

# JSON

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**JSON (JavaScript Object Notation)** is a lightweight data interchange format that is easy for humans to read and write, and it's widely used for transmitting data between a server and a web application, as well as for storing data. JSON uses a simple syntax that consists of key-value pairs and nested structures.

## JSON Syntax:

- JSON data is written as key-value pairs.
- Data is enclosed in curly braces {}.
- Each key is followed by a colon :, and its corresponding value.
- Key-value pairs are separated by commas ,.

```
{
  "name": "John Doe",
  "age": 30,
  "city": "New York"
}
```

## JSON Data Types:

- Strings: Enclosed in double quotes "".
- Numbers: Integers or floating-point numbers.
- Booleans: true or false.
- Arrays: Ordered lists of values enclosed in square brackets [].
- Objects: Collection of key-value pairs enclosed in curly braces {}.

```
{
  "name": "John Doe",
  "age": 30,
  "isStudent": false,
  "grades": [90, 85, 95],
  "address": {
    "street": "123 Main St",
    "city": "New York",
    "country": "USA"
  }
}
```

## JSON Arrays:

- JSON arrays can contain multiple values of any type.
- Values within an array are separated by commas.

```
{
  "fruits": ["apple", "banana", "orange"]
}
```

## Accessing JSON Data:

- In JavaScript, you can access JSON data using dot notation or square bracket notation.
- Dot notation: `objectName.key`

- Square bracket notation: `objectName["key"]`

```
{
  "employee": {
    "name": "John Doe",
    "age": 30,
    "department": "Engineering"
  }
}
```

### To access the employee's name using dot notation:

```
var employeeName = json.employee.name;
console.log(employeeName); // Output: John Doe
```

### To access the employee's department using square bracket notation:

```
var employeeDepartment = json["employee"]["department"];
console.log(employeeDepartment); // Output: Engineering
```

**JSON is primarily a data format and not a programming language. However, it is commonly used in conjunction with programming languages like JavaScript to exchange data between systems.**