

Training Day 24 Report

24 July 2025

JSON and Arrays in JavaScript

- **1. Introduction**
- JSON (JavaScript Object Notation) is a **lightweight data format** used to store and exchange data between server and client.
Arrays are **JavaScript objects** used to store **ordered lists of values**.
- Often, when working with APIs or local data, we need to **convert JSON to arrays** or **arrays to JSON** for processing.

- **2. JSON to Array**
- **a) What is JSON?**
- JSON is a **string representation** of objects or arrays.
It looks like JavaScript objects but is **always a string**.
- **Example JSON array (string):**
- `let jsonData = '["Apple", "Banana", "Mango"]';`
- **b) Converting JSON to Array**
- To convert a JSON string into a JavaScript array, we use **JSON.parse()**.
- **Syntax:**
- `let array = JSON.parse(jsonString);`
- **Example:**
- `let jsonData = '["Apple", "Banana", "Mango"]';`
- `let fruits = JSON.parse(jsonData);`
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- `console.log(fruits); // ["Apple", "Banana", "Mango"]`
- `console.log(fruits[0]); // Apple`
- **Explanation:**
- `JSON.parse()` takes a JSON string and converts it to a **JavaScript object or array**.
- After parsing, we can access array elements using **indices**.

- **c) JSON Object to Array of Objects**
- Sometimes, JSON contains **objects**:
- `let jsonData = '[{"name":"Shubhdeep","age":20}, {"name":"Riya","age":19}]';`
- `let students = JSON.parse(jsonData);`
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- `console.log(students[0].name); // Shubhdeep`
- `console.log(students[1].age); // 19`

- Each object in JSON becomes an **object in the array** after parsing.
- **3. Array to JSON**
- **a) Converting Array to JSON**
- To convert a JavaScript array into a JSON string, we use **JSON.stringify()**.
- **Syntax:**
- `let jsonString = JSON.stringify(array);`
- **Example:**
- `let fruits = ["Apple", "Banana", "Mango"];`
- `let jsonData = JSON.stringify(fruits);`
- `console.log(jsonData); // ["Apple","Banana","Mango"]`
- **Explanation:**
- `JSON.stringify()` converts a **JavaScript array or object** into a **JSON string**.
- JSON strings are often used to **send data to servers** or store in **local storage**.
- **b) Array of Objects to JSON**
- You can also convert an array of objects into JSON:
- `let students = [`
- `{ name: "Shubhdeep", age: 20 },`
- `{ name: "Riya", age: 19 }`
- `];`
- `let jsonData = JSON.stringify(students);`
- `console.log(jsonData);`
- `// [{"name":"Shubhdeep","age":20},{ "name":"Riya","age":19}]`
- Each object is converted into JSON format.
- This string can be transmitted to a **server** or saved in **local storage**.
- **4. JSON ↔ Array Example Together**
- **Example:**
- `// JSON string`
- `let jsonData = '[{"name":"Aman","score":80},{ "name":"Riya","score":90}]';`
- `// JSON to Array`
- `let students = JSON.parse(jsonData);`
- `console.log(students[0].name); // Aman`
- `// Modify array`
- `students.push({ name: "Karan", score: 85 });`

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- `// Array to JSON`
- `let newJsonData = JSON.stringify(students);`
- `console.log(newJsonData);`
- `//`
`'[{"name":"Aman","score":80},{"name":"Riya","score":90},{"name":"Karan","score":85}]'`
- **Explanation:**
- **JSON.parse()** converts the JSON string to a JavaScript array of objects.
- You can **modify the array** (add/remove elements).
- **JSON.stringify()** converts the modified array back to a JSON string.

• 5. Using JSON with Local Storage

- Often, arrays are stored in **browser local storage** using JSON.

• Example:

- `let fruits = ["Apple", "Banana", "Mango"];`
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- `// Store array as JSON string`
- `localStorage.setItem("fruits", JSON.stringify(fruits));`
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- `// Retrieve array from JSON string`
- `let storedFruits = JSON.parse(localStorage.getItem("fruits"));`
- `console.log(storedFruits); // ["Apple", "Banana", "Mango"]`

• 6. Key Points

- **JSON.parse()** → Converts JSON string → JavaScript array/object
- **JSON.stringify()** → Converts JavaScript array/object → JSON string
- Useful for **APIs, server communication, and local storage.**
- JSON is **always a string**, arrays and objects are **actual JavaScript types**.

• 7. Conclusion

- Converting between **JSON and arrays** is a common task in web development.
- `JSON.parse()` and `JSON.stringify()` make it simple and efficient.
- Understanding these conversions is essential for **data handling, storage, and server communication.**