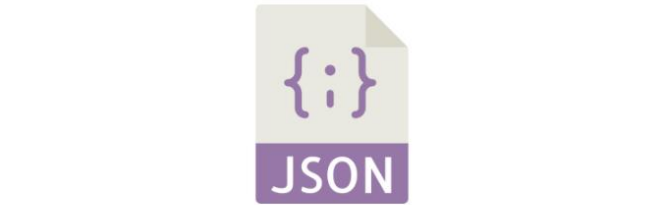# What is JSON?

JSON stands for JavaScript Object Notation

📑 *JSON* › *JSON is designed by Douglas Crockford (2001)*

📑 *What It Is:* › *JSON, or JavaScript Object Notation, is a minimal, readable format for structuring data. It is used primarily to transmit data between a server and web application.*

- JSON is a lightweight format for storing and transporting data
- JSON is often used when data is sent from a server to a web page
- JSON is "self-describing" and easy to understand


```
{
    "car": {
        "color": "blue",
        "price": "$30,000"
    }
}
```

JSON Code:

```
{
"employees":[
    {"firstName":"John", "lastName":"MC"},
    {"firstName":"Aaron", "lastName":"A"},
    {"firstName":"James", "lastName":"G"},
    {"firstName":"Oliver", "lastName":"A"},
    {"firstName":"Walter", "lastName":"W"}
]
}
```

❝ **Q**: What is JSON?
 A: JSON, or JavaScript Object Notation, is a minimal, readable format for structuring data. It is used primarily to transmit data between a server and web application.

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Syntax Rules

- Data is in `name/value` pairs.
- `: (colon)` to separate name from value.
- Data is separated by `, (commas)` .
- `Curly braces` (`{ and }`) hold objects.
- `Square brackets` (`[and ]`)hold arrays.

```
{ "name" : "John" }
```

Example of a dictionary object written in JSON.

```
{
        "Country": "US",
        "Capital": "Washington",
        "Continent": "North America"
}
```

- It starts with { (left brace) and ends with } (right brace).
- This particular example contains 3 keys – country, capital, and continent.
- Each key is followed by : (colon) and its respective value. We separate the key/value pairs by , (comma).

Example of an array.

```
[
        "Japan",
        "Austria",
        "Canada"
]
```

- It starts with [(left bracket), ends with] (right bracket)
- the items are separated by , comma, similar to the dictionary.

❝ **Q**: What is the rule for JSON syntax rules?
 A: JSON syntax is a set of the JavaScript object notation syntax.

- Data is in name/value pairs
- Data is separated by comma
- Curly brackets hold objects
- Square bracket holds arrays

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Data Types

In JSON, values must be one of the following data types:

- a string

```
{ "name":"John" }
```

- a number

```
{ "age":30 }
```

- an object (JSON object)

```
{
"employee":{ "name":"John", "age":40, "city":"Virginia" }
}
```

- an array

```
{
"employees":[ "John", "Aaron", "James" , "Oliver" , "Walter" ]
}
```

- a boolean

```
{ "Pass":true }
```

- null

```
{ "middlename":null }
```

⚠ Avoid ! : JSON values cannot be one of the following data types:
- a function
- a date
- undefined

❝ **Q**: What are the data types supported by JSON?
 A:Data types supported by JSON includes

- Number
- String
- Boolean
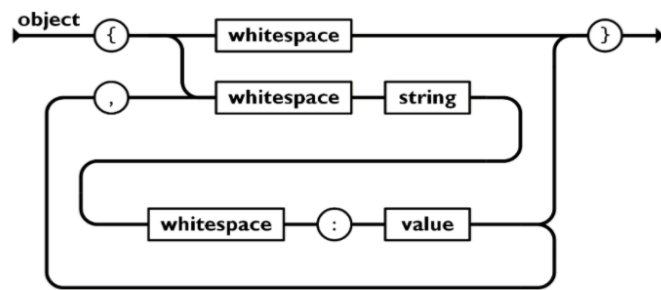- Array
- Object
- Null

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Basics of JSON

JSON is built on two structures:

- A collection of name/value pairs.
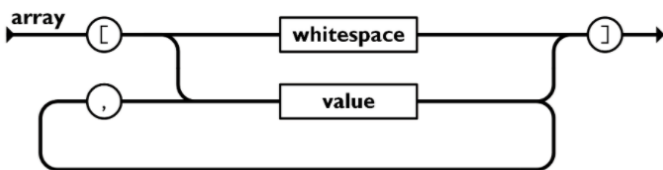- An ordered list of values. In most languages, this is realized as an array, vector, list, or sequence.

In JSON, they take on these forms:

An object is an unordered set of name/value pairs. An object begins with `{` left brace and ends with `}` right brace. Each name is followed by `:` colon and the name/value pairs are separated by `,` comma.
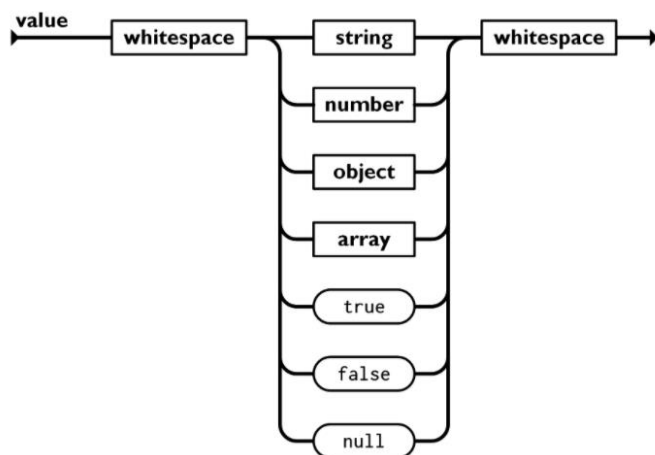


```
{"firstName":"John", "lastName":"MC"}
```

An array is an ordered collection of values. An array begins with `[` left bracket and ends with `]` right bracket. Values are separated by `,` comma.


```
1  employees":[
2      {"firstName":"John", "lastName":"MC"},
3      {"firstName":"Walter", "lastName":"W"},
4  ]
```
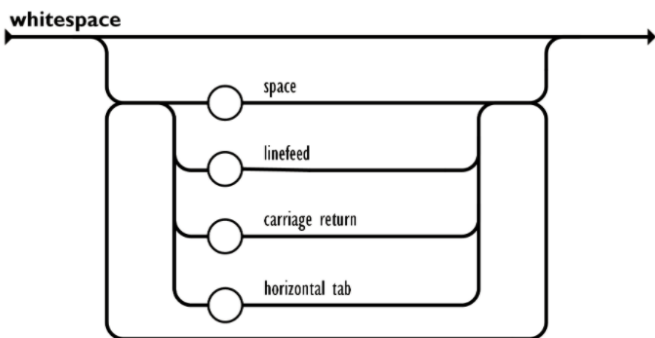
A value can be a string in double quotes, or a number, or true or false or null, or an object or an array. These structures can be nested.

A string is a sequence of zero or more Unicode characters, wrapped in double quotes, using backslash escapes. A character is represented as a single character string. A string is very much like a C or Java string.

A number is very much like a C or Java number, except that the octal and hexadecimal formats are not used.

Whitespace can be inserted between any pair of tokens.

> **Q**: What is JSON objects?
> **A**: An object can be defined as an unordered set of name/value pairs. An object in JSON starts with {left brace} and finish or ends with {right brace}. Every name is followed by: (colon) and the name/value pairs are parted by, (comma).
>
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Full Length Example

- The following full-length example specifies the construct of JSON which includes symbols.

Example:

```
1  {
2      "json": [
3          "rigid",
4          "better for data interchange"
5      ],
6      "yaml": [
7          "slim and flexible",
8          "better for configuration"
9      ],
10     "object": {
11         "key": "value",
12         "array": [
13             {
14                 "null_value": null
15             },
16             {
17                 "boolean": true
18             },
19             {
20                 "integer": 1
21             }
22         ]
23     }
24  }
```