JSON

JSON – Java Script Object Notation

- JSON is a syntax for storing and exchanging data.
- Basically, It was designed for human-readable data interchange.
- JSON is text, written with Java Script Object Notation.
- It has been extended from the JavaScript scripting language
- The filename extension is **.json**
- JSON internet Media type is **application/json**

JSON Data Types

1. String

A string in JSON is a sequence of characters enclosed in double quotes ("). It can include letters, numbers, spaces, and special characters.

Example:

```
{
  "name": "John Doe",
  "city": "New York",
  "status": "Active"
}
```

2. Number

Numbers in JSON can be integers or floating-point (decimal) values. They do not require quotes.

Example:

```
{
  "age": 30,
  "height": 5.9,
  "score": 100
}
```

3. Boolean

Boolean values can either be true or false. They represent binary states and are not enclosed in quotes.

Example:

```
{
  "isStudent": false,
  "isEmployed": true
}
```

4. Null

null is a special value in JSON that represents the absence of a value. It is not enclosed in quotes.

Example:

```
{
  "middleName": null,
  "spouse": null
}
```

5. Array

An array is an ordered list of values. The values can be of any JSON data type (e.g., strings, numbers, objects, etc.). Arrays are enclosed in square brackets ([]).

Example:

```
{
  "skills": ["Java", "Python", "Selenium"],
  "scores": [85, 90, 95]
}
```

6. Object

An object is a collection of key-value pairs enclosed in curly braces ({}). Keys are strings, and values can be any JSON data type.

Example:

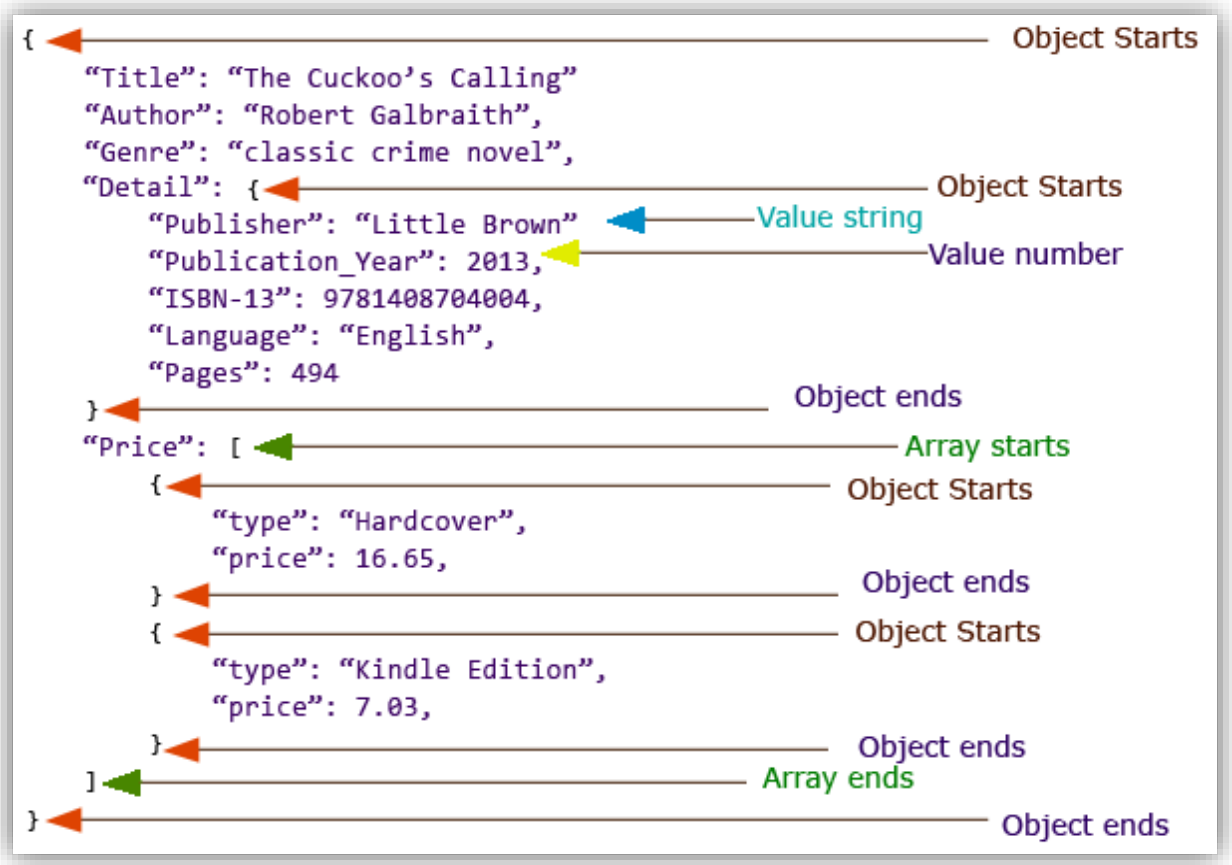
```
{
  "person": {
    "firstName": "John",
    "lastName": "Doe",
    "address": {
      "city": "New York",
      "zip": "10001"
    }
  }
}
```

7. Example Combining All Data Types

Here is a more complex example that combines all JSON data types:

Example:

```
{
  "name": "Alice",
  "age": 28,
  "isMarried": false,
  "children": null,
  "hobbies": ["reading", "traveling", "coding"],
  "address": {
    "city": "Los Angeles",
    "state": "California",
    "postalCode": "90001"
  },
  "scores": [95.5, 88.0, 76],
  "profileComplete": true
}
```



JSON Path

- **JSON Path** is a query language for JSON data, similar to XPath for XML.
- It allows you to navigate and extract specific data from a JSON document by specifying paths.
- JSON Path uses a syntax that makes it easy to access elements, objects, arrays, and their nested components.

JSON Path Syntax Overview

1. **Dot Notation (.)**: Accesses child elements.
2. **Bracket Notation ([])**: Accesses array elements or specific keys.
3. **Wildcard (*)**: Matches all elements.

Sample JSON Data

Here's an example JSON object that we'll use to demonstrate JSON Path queries:

```
{
  "store": {
    "book": [
      {
        "title": "Java Programming",
        "author": "John Doe",
        "price": 29.99,
        "categories": ["Programming", "Java"]
      },
      {
        "title": "Python Basics",
        "author": "Jane Smith",
        "price": 19.99,
        "categories": ["Programming", "Python"]
      }
    ],
    "bicycle": {
      "type": "Mountain",
      "price": 499.99
    }
  }
}
```

JSON Path Examples

1. **Accessing a Simple Key**
    - **Path**: $.store.bicycle.type
    - **Result**: "Mountain"
2. **Accessing a Nested Key**
    - **Path**: $.store.book[0].author
    - **Result**: "John Doe"
3. **Accessing All Elements in an Array**
    - **Path**: $.store.book[*].title
    - **Result**: ["Java Programming", "Python Basics"]
4. **Accessing a Specific Element in an Array**
    - **Path**: $.store.book[1].title
    - **Result**: "Python Basics"
5. **Using a Wildcard to Access All Data in an Array**
    - **Path**: $.store.book[*]
    - **Result**:

```
[
  {
    "title": "Java Programming",
    "author": "John Doe",
    "price": 29.99,
    "categories": ["Programming", "Java"]
  },
  {
    "title": "Python Basics",
    "author": "Jane Smith",
    "price": 19.99,
    "categories": ["Programming", "Python"]
  }
]
```

Useful tools to generate and evaluate JSON Paths:

https://jsonpathfinder.com/

https://www.site24x7.com/tools/jsonpath-finder-validator.html

https://jsonpath.com/