

## 1. Find Common Elements Between Two Arrays

**Question:** Given two arrays, find their common elements.

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let commonElements = arr1.filter(element => arr2.includes(element));
console.log(commonElements); // Output: [2, 1, 3]
```

**Explanation:**

1. **filter()**:

Iterates through each element in arr1.

Checks if the element exists in arr2 using includes().

2. **includes()**:

Returns true if the element exists in arr2, otherwise false.

3. **Result:**

The elements that return true are added to the commonElements array.

## 2. Find Common Elements Without Duplicates

**Question:** Find common elements, but ensure the result has no duplicates.

**Code:**

```
let arr1 = [2, 1, 4, 6, 3, 2];
let arr2 = [1, 7, 8, 3, 2, 2];

let commonElements = [...new Set(arr1.filter(element => arr2.includes(element)))];
console.log(commonElements); // Output: [2, 1, 3]
```

**Explanation:**

1. **Set**: Removes duplicates from the array.
2. **Process**:

Use filter() to find common elements.

Pass the result to new Set() to remove duplicates.

Convert back to an array using the spread operator [...].

### 3. Find Elements Unique to Each Array

**Question:** Find elements that are unique to each array (not common).

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let uniqueToArr1 = arr1.filter(element => !arr2.includes(element));
let uniqueToArr2 = arr2.filter(element => !arr1.includes(element));
let uniqueElements = [...uniqueToArr1, ...uniqueToArr2];

console.log(uniqueElements); // Output: [4, 6, 7, 8]
```

**Explanation:**

1. **Unique to arr1:**

Use filter() to find elements in arr1 that do not exist in arr2.

2. **Unique to arr2:**

Similarly, find elements in arr2 that do not exist in arr1.

3. **Combine Results:**

Merge both arrays using the spread operator [...].

### 4. Find Union of Two Arrays

**Question:** Combine two arrays and remove duplicates.

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let union = [...new Set([...arr1, ...arr2])];
console.log(union); // Output: [2, 1, 4, 6, 3, 7, 8]
```

**Explanation:**

1. **Combine Arrays:**

Use the spread operator to merge arr1 and arr2.

## 2. Remove Duplicates:

Pass the merged array into new Set() to eliminate duplicates.

## 5. Find Intersection Using Sets

**Question: Find common elements using Set for better performance.**

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let set1 = new Set(arr1);
let intersection = arr2.filter(element => set1.has(element));

console.log(intersection); // Output: [1, 3, 2]
```

**Explanation:**

### 1. Create Set:

Convert arr1 into a Set to enable quick lookups.

### 2. Find Intersection:

Use filter() on arr2 and check if set1 contains the element.

## 6. Find Difference Between Two Arrays

**Question: Find elements in arr1 that are not in arr2.**

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let difference = arr1.filter(element => !arr2.includes(element));
console.log(difference); // Output: [4, 6]
```

**Explanation:**

### 1. Filter Elements:

Use filter() to find elements in arr1 that do not exist in arr2.

## 7. Find Symmetric Difference

**Question:** Find elements that are in either array but not in both.

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let diff1 = arr1.filter(element => !arr2.includes(element));
let diff2 = arr2.filter(element => !arr1.includes(element));
let symmetricDifference = [...diff1, ...diff2];

console.log(symmetricDifference); // Output: [4, 6, 7, 8]
```

**Explanation:**

1. **Unique to arr1:**

Find elements in arr1 not in arr2.

2. **Unique to arr2:**

Find elements in arr2 not in arr1.

3. **Combine Results:**

Merge the two results to get the symmetric difference.

## 8. Find Common Elements in Three Arrays

**Question:** Find common elements in three arrays.

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];
let arr3 = [3, 2, 9, 1];

let commonElements = arr1.filter(element => arr2.includes(element) &&
arr3.includes(element));
console.log(commonElements); // Output: [1, 3, 2]
```

**Explanation:**

1. **Filter for All Arrays:**

Use filter() to check if an element exists in both arr2 and arr3.

## 9. Check if Two Arrays Are Disjoint

**Question:** Check if two arrays have no common elements.

**Code:**

```
let arr1 = [2, 4, 6];
let arr2 = [1, 7, 8];

let isDisjoint = arr1.every(element => !arr2.includes(element));
console.log(isDisjoint); // Output: true
```

**Explanation:**

1. **every():**

Checks if every element in arr1 does not exist in arr2.

## 10. Count Common Elements

**Question:** Count the number of common elements between two arrays.

**Code:**

```
let arr1 = [2, 1, 4, 6, 3];
let arr2 = [1, 7, 8, 3, 2];

let commonCount = arr1.filter(element => arr2.includes(element)).length;
console.log(commonCount); // Output: 3
```

**Explanation:**

1. **Find Common Elements:**

Use filter() to find common elements.

2. **Count:**

Use .length to count the number of elements in the resulting array.

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