JavaScript JSON

JSON is a format for storing and transporting data.

JSON is often used when data is sent from a server to a web page.

## **What is JSON?**

* JSON stands for **J**ava**S**cript **O**bject **N**otation
* JSON is a lightweight data interchange format
* JSON is language independent **\***
* JSON is "self-describing" and easy to understand

\* The JSON syntax is derived from JavaScript object notation syntax, but the JSON format is text only. Code for reading and generating JSON data can be written in any programming language.

## **JSON Example**

This JSON syntax defines an employees object: an array of 3 employee records (objects):

{  
"employees":[  
  {"firstName":"John", "lastName":"Doe"},  
  {"firstName":"Anna", "lastName":"Smith"},  
  {"firstName":"Peter", "lastName":"Jones"}  
]  
}

## **The JSON Format Evaluates to JavaScript Objects**

The JSON format is syntactically identical to the code for creating JavaScript objects.

Because of this similarity, a JavaScript program can easily convert JSON data into native JavaScript objects.

## **JSON Syntax Rules**

* Data is in name/value pairs
* Data is separated by commas
* Curly braces hold objects
* Square brackets hold arrays

## **JSON Data - A Name and a Value**

JSON data is written as name/value pairs, just like JavaScript object properties.

A name/value pair consists of a field name (in double quotes), followed by a colon, followed by a value:

"firstName":"John"

## **JSON Objects**

JSON objects are written inside curly braces.

Just like in JavaScript, objects can contain multiple name/value pairs:

{"firstName":"John", "lastName":"Doe"}

## **JSON Arrays**

JSON arrays are written inside square brackets.

Just like in JavaScript, an array can contain objects:

"employees":[  
  {"firstName":"John", "lastName":"Doe"},  
  {"firstName":"Anna", "lastName":"Smith"},  
  {"firstName":"Peter", "lastName":"Jones"}  
]

## **Converting a JSON Text to a JavaScript Object**

A common use of JSON is to read data from a web server, and display the data in a web page.

For simplicity, this can be demonstrated using a string as input.

First, create a JavaScript string containing JSON syntax:

let text = '{ "employees" : [' +  
'{ "firstName":"John" , "lastName":"Doe" },' +  
'{ "firstName":"Anna" , "lastName":"Smith" },' +  
'{ "firstName":"Peter" , "lastName":"Jones" } ]}';

Then, use the JavaScript built-in function JSON.parse() to convert the string into a JavaScript object:

const obj = JSON.parse(text);

## **Why Use JSON?**

The JSON format is syntactically similar to the code for creating JavaScript objects. Because of this, a JavaScript program can easily convert JSON data into JavaScript objects.

Since the format is text only, JSON data can easily be sent between computers, and used by any programming language.

JavaScript has a built in function for converting JSON strings into JavaScript objects:

JSON.parse()

JavaScript also has a built in function for converting an object into a JSON string:

JSON.stringify()

## **Storing Data**

When storing data, the data has to be a certain format, and regardless of where you choose to store it, text is always one of the legal formats.

JSON makes it possible to store JavaScript objects as text.