

### 1. Write a Java Program to Check if an Element Exists in an Array.

#### Problem Statement:

Write a program in Java to check if a given element exists in an array. If the element exists, display its position(s); otherwise, display a message indicating that the element is not found.

#### Example Input:

Enter the size of the array: 5  
Enter the elements of the array: 10 20 30 40 50  
Enter the element to search: 30

#### Example Output:

Element 30 exists in the array.

#### Example Input (Not Found):

Enter the size of the array: 4  
Enter the elements of the array: 5 15 25 35  
Enter the element to search: 10

#### Example Output (Not Found):

Element 10 does not exist in the array.

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### 2. Write a Java Program to Find Duplicate Elements in an Array.

#### Problem Statement:

Write a program in Java to find and display all duplicate elements in a given array.

#### Example Input:

Enter the size of the array: 7  
Enter the elements of the array: 1 2 3 2 4 5 1

#### Example Output:

Duplicate elements: 1, 2

#### Example Input (No Duplicates):

Enter the size of the array: 5

Enter the elements of the array: 10 20 30 40 50

**Example Output (No Duplicates):**

No duplicate elements found.

**3. Write a program to create an integer array of a given size with user-provided elements and display the count of even and odd values separately.**

**Input:**

Enter the size of the array: 5

Enter the elements of the array:

10 15 20 25 30

**Output:**

Number of even numbers: 3

Number of odd numbers: 2

**4. Write a program to create an integer array of a given size and display the maximum element in the array.**

**Input**

Enter the size of the array: 4

Enter the elements of the array:

12 7 19 5

**Output**

Maximum element: 19

**5. Write a program to create an integer array of a given size and display the minimum element in the array.**

**Input**

Enter the size of the array: 3

Enter the elements of the array:

25 10 15

### **Output**

Minimum element: 10

## **6. Write a program to calculate and display the sum of all the elements in an integer array provided by the user.**

### **Input**

Enter the size of the array: 5

Enter the elements of the array:

1 2 3 4 5

### **Output**

Sum of elements: 15

## **Answers:**

### **1. Checking if an Element Exists in Array:**

```
class Main {  
    public static void main(String[] args) {  
        int arr[] = {10, 20, 30, 40, 50};  
        int searchElement = 10;  
        boolean exist = false;  
        for (int i = 0; i < arr.length; i++) {  
            if (arr[i] == searchElement) {  
                exist = true;  
                break;  
            }  
        }  
    }  
}
```

```

    if (exist) {
        System.out.println("Element " + searchElement + " exists in the array.");
    } else {
        System.out.println("Element " + searchElement + " does not exist in the array.");
    }
}
}

```

## Or Using Scanner Class

```

import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Ask the user for the size of the array
        System.out.print("Enter the number of elements in the array: ");
        int n = scanner.nextInt();
        // Initialize the array with the given size
        int[] arr = new int[n];
        // Read elements from the user
        System.out.println("Enter " + n + " elements:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
        // Search for an element in the array
        System.out.print("Enter the element to search: ");
        int searchElement = scanner.nextInt();
        boolean exist = false;
        for (int i = 0; i < arr.length; i++) {
            if (arr[i] == searchElement) {
                exist = true;
                break;
            }
        }
        if (exist) {
            System.out.println("Element " + searchElement + " exists in the array.");
        } else {
            System.out.println("Element " + searchElement + " does not exist in the array.");
        }
    }
}

```

## 2. Finding Duplicate Elements in an Array:

### Example:-

```
class Main {
    public static void main(String[] args) {
        int[] arr = {1, 2, 3, 4, 2, 5, 6, 3, 7};
        System.out.println("Duplicate elements in the 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[i]);
                    break; // Exit the inner loop once a duplicate is found
                }
            }
        }
    }
}
```

**Or**

### Using Scanner Class

```
import java.util.Scanner;

class Main {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the number of elements in the array: ");

        int n = scanner.nextInt();

        int[] arr = new int[n];

        System.out.println("Enter " + n + " elements:");

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

            arr[i] = scanner.nextInt();

        }

        System.out.println("Duplicate elements in the 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[i]);
            break; // Exit the inner loop once a duplicate is found
        }
    }
}
}
}

```

**Or**

```

class Main {

    public static void main(String[] args) {

        int[] arr = {1, 4, 2, 5, 6, 3, 7};

        // Variable to check if duplicates are found
        boolean hasDuplicates = false;

        System.out.println("Duplicate elements in the 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[i]);
                    hasDuplicates = true;
                    break; // Exit the inner loop once a duplicate is found
                }
            }
        }
    }
}

```

```

    }
}

// If no duplicates were found, print a message
if (!hasDuplicates) {
    System.out.println("No duplicate elements found.");
}
}
}

```

**Or**

### **Using Scanner class**

```

import java.util.Scanner;

class Main {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the number of elements in the array: ");

        int n = scanner.nextInt();

        int[] arr = new int[n];

        System.out.println("Enter " + n + " elements:");

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

            arr[i] = scanner.nextInt();

        }

        // Variable to check if duplicates are found

        boolean hasDuplicates = false;
    }
}

```

```
System.out.println("Duplicate elements in the 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[i]);

            hasDuplicates = true;

            break; // Exit the inner loop once a duplicate is found

        }

    }

}

// If no duplicates were found, print a message

if (!hasDuplicates) {

    System.out.println("No duplicate elements found.");

}

}

}
```

---

### 3. Count Even and Odd Numbers

```
class CountEvenOdd {
    public static void main(String[] args) {
        // Predefined array
        int[] arr = {12, 15, 8, 7, 20, 33, 45};
        // Counting even and odd numbers
        int evenCount = 0;
        int oddCount = 0;
        for (int i = 0; i < arr.length; i++) {
            if (arr[i] % 2 == 0) {
                evenCount++;
            }
        }
    }
}
```



```

        } else {
            oddCount++;
        }
    }
    System.out.println("Even numbers count: " + evenCount);
    System.out.println("Odd numbers count: " + oddCount);
}
}

```

## Or

### Using Scanner Class

```

import java.util.Scanner;
class CountEvenOdd {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        // Input: Array size
        System.out.print("Enter the number of elements in the array: ");
        int n = scanner.nextInt();
        int[] arr = new int[n];
        // Input: Array elements
        System.out.println("Enter the elements of the array:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
        // Counting even and odd numbers
        int evenCount = 0;
        int oddCount = 0;
        for (int i = 0; i < n; i++) {
            if (arr[i] % 2 == 0) {
                evenCount++;
            } else {
                oddCount++;
            }
        }
        System.out.println("Even numbers count: " + evenCount);
        System.out.println("Odd numbers count: " + oddCount);
    }
}

```

```
}
```

---

#### 4. Find Maximum Element

```
class MaxElement {
    public static void main(String[] args) {
        // Predefined array
        int[] arr = {12, 45, 23, 89, 34, 67, 56};
        // Assuming the first element is the maximum initially
        int max = arr[0];
        // Loop through the array to find the maximum element
        for (int i = 1; i < arr.length; i++) {
            if (arr[i] > max) {
                max = arr[i];
            }
        }
        System.out.println("Maximum element: " + max);
    }
}
```

#### Or Using Scanner Class

```
import java.util.Scanner;
class MaxElement {
    public static void main(String[] args) {
        // Create a Scanner object to take input
        Scanner scanner = new Scanner(System.in);
        // Take the size of the array as input
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();
        // Declare an array of size n
        int[] arr = new int[n];
        // Input the elements of the array
        System.out.println("Enter " + n + " elements:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
        // Find the maximum element in the array
        int max = arr[0];
        for (int i = 1; i < n; i++) {
            if (arr[i] > max) {
                max = arr[i];
            }
        }
    }
}
```

```

    }
}
System.out.println("The maximum element is: " + max);
}
}

```

---

## 5. Find Minimum Element

```

public class MinElement {
    public static void main(String[] args) {
        // Example array
        int[] arr = {15, 32, 8, 4, 29, 12};

        // Find the minimum element in the array
        int min = arr[0];
        for (int i = 1; i < arr.length; i++) {
            if (arr[i] < min) {
                min = arr[i];
            }
        }

        // Output the minimum element
        System.out.println("The minimum element is: " + min);
    }
}

```

### Or Using Scanner Class

```

import java.util.Scanner;
class MinElement {
    public static void main(String[] args) {
        // Create a Scanner object to take input
        Scanner scanner = new Scanner(System.in);
        // Take the size of the array as input
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();
        // Declare an array of size n
        int[] arr = new int[n];
        // Input the elements of the array
        System.out.println("Enter " + n + " elements:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
    }
}

```

```

    }
    // Find the minimum element in the array
    int min = arr[0];
    for (int i = 1; i < n; i++) {
        if (arr[i] < min) {
            min = arr[i];
        }
    }

    // Output the minimum element
    System.out.println("The minimum element is: " + min);
}
}

```

---

## 6. Find Sum of Elements

```

public class SumOfElements {
    public static void main(String[] args) {
        // Example array
        int[] arr = {10, 20, 30, 40, 50};

        // Calculate the sum of the elements in the array
        int sum = 0;
        for (int i = 0; i < arr.length; i++) {
            sum += arr[i];
        }

        // Output the sum of the elements
        System.out.println("The sum of the elements is: " + sum);
    }
}

```

### Or Using Scanner class

```

import java.util.Scanner;
class SumOfElements {
    public static void main(String[] args) {
        // Create a Scanner object to take input
        Scanner scanner = new Scanner(System.in);
        // Take the size of the array as input
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();
    }
}

```

```
// Declare an array of size n
int[] arr = new int[n];
// Input the elements of the array
System.out.println("Enter " + n + " elements:");
for (int i = 0; i < n; i++) {
    arr[i] = scanner.nextInt();
}
// Calculate the sum of the elements in the array
int sum = 0;
for (int i = 0; i < n; i++) {
    sum += arr[i];
}
System.out.println("The sum of the elements is: " + sum);
}
}
```

---