

DATA STRUCTURES AND ALGORITHMS

LAB-01

PRATIK V

20BAI1313

ARRAYS

DATE: 12/12/22

## FIND THE MINIMUM AND MAXIMUM NUMBER IN A GIVEN ARRAY

### C CODE:

```
#include<stdio.h>

int main()
{
    int arr[10],n,max=0,min=0;
    printf("Enter the size of the array:\n");
    scanf("%d",&n);
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    max=arr[0];
    for (int i=0;i<n;i++)
    {
        if(arr[i]>max)
        {
            max=arr[i];
        }
    }
    printf("The maximum number is : %d\n",max);
    min=arr[0];
    for (int i=0;i<n;i++)
    {
        if(arr[i]<min)
        {
```

```

        min=arr[i];
    }
}

printf("The minimum number is : %d",min);
}

```

## SNAPSHOTS

```

#include<stdio.h>

int main()
{
    int arr[10],n,max=0,min=0;
    printf("Enter the size of the array:\n");
    scanf("%d",&n);
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    max=arr[0];
    for (int i=0;i<n;i++)
    {
        if(arr[i]>max)
        {
            max=arr[i];
        }
    }
    printf("The maximum number is : %d\n",max);
    min=arr[0];
    for (int i=0;i<n;i++)
    {
        if(arr[i]<min)
        {
            min=arr[i];
        }
    }
    printf("The minimum number is : %d",min);
}

```

```
Enter the size of the array :
5
Enter the array elements :
1
10
2
20
91
The maximum number is : 91
The minimum number is : 1

...Program finished with exit code 0
Press ENTER to exit console.□
```

#### C++ CODE:

```
#include <iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int arr[10],n,max=0,min=0;
```

```
    cout<<"Enter the size of the array :\n";
```

```
    cin>>n;
```

```
    cout<<"Enter the array elements :\n";
```

```
    for(int i=0;i<n;i++)
```

```
    {
```

```
        cin>>arr[i];
```

```
    }
```

```
    max=arr[0];
```

```
for (int i=0;i<n;i++)
{
    if(arr[i]>max)
    {
        max=arr[i];
    }
}
cout<<"The maximum number is : "<<max<<endl;
min=arr[0];
for (int i=0;i<n;i++)
{
    if(arr[i]<min)
    {
        min=arr[i];
    }
}
cout<<"The minimum number is : "<<min;
}
```

## SNAPSHOTS

```
#include <iostream>

using namespace std;

int main()
{
    int arr[10],n,max=0,min=0;
    cout<<"Enter the size of the array : \n";
    cin>>n;
    cout<<"Enter the array elements : \n";
    for(int i=0;i<n;i++)
    {
        cin>>arr[i];
    }
    max=arr[0];
    for (int i=0;i<n;i++)
    {
        if(arr[i]>max)
        {
            max=arr[i];
        }
    }
    cout<<"The maximum number is : "<<max<<endl;
    min=arr[0];
    for (int i=0;i<n;i++)
    {
        if(arr[i]<min)
        {
            min=arr[i];
        }
    }
    cout<<"The minimum number is : "<<min;
}
```

```
Enter the size of the array :
5
Enter the array elements :
12
56
99
45
0
The maximum number is : 99
The minimum number is : 0

...Program finished with exit code 0
Press ENTER to exit console.[]
```

LIST THE DUPLICATE ELEMENTS IN THE LIST AND PRINT THE ARRAY  
AFTER REMOVING DUPLICATES

C++ CODE:

```
#include <iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int arr[10],n;
```

```
    cout<<"Enter the size of the array :\n";
```

```
    cin>>n;
```

```
    cout<<"Enter the array elements :\n";
```

```
    for(int i=0;i<n;i++)
```

```
    {
```

```
        cin>>arr[i];
```

```
    }
```

```
    for(int i=0;i<n;i++)
```

```
    {
```

```
        for(int j=i+1;j<n;j++)
```

```
        {
```

```
            if(arr[i]==arr[j])
```

```
            {
```

```
                cout<<"duplicate elements are: \n"<<arr[i]<<endl;
```

```
                for(int k=j;k<n-1;k++)
```

```
                {
```

```

        arr[k]=arr[k+1];
    }

    n--;

    j--;

}

}

}

for(int i=0;i<n;i++)
{
    cout<<"array after removing duplicates are: "<<arr[i]<<endl;
}
}

```

### SNAPSHOTS:

```

#include <iostream>

using namespace std;

int main()
{
    int arr[10],n;
    cout<<"Enter the size of the array : \n";
    cin>>n;
    cout<<"Enter the array elements : \n";
    for(int i=0;i<n;i++)
    {
        cin>>arr[i];
    }
    for(int i=0;i<n;i++)
    {
        for(int j=i+1;j<n;j++)
        {
            if(arr[i]==arr[j])
            {
                cout<<"duplicate elements are: \n"<<arr[i]<<endl;
                for(int k=j;k<n-1;k++)
                {
                    arr[k]=arr[k+1];
                }
                n--; |
                j--;
            }
        }
    }
    for(int i=0;i<n;i++)
    {
        cout<<"array after removing duplicates are: "<<arr[i]<<endl;
    }
}

```



```
Enter the size of the array :
5
Enter the array elements :
1
2
2
3
4
duplicate elements are:
2
array after removing duplicates are: 1
array after removing duplicates are: 2
array after removing duplicates are: 3
array after removing duplicates are: 4
```

#### C CODE:

```
#include<stdio.h>

int main()
{
    int arr[10],n;
    printf("Enter the size of the array :\n");
    scanf("%d",&n);
    printf("Enter the array elements :\n");
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    for(int i=0;i<n;i++)
    {
        for(int j=i+1;j<n;j++)
        {
```

```
if(arr[i]==arr[j])
{
    printf("duplicate elements are: %d\n",arr[i]);
    for(int k=j;k<n-1;k++)
    {
        arr[k]=arr[k+1];
    }
    n--;
    j--;
}
}
}
for(int i=0;i<n;i++)
{
    printf("\narray after removing duplicates are: %d",arr[i]);
}
}
```

## SNAPSHOTS

```
#include<stdio.h>
int main()
{
    int arr[10],n;
    printf("Enter the size of the array :\n");
    scanf("%d",&n);
    printf("Enter the array elements :\n");
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    for(int i=0;i<n;i++)
    {
        for(int j=i+1;j<n;j++)
        {
            if(arr[i]==arr[j])
            {
                printf("duplicate elements are: %d\n",arr[i]);
                for(int k=j;k<n-1;k++)
                {
                    arr[k]=arr[k+1];
                }
                n--;
                j--;
            }
        }
    }
    for(int i=0;i<n;i++)
    {
        printf("\narray after removing duplicates are: %d",arr[i]);
    }
}
```

```
Enter the size of the array :
5
Enter the array elements :
1
1
12
13
4
duplicate elements are: 1

array after removing duplicates are: 1
array after removing duplicates are: 12
array after removing duplicates are: 13
array after removing duplicates are: 4
```

IN A GIVEN ARRAY, FIND THE EVEN AND ODD NUMBERS AND ALSO PRINT THE  
SUM OF ODD NUMBERS

C++ CODE:

```
#include<iostream>

using namespace std;

int main()
{
    int arr[10],n,sum=0;

    cout<<"Enter the length of the array :"<<endl;
    cin>>n;

    cout<<"Enter the elements of the array :"<<endl;
    for(int i=0;i<n;i++)
    {
        cin>>arr[i];
    }

    for(int i=0;i<n;i++)
    {
        if(arr[i]%2==0){
            cout<<"even number of the array: "<<arr[i]<<endl;
        }
    }

    for(int i=0;i<n;i++)
    {
        if(arr[i]%2!=0){
            cout<<"odd number of the array: "<<arr[i]<<endl;
        }
    }
}
```

```

    }

    cout<<"The sum of the odd numbers are : "<<sum;

}

```

### SNAPSHOTS:

```

#include<iostream>
using namespace std;
int main()
{
    int arr[10],n,sum=0;
    cout<<"Enter the length of the array : "<<endl;
    cin>>n;
    cout<<"Enter the elements of the array : "<<endl;
    for(int i=0;i<n;i++)
    {
        cin>>arr[i];
    }
    for(int i=0;i<n;i++)
    {
        if(arr[i]%2==0){
            cout<<"even number of the array: "<<arr[i]<<endl;
        }
    }

    for(int i=0;i<n;i++)
    {
        if(arr[i]%2!=0){
            cout<<"odd number of the array: "<<arr[i]<<endl;
        }
    }
    cout<<"The sum of the odd numbers are : "<<sum;
}

```

```

Enter the length of the array :
6
Enter the elements of the array :
1
2
3
4
5
6
even number of the array: 2
even number of the array: 4
even number of the array: 6
odd number of the array: 1
odd number of the array: 3
odd number of the array: 5
The sum of the odd numbers are : 0

```

### C CODE:

```
#include<stdio.h>

int main()
{
    int arr[10],n,sum=0;
    printf("Enter the length of the array :\n");
    scanf("%d",&n);
    printf("Enter the elements of the array :\n");
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    for(int i=0;i<n;i++)
    {
        if(arr[i]%2==0){
            printf("even number of the array: %d\n",arr[i]);
        }
    }

    for(int i=0;i<n;i++)
    {
        if(arr[i]%2!=0){
            printf("odd number of the array: %d\n",arr[i]);
            sum=sum+arr[i];
        }
    }
}
```

```
printf("The sum of the odd numbers are : %d",sum);  
}
```

### SNAPSHOTS:

```
#include<stdio.h>  
int main()  
{  
    int arr[10],n,sum=0;  
    printf("Enter the length of the array : \n");  
    scanf("%d",&n);  
    printf("Enter the elements of the array : \n");  
    for(int i=0;i<n;i++)  
    {  
        scanf("%d",&arr[i]);  
    }  
    for(int i=0;i<n;i++)  
    {  
        if(arr[i]%2==0){  
            printf("even number of the array: %d\n",arr[i]);  
        }  
    }  
  
    for(int i=0;i<n;i++)  
    {  
        if(arr[i]%2!=0){  
            printf("odd number of the array: %d\n",arr[i]);  
            sum=sum+arr[i];  
        }  
    }  
    printf("The sum of the odd numbers are : %d",sum);  
}
```

```
Enter the length of the array :  
6  
Enter the elements of the array :  
5  
6  
7  
8  
9  
10  
even number of the array: 6  
even number of the array: 8  
even number of the array: 10  
odd number of the array: 5  
odd number of the array: 7  
odd number of the array: 9  
The sum of the odd numbers are : 21
```