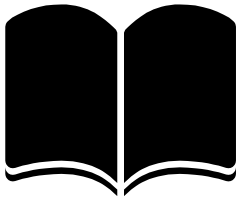
Introduction to JSON

AGENDA



- WHAT IS JSON
- JAVASCRIPT VS. JSON OBJECT
- JSON DATA TYPES
- ACTIVITY
- ACCESSING JSON
- PARSING JSON
- AJAX AND JSON
- SELECTING JSON DATA

JSON

What is JSON?
a lightweight text-based open standard designed for human-readable data interchange.

```
"testSteps": [
{
  "type": "REST Request",
  "method": "GET",
  "URI": "http://google.com/",
  "assertions": [
  {
    "type": "Valid HTTP Status Codes",
    "validStatusCodes": [
      200,
      302
      ]
    }
  ]
```

Need to Know info about JSON

1.

- JSON stands for JavaScript Object Notation.
- Consist of Key-value pairs
- The filename extension is **.json**
- JSON Internet Media type is **application/json**

Need to Know info about JSON

2.

- JSON format is used for serializing and transmitting structured data over network connection.
- It is primarily used to transmit data between a server and web applications.
- Web services and APIs use JSON format to provide public data.
- It can be used with modern programming languages.

JavaScript vs JSON Object

JavaScript Object

With JavaScript Objects, we can call associate functions to key Qoutes are needed for key value.

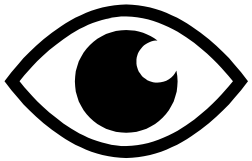
```
var person = {
    name: "Jane",
    age: 47,
    email: "jane@example.com"
}
```

JSON Object

JSON Key's wrapped in qoutes

```
"person": {
    "name": "Jane",
    "age": 47,
    "email": "jane@example.com"
}
```

JSON Data Types



Strings
Strings in JSON must be written in double quotes.

{ "name":“Joe" }

Arrays
Values in JSON can be arrays.

{
"employees":["John", "Anna", "Peter"]
}

Numbers
Numbers in JSON must be an integer or a floating point.

{ "age":30 }

Boolean
Values in JSON can be true/false.

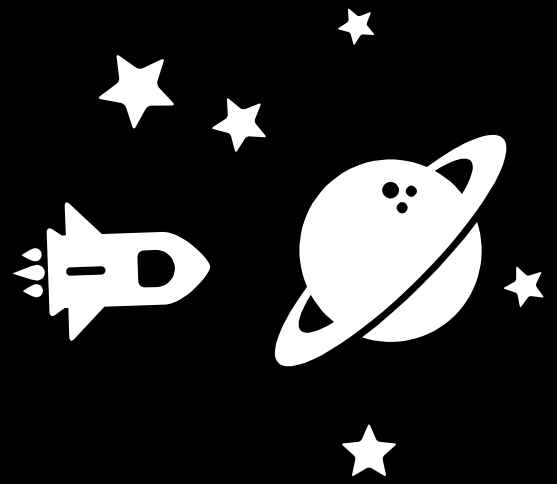
{ "sale":true }

Objects
Values in JSON can be objects.
{
"employee":{ "name":"John", "age":30, "city":"New York" }
}

Null
Values in JSON can be null.

{ "middlename":null }

ACTIVITY



Place in to JSON formate:
Maggie is 21 years old and a undergrad student at UIC. Maggie needs three courses to graduate. She needs CS484 which starts at 9am and currently has 45 students enrolled, CS599 which starts at 11:30am and currently has 42 students enrolled and CS401 which starts at 2:30am and currently has 69 students enrolled. Maggie started during the Fall 2019 term and is hoping to graduate at the conclusion of Spring 2022.

Working with JSON

```
var student = {
                "name": "Lisa",
                "id": 1234,
                "term": "Spring 2017"
              }
```

SELECTING AND OUTPUTING A KEY VALUE

console.log(student.name);

Should print out “Lisa”

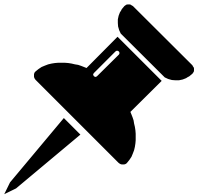
```
var student = [
                {
                 "name": "Lisa",
                 "id": 1234,
                 "term": "Spring 2017"
                },
                {
                 "name": "Silas",
                 "id": 4321,
                 "term": "Fall 2017"
                }
              ]
```

ITERATING THROUGH A JSON OBJECT AND OUTPUTTING DATA

console.log(student[1].name);

Should print out “Silas”

What is AJAX



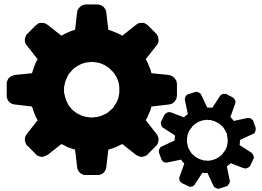
Update a web page without reloading the page

Request data from a server - after the page has loaded

Receive data from a server - after the page has loaded

Send data to a server - in the background

How do you request data from a server?



Ajax is a client-side script that communicates to and from a server/database without the need for a postback or a complete page refresh.

Good Tutorial: https://www.w3schools.com/xml/ajax_intro.asp

Request the file → **Parse data** → **Use data**

```
var xmlhttp = new XMLHttpRequest();
xmlhttp.onreadystatechange = function() {
    if (this.readyState == 4 && this.status == 200) {
        var myObj = JSON.parse(this.responseText);
        document.getElementById("demo").innerHTML = myObj.name;
    }
};
xmlhttp.open("GET", "json_demo.txt", true);
xmlhttp.send();
```

Requesting and Parson JSON via AJAX

HTTP Status Codes
200's are used for successful requests.
300's are for redirections.
400's are used if there was a problem with the request.
500's are used if there was a problem with the server.
https://www.w3schools.com/tags/ref_httpmessages.asp

Checking the header info to make sure file is located on server

JSON objects are listed in the json_demo.txt file, you can also name this file .json

```
// GET Request.
fetch('https://603a806df1d6aa0017a10c48.mockapi.io/restaurants')
// Handle success
.then(response => response.json())  // convert to json
.then(json => console.log(json))    //print data to console
.catch(err => console.log('Request Failed', err)); // Catch errors
```

Using a fetch request

Example
https://gist.github.com/instructorc/179a9e5a07eeb3252766c1b4dee6edf4

Fetch API
The Fetch API provides an interface for fetching resources across a network. It is familiar to XMLHttpRequest, but this API provides a more powerful and flexible feature set.
- More info at: https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API

JSON.parse()

When you receive information from a web server or api, how do you begin to work with the data that is presented to you.

- Data that we receive from the server is always in string format
- We can convert the data into a javascript object by using the parse() function