Array Practice Questions:

Easy Level

1.Find the Maximum Number in an Array

Write a Java program to find the maximum number in a given array.

Example:

Input: [5, 12, 8, 20, 3]

Output: 20

Code:

```java
import java.util.*;

public class MaxNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter array size: ");
        int n = sc.nextInt();
        int[] arr = new int[n];

        System.out.println("Enter " + n + " numbers:");
        for (int i = 0; i < n; i++)
            arr[i] = sc.nextInt();

        int max = arr[0];
        for (int i = 1; i < n; i++)
            if (arr[i] > max)
                max = arr[i];

        System.out.println("Maximum Number: " + max);
        sc.close();
    }
}
```

2.Reverse an Array

Write a Java program to reverse a given array without using extra space.

Example:

Input: [1, 2, 3, 4, 5]

Output: [5, 4, 3, 2, 1]

Code:

```java
import java.util.*;

public class ReverseArray {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter array size: ");
        int n = sc.nextInt();
        int[] arr = new int[n];

        System.out.println("Enter " + n + " numbers:");
        for (int i = 0; i < n; i++)
            arr[i] = sc.nextInt();

        for (int i = 0, j = n - 1; i < j; i++, j--) {
            int temp = arr[i];
            arr[i] = arr[j];
            arr[j] = temp;
        }

        System.out.println("Reversed Array: " + Arrays.toString(arr));
        sc.close();
    }
}
```

Medium Level

3.Find the Missing Number in an Array

You are given an array containing N-1 distinct numbers from 1 to N. Find the missing number.

Example:

Input: [1, 2, 4, 5, 6] (N = 6)

Output: 3

Code:

```java
import java.util.*;

public class MissingNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter N (total numbers should be from 1 to N): ");
        int n = sc.nextInt();
        int[] arr = new int[n - 1];

        System.out.println("Enter " + (n - 1) + " numbers:");
        int sum = 0;
        for (int i = 0; i < n - 1; i++) {
            arr[i] = sc.nextInt();
            sum += arr[i];
        }

        int totalSum = n * (n + 1) / 2;
        System.out.println("Missing Number: " + (totalSum - sum));
        sc.close();
    }
}
```

4.Move All Zeros to the End

Write a Java program to move all zeros in an array to the end, while maintaining the relative order of non-zero elements.

Example:

Input: [0, 1, 0, 3, 12]

Output: [1, 3, 12, 0, 0]

Code:

```
import java.util.*;
public class MoveZeros {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter array size: ");
        int n = sc.nextInt();
        int[] arr = new int[n];

        System.out.println("Enter " + n + " numbers:");
        for (int i = 0; i < n; i++)
            arr[i] = sc.nextInt();

        int index = 0;
        for (int i = 0; i < n; i++)
            if (arr[i] != 0)
                arr[index++] = arr[i];

        while (index < n)
            arr[index++] = 0;

        System.out.println("Modified Array: " + Arrays.toString(arr));
        sc.close();
    }
}
```

5.Find Pairs with Given Sum

Given an integer array and a target sum, find all pairs of numbers that add up to the given sum.

Example:

Input: arr = [1, 4, 6, 8, 3, 2], target = 10

Output: (4, 6), (8, 2)

Code:

```java
import java.util.*;

public class PairSum {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter array size: ");
        int n = sc.nextInt();
        int[] arr = new int[n];

        System.out.println("Enter " + n + " numbers:");
        for (int i = 0; i < n; i++)
            arr[i] = sc.nextInt();

        System.out.print("Enter target sum: ");
        int target = sc.nextInt();

        System.out.println("Pairs with sum " + target + ":");
        for (int i = 0; i < n; i++) {
            for (int j = i + 1; j < n; j++) {
                if (arr[i] + arr[j] == target) {
                    System.out.println("(" + arr[i] + ", " + arr[j] + ")");
                }
            }
        }
        sc.close();
    }
}
```