

# **JSON**

## **(JavaScript Object Notation)**

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### **CS 4640**

## **Programming Languages for Web Applications**

[Robert W. Sebesta, “Programming the World Wide Web”  
[[https://www.w3schools.com/js/js\\_json\\_intro.asp](https://www.w3schools.com/js/js_json_intro.asp)]

# Overview

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1. What is JSON?
2. Why JSON?
3. How does JSON work?

# What is JSON?

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- JavaScript Object Notation
- Data representation for storing and exchanging between server and client
  - Requires double quotes for strings and property names
  - You can't transfer the actual objects over a network. You send text which is converted into objects by the browser
- Looks like JS object, but it is just plain text data (not an object)
  - Contains only properties, no methods
- Misplaced comma or colon can cause a JSON file to go wrong
  - JSONLint – validate JSON (in terms of syntax)
- Specification: [https://www.w3schools.com/js/js\\_json\\_intro.asp](https://www.w3schools.com/js/js_json_intro.asp)

# Why JSON?

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- **Light weight**
  - Plain text, containing only data to be transferred → fast and easy to load
- **Scalable**
  - Flexible, semi-structure, extensible
- **Standard structure**
  - Easy to distribute data over the Internet
- **Multiple applications**
  - JSON data resource can easily be reused to generate different views (promoting MVC)

# How does JSON work?

- Data are presented in property name-value pairs
- Strings and property names (or keys) must be placed in **double quotes**
- The key is separated from its value by a **colon**
- Each key-value pair is separated by a **comma**. No comma after the last key-value pair.

```
{  
  "place": "Charlottesville, VA",  
  "date": "July 20",  
  "map": "img/map-va.png"  
}
```



Key



Value

# How does JSON work? (cont.)

- Values can be any of the following data types

Data type	Description
string	Text (must be written in double quotes)
number	Number
Boolean	Either true or false
array	Array of values – this can also be an array of objects
object	JavaScript object – this can contain child objects or arrays
null	This is when the value is empty or missing

# More JSON Examples

```
{
  "events": [
    {
      "place": "Charlottesville, VA",
      "date": "July 20",
      "map": "img/map-va.png"
    },
    {
      "place": "Austin, TX",
      "date": "July 23",
      "map": "img/map-tx.png"
    },
    {
      "place": "New York, NY",
      "date": "July 30",
      "map": "img/map-ny.png"
    }
  ]
}
```

- Object
- Array

# Summary

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- JSON gives software engineers an incredibly **flexible, simple, and powerful** way to represent data
  - Works with **all sorts** of data
  - Can be mapped to tables, spreadsheets and databases (some data may be missing)
- Human **readable**
- Plain text files use **more space** on disk
- Plain text data without markup tags – fast and easy to load