4. ARRAYS

1.
To add integer values of an array-

```
import java.util.Scanner;
public class Excercise1
{
	public static void main(String[] args)
	{
		int sum=0,n,i;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
		{
			a[i]=sc.nextInt();
			sum=sum+a[i];
		}
		System.out.println("Sum : "+sum);

	}
}
```

Output-
Enter the size : 5
Enter the elements : 2 4 7 2 5
Sum : 20

2.
average value of an array of integers

```
import java.util.Scanner;
public class Excercise2
{
	public static void main(String[] args)
	{
		int sum=0,n,i,avg;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
		{
			a[i]=sc.nextInt();
			sum=sum+a[i];
```

```
                }
                avg=sum/n;
                System.out.println("Average : "+avg);

        }
}
```

Output-
Enter the size :
5
Enter the elements :
2 4 7 2 5
Average : 4

3.
program to find the index of an array element

```
import java.util.Scanner;
public class Excercise3
{
    public static int  findIndex (int[] a, int x)
    {
        if (a == null) return -1;
        int len = a.length;
        int i = 0;
        while (i < len)
          {
                if (a[i] == x) return i+1;
                else i=i+1;
        }
        return -1;
    }
    public static void main(String[] args)
   {
        int n,i,x;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the size : ");
        n=sc.nextInt();
        int a[];
        a=new int[n];
        System.out.println("Enter the elements : ");
        for(i=0;i<n;i++)
        a[i]=sc.nextInt();
        System.out.println("Enter the value : ");
        x=sc.nextInt();
        System.out.println("Index position of "+x+" is: " + findIndex(a, x));
  }
}
```

Output-
Enter the size :
5
Enter the elements :
2 4 7 5 3
Enter the value :
7
Index position of 7 is: 3

4.
To test if array contains a specific value-

```
import java.util.Scanner;
public class Exercise4
{
  public static void main(String[] args)
 {
        int n,i,x;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the size : ");
        n=sc.nextInt();
        int a[];
        a=new int[n];
        System.out.println("Enter the elements : ");
        for(i=0;i<n;i++)
        a[i]=sc.nextInt();
        System.out.println("Enter the value : ");
        x=sc.nextInt();
        for (i=0;i<n;i++)
        {
              if (x==a[i])
                    System.out.println("found");
        }
  }
}
```

Output-
Enter the size :
5
Enter the elements :
2 4 7 5 3
Enter the value :
5
found

5.
To remove a specific element from an array

```
import java.util.Scanner;
```

```
public class Exercise5
{
  public static void main(String[] args)
 {
        int n,i,pos;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the size : ");
        n=sc.nextInt();
        int a[];
        a=new int[n];
        System.out.println("Enter the elements : ");
        for(i=0;i<n;i++)
        a[i]=sc.nextInt();
        System.out.println("Enter the position of the number which is to be deleted");
        pos = sc.nextInt();
        for(i=pos;i<n-1;i++)
        {
                a[i]=a[i+1];
        }
        n=n-1;
        System.out.println("On deleting, the new array we get is\n");
        for(i=0;i<n;i++)
        {
                System.out.println(a[i]+" ");
        }
  }
}
```

Output-

```
Enter the size :
5
Enter the elements :
1 4 2 6 8
Enter the position of the number which is to be deleted
3
On deleting, the new array we get is
1 4 2 8
```

6.

To copy an array to another array-

```
import java.util.Scanner;
public class Exercise6
{
        public static void main(String[] args)
        {
                int n,i;
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter the size : ");
                n=sc.nextInt();
                int a[];
```

```
                a=new int[n];
                System.out.println("Enter the elements : ");
                for(i=0;i<n;i++)
                a[i]=sc.nextInt();
                int b[] = new int[n];
                for (i = 0; i < n; i++)
                        b[i] = a[i];
                System.out.println("The elements of the new array are: ");
                for(i=0;i<n;i++)
                        System.out.println(a[i]+" ");
        }
}
```

Output-

```
Enter the size :
5
Enter the elements :
3 6 2 5 7
The elements of the new array are:
3 6 2 5 7
```

7.
To insert an element at a specific position in the array-

```
import java.util.Scanner;
public class Exercise7
{
        public static void main(String[] args)
        {
           int n,i,x,pos;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the size : ");
        n=sc.nextInt();
        int a[];
        a=new int[n+1];
        System.out.println("Enter the elements : ");
        for(i=0;i<n;i++)
        a[i]=sc.nextInt();
        System.out.print("Enter the position where you want to insert element:");
        pos = sc.nextInt();
        System.out.print("Enter the element you want to insert:");
        x = sc.nextInt();
        for(i = (n-1); i >= (pos-1); i--)
        {
                a[i+1] = a[i];
        }
        a[pos-1] = x;
        System.out.println("The elements of the new array are: ");
        for(i=0;i<n;i++)
```

```
        {
                System.out.print(a[i]+" ");
        }
        System.out.print(a[n]);
    }
}
```

Output-

```
Enter the size :
5
Enter the elements :
2 7 4 5 1
Enter the position where you want to insert element:3
Enter the element you want to insert:8
The elements of the new array are:
2 7 8 4 5 1
```

8.
To find the minimum and maximum value of an array-

```
import java.util.Scanner;
public class Exercise8
{
        public static void main(String[] args)
        {
                int n,i,max,min;
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter the size : ");
                n=sc.nextInt();
                int a[];
                a=new int[n];
                System.out.println("Enter the elements : ");
                for(i=0;i<n;i++)
                        a[i]=sc.nextInt();
                max=a[0];
                for(i=1;i<n;i++)
                {
                  if(a[i]>max)
                  max=a[i];
                }
                System.out.println("Maximum value of the array : "+max);
                min=a[0];
                for(i=1;i<n;i++)
                {
                  if(a[i]<min)
                  min=a[i];
                }
                System.out.println("Minimum value of the array : "+min);
        }
```

```
}
```

Output-

```
Enter the size :
5
Enter the elements :
4 6 2 8 5
Maximum value of the array : 8
Minimum value of the array : 2
```

9.
To reverse an array of integer values-

```
import java.util.Scanner;
public class Exercise9
{
	public static void main(String[] args)
	{
		int n,i;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		System.out.println("Original array: ");
		for (i = 0; i < n; i++)
			System.out.print(arr[i] + " ");
		System.out.println();
		System.out.println("Array in reverse order: ");
		for (int i = n; i >= 0; i--)
			System.out.print(arr[i] + " ");
	}
}
```

Output-

```
Enter the size :
5
Enter the elements :
1 2 3 4 5
Original array:
1 2 3 4 5
Array in reverse order:
5 4 3 2 1
```

10.
To find the duplicate values of an array-

```
import java.util.Scanner;
public class Exercise10
{
	public static void main(String[] args)
	{
		int n,i,j;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n+1];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		 System.out.println("Duplicate elements in given array: ");
		for( i = 0; i < n; i++)
		{
			for(j = i + 1; j < n; j++)
			{
				if(a[i] == a[j])
					System.out.println(a[j]+" ");
			}
		}
	}
}
```

Output-

```
Enter the size :
5
Enter the elements :
2 5 3 2 5
Duplicate elements in given array:
2
5
```

11.

Program to find the common values between two arrays-

```
import java.util.Scanner;
public class Excercise11
{
	public static void main(String[] args)
	{
		int n1,n2,i,j;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size of array1: ");
		n1=sc.nextInt();
		int a1[];
		a1=new int[n1];
		System.out.println("Enter the elements of array1: ");
		for(i=0;i<n1;i++)
```

```
                    a1[i]=sc.nextInt();
                System.out.println("Enter the size of array2: ");
                n2=sc.nextInt();
                int a2[];
                a2=new int[n2];
                System.out.println("Enter the elements of array2: ");
                for(i=0;i<n2;i++)
                    a2[i]=sc.nextInt();
                 System.out.println("Common elements : ");
                 for ( i = 0; i < n1; i++)
                {
                    for (j = 0; j < n2; j++)
                    {
                            if(a1[i] == (a2[j]))
                            {
                                System.out.println(a1[i]+" ");
                            }
                    }
                }
        }
}
```

Output-

```
Enter the size of array1:
5
Enter the elements of array1:
5 2 6 4 1
Enter the size of array2:
5
Enter the elements of array2:
4 8 6 9 3
Common elements :
6
4
```

12.

To remove duplicate elements from an array

```
import java.util.Scanner;
public class Excercise12
{
        public static void main(String[] args)
        {
                int n,i,j=0;
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter the size of array: ");
                n=sc.nextInt();
                int a[];
                a=new int[n];
                System.out.println("Enter the elements of array: ");
```

```
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		int[] temp = new int[n];
		for ( i = 0; i < n - 1; i++)
		{
			if (a[i] != a[i + 1])
			{
					temp[j++] = a[i];
			}
		}
		temp[j++] = a[n - 1];
		for (i = 0; i < j; i++)
			a[i] = temp[i];
		System.out.println("After removing the duplicate values, the array is :");
		for (i = 0; i < j; i++)
			System.out.println(a[i]+" ");
	}
}
```

Output-

```
Enter the size of array:
5
Enter the elements of array:
1 2 3 3 4
After removing the duplicate values, the array is :
1 2 3 4
```

13.

To find the second largest number in an array-

```
import java.util.Scanner;
public class Excercise13
{
	public static void main(String[] args)
	{
		int n,i,j,temp;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		for ( i = 0; i < n; i++)
		{
			for ( j = i + 1; j < n; j++)
			{
					if (a[i] > a[j])
					{
					temp = a[i];
```

```
                                        a[i] = a[j];
                                        a[j] = temp;
                                        }
                        }
                }
                System.out.println("Second largest number of the array : "+a[n-1]);
        }
}
```

Output-
Enter the size :
5
Enter the elements :
2 5 3 4 1
Second largest number of the array : 5

14.
To find the second largest number in an array-

```
import java.util.Scanner;
public class Excercise14
{
        public static void main(String[] args)
        {
                int n,i,j,temp;
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter the size : ");
                n=sc.nextInt();
                int a[];
                a=new int[n];
                System.out.println("Enter the elements : ");
                for(i=0;i<n;i++)
                        a[i]=sc.nextInt();
                for ( i = 0; i < n; i++)
                {
                        for ( j = i + 1; j < n; j++)
                        {
                                        if (a[i] > a[j])
                                        {
                                        temp = a[i];
                                        a[i] = a[j];
                                        a[j] = temp;
                                        }
                        }
                }
                System.out.println("Largest number of the array : "+a[n-1]);
        }
}
```

Output-
Enter the size :
5
Enter the elements :
2 5 3 4 1
Largest number of the array : 5

15.
To find number of even number and odd numbers in an array-

```
import java.util.Scanner;
public class Exercise15
{
	public static void main(String[] args)
	{
		int n,i,ec=0,oc=0;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		for ( i = 0; i < n; i++)
		{
			if(a[i]%2==0)
				ec++;
			else
				oc++;
		}
		System.out.println("Number of even numbers in the array : "+ec);
		System.out.println("Number of odd numbers in the array : "+oc);
	}
}
```

Output-
Enter the size :
5
Enter the elements :
1 2 3 4 5
Number of even numbers in the array : 2
Number of odd numbers in the array : 3

16.
To get the difference of largest and smallest value in an array-

```
import java.util.Scanner;
public class Exercise16
```

```
{
	public static void main(String[] args)
	{
		int n,i,max,min;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements : ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		max=a[0];
		for(i=1;i<n;i++)
		{
		  if(a[i]>max)
		  max=a[i];
		}
		min=a[0];
		for(i=1;i<n;i++)
		{
		  if(a[i]<min)
		  min=a[i];
		}
		System.out.println("Difference of largest and smallest value in  the array : "+(max-
min));
	}
}
```

Output-

```
Enter the size :
5
Enter the elements :
6 2 4 8 3
Difference of largest and smallest value in  the array : 6
```

17.

To verify if the array contains two specified elements-

```
import java.util.Scanner;
public class Excercise17
{
	public static void main(String[] args)
	{
		int n,i,num1,num2;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size : ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
```

```
		System.out.println("Enter the elements of the array: ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();

		System.out.println("Enter the 2 specific elements: ");
		num1=sc.nextInt();
		num2=sc.nextInt();
		System.out.println("Result: "+result(a, num1, num2));
	}
	public static boolean result(int[] a, int num1, int num2)
	{
		for (int num : a)
		{
			boolean r = num != num1 && num != num2;
			if (r)
			{
				return true;
			}
		}
		return false;
	}
}
```

Output-

```
Enter the size :
5
Enter the elements of the array:
1 2 3 4 5
Enter the 2 specific elements:
4 1
Result: true
```

18.

To remove the duplicate elements and return the new array-

```
import java.util.Scanner;
public class Excercise18
{
	public static void main(String[] args)
	{
		int n,i,j=0;
		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the size of array: ");
		n=sc.nextInt();
		int a[];
		a=new int[n];
		System.out.println("Enter the elements of array: ");
		for(i=0;i<n;i++)
			a[i]=sc.nextInt();
		int[] temp = new int[n];
```

```
                for ( i = 0; i < n - 1; i++)
                {
                        if (a[i] != a[i + 1])
                        {
                                        temp[j++] = a[i];
                        }
                }
                temp[j++] = a[n - 1];
                for (i = 0; i < j; i++)
                        a[i] = temp[i];
                System.out.println("After removing the duplicate values, the array is :");
                for (i = 0; i < j; i++)
                        System.out.println(a[i]+" ");
        }
}
```

Output-

```
Enter the size of array:
5
Enter the elements of array:
1 2 3 3 4
After removing the duplicate values, the array is :
1 2 3 4
```