp;
      }
    }
  }
  printf("sorted elements are in the order :");
```

```
    for(int i=0;i<size;i++){
        printf("%d,",arr[i]);
    }

}
```

8

```
#include<stdio.h>
#define size 5
int main(){
    int arr[size]={1,2,3,4,5};
    int max=0,index=0;
    for(int i=0;i<size;i++){
        if(arr[i]>max){
            index=i;
        }
    }
    printf("the second largest element is %d",arr[index-1]);

}
```

9

```
#include<stdio.h>
#define size 5
int main(){
    int arr[size]={2,3,4,5,6};
    int odd[size]={0};
    int even[size]={0};
    int even_count=0,odd_count=0;
```

```
    for(int i=0;i<size;i++){
        if(arr[i]%2==0){
            even[even_count]=arr[i];
            even_count+=1;
        }else{
            odd[odd_count]=arr[i];
            odd_count+=1;
        }
    }
    printf("the odd numbers are :");
    for(int i=0;i<odd_count;i++){
        printf("%d,",odd[i]);
    }
     printf("\nthe even numbers are :");
    for(int i=0;i<even_count;i++){
        printf("%d,",even[i]);
    }

}

//10
#include <stdio.h>
#define N 1
int main() {
    int arr[] = {1, 2, 3, 4, 5};
    int size = sizeof(arr) / sizeof(arr[0]);
    static int rotated_arr[5];
    for (int i = 0; i < size; i++) {
        rotated_arr[i] = 0;
```

```
    }
    for (int i = 0; i < size; i++) {
        int new_pos = (i + N) % size;
        rotated_arr[new_pos] = arr[i];
    }
    printf("Rotated array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", rotated_arr[i]);
    }
    printf("\n");

    return 0;
}
```