1. **Write a java program to find duplicate elements in an array?**

```
package JAVA;

public class DuplicateElementPG {
	public static void main(String[] args)
	{
		int[] arr = new int[] {1,2,3,4,2,7,8,8,3};
		System.out.println("Duplicate element in given array");
		for(int i = 0; i < arr.length; i++)
		{
			for(int j = i+1 ; j < arr.length; j++)
			{
				if(arr[i] == arr[j])
					System.out.println(arr[j]);
			}
		}
	}
}
```

Output:

```
Duplicate element in given array
2
3
8
```

---

2. **Write a java program to find second largest element in an array of integers?**

```
package JAVA;

public class SecondLargestElementPG {
	public static int getSecondLargest(int[] a, int total)
	{
		int temp;
		for(int i=0;i<total;i++)
		{
			for(int j=i+1;j<total;j++)
			{
				if(a[i] > a[j])
				{
					temp = a[i];
					a[i] = a[j];
					a[j] = temp;
				}
			}
		}
		return a[total-2];

	}
	public static void main(String[] args)
	{
		int a[] = {1,2,5,6,3,2};
		int b[] = {44,66,99,77,33,22,55};
		System.out.println("SecondLargest:" + getSecondLargest(a,6));
		System.out.println("SecondLargest:" + getSecondLargest(b,7));
		}
```

```
}
```

Output:

```
SecondLargest:5
SecondLargest:77
```

---

3. Write a java program to check the equality of two arrays?

```
package JAVA;

import java.util.Arrays;

public class EqualityOfAnArrayPG {
	public static void main(String[] args)
	{
		int[] a1 = new int[] {1,2,3,4,5,6,7,8};
		int[] a2 = new int[] {1,2,3,4,5,6,7,8};
		if(a1 == a2)
		{
			System.out.println("Array are equal");
		}
		else
		{
			System.out.println("Array are not equal");
		}


		int[] arr1 = new int[] {'a','b','c','d','e'};
		int[] arr2 = new int[] {'a','b','c','d','e'};
		if (Arrays.equals(arr1, arr2))
		{
			System.out.println("Arrays are equal");
		}
		else
		{
			System.out.println("Arrays are not equal");
		}
	}
}
```

Output:

```
Array are not equal
Arrays are equal
```

---

4. Write a java program to find all pairs of elements in an integer array whose sum is equal to a given number?

```
package JAVA;

public class PairingOfElementPG {
	public static void main(String[] args)
	{
		int[] arr = {1,5,7,-1,5};
```

```
                int k = 6;
                getParisCount(arr,k);
        }
    public static void getParisCount(int[] arr, int k)
    {
        int count = 0;
        for(int i = 0; i <arr.length; i++)
            for(int j = i+1; j <arr.length; j++)
                if((arr[i] + arr[j]) ==k)
                    count ++;
        System.out.printf("Count of pairs is %d", count);

    }
}
```

Output:

```
Count of pairs is 3
```

---

5. Write a java program to find continuous sub array whose sum is equal to a given number?

```
package JAVA;

import java.util.Arrays;
import java.util.Scanner;

public class SubArrayPG {
    public static void subarray(int arr[], int n, int sum)
    {
        int currentsum,i,j;
        for(i=0;i<n;i++)
        {
            currentsum = arr[i];
            for(j=i+1;j<=n;j++)
            {
                if(currentsum == sum)
                {
                    int p = j-1;
                    System.out.println("Sum found between
indexes " + i + "and" + p);

                }
                if(currentsum > sum || j == n)
                    break;
                currentsum = currentsum + arr[j];
            }
        }
        System.out.println("No subarray found");

    }

    public static void main(String[] args)
    {
        int n;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter number of elements:");
        n = sc.nextInt();
```

```
                int[] array = new int[100];
                System.out.println("Enter elements of the array:");
                for(int i=0;i<n;i++)
                {
                        array[i]=sc.nextInt();
                }
                System.out.println("Enter value of sum:");
                int sum = sc.nextInt();
                subarray(array, n, sum);
        }
}
```

Output:

```
Enter number of elements:
5
Enter elements of the array:
2 5 7 9 3
Enter value of sum:
26
Sum found between indexes 0and4
No subarray found
```

---

6. Write a java program to find the intersection of two arrays?

```
package JAVA;

public class intersectionOfArrayPG {
public static void main(String[] args)
{
        int myArray1[] = {23, 36, 96, 78, 55};
        int myArray2[] = {78, 45, 19, 73, 55};
        System.out.println("Intersection of the two array:");
        for(int i=0;i<myArray1.length;i++)
        {
                for(int j=0;j<myArray2.length;j++)
                {
                        if(myArray1[i] == myArray2[j])
                        {
                                System.out.println(myArray2[j]);
                        }
                }
        }
}
}
```

Output:

```
Intersection of the two array:
78
55
```

---

7. Write a java program to separate zeros from non-zeros in an integer array?

```
package JAVA;
```

```
public class SeparateZeroAndNonzeroPG {
	static int a[] = {1,4,3,4,0,1};
	static int k=6;
	static int n=a.length;
public static void move0toEnd()
{
	int bigin=0;
	for(int i=0;i<n;i++)
	{
		if(a[i]!=0)
		{
			a[bigin]=a[i];
			bigin+=1;
		}
	}
	while(bigin<n)
	{
		a[bigin]=0;
		bigin+=1;
	}
}
public static void main(String[] args)
{
	move0toEnd();
	for(int i:a)
		System.out.println(i+" ");
}
}
```

Output:

```
1
4
3
4
1
0
```

8.Write a java program to convert an array to ArrayList and an ArrayList to array?

```
package JAVA;

import java.util.ArrayList;
import java.util.Arrays;
import java.util.List;

public class ConvertArrayToArraylistPG {
	public static void main(String[] args)
	{
		String[] array = {"Java","Python","C"};
		List al = Arrays.asList(array);
		System.out.println(al);
	}
}
```

Output:

```
[Java, Python, C]
```

---

9. Write a java program to count occurrences of each element in an array?

```
package JAVA;

import java.util.Scanner;

public class CountOccurrencePG {
public static void main(String[] args)
{
	int n,x,count = 0, i = 0;
	Scanner s = new Scanner(System.in);
	System.out.println("Enter no. of elements you want in array:");
	n = s.nextInt();
	int a[] = new int[n];
	System.out.println("Enter all the element:");
	for(i=0;i<n;i++)
	{
		a[i]  = s.nextInt();
	}
	System.out.println("Enter the element of which you want to count
number of occurrences:");
	x = s.nextInt();
	for(i=0;i<n;i++)
	{
		if(a[i] == x)
		{
			count++;
		}
	}
	System.out.println("Number of Occurrences of the element: " +
count);
}
}
```

Output:

```
Enter no. of elements you want in array:
6
Enter all the element:
3
4
5
7
5
5
Enter the element of which you want to count number of occurrences:
5
Number of Occurrences of the element: 3
```

---

10. Write a java program to reverse an array without using an additional array?

```
package JAVA;
```

```
import java.util.Scanner;

public class ReverseOfArrayPG {
public static void main(String[] args)
{
	int[] arr = new int[] {1,2,3,4,5};
	System.out.println("Original array:");
	for(int i=0;i<arr.length;i++)
	{
		System.out.println(arr[i]+" ");
	}
	System.out.println();
	System.out.println("Array in reverse order");
	for(int i=arr.length-1;i>=0;i--)
	{
		System.out.println(arr[i] +" ");
	}
}

}
```

Output:

```
Original array:
1
2
3
4
5

Array in reverse order
5
4
3
2
1
```