JSON

- JavaScript Object Notation
  - Text-based, human-readable data interchange format
  - Most often used for serializing and transmitting data
  - Based on the associative array structure in JavaScript, but parsers and serializers exist for many languages
  - Commonly used a simpler alternative to XML for web applications
JSON

• Basic data types
  – number
    • integer or floating-point
  – string
    • quoted (using double quotes) Unicode characters with backslash escaping
  – boolean
    • true or false
  – list
    • comma-separated sequence enclosed in square brackets
  – map
    • comma-separated key:value pairs enclosed in curly braces
  – null
• Whitespace outside of quoted strings is not significant
JSON

- Example

```json
{
  "firstName": "John",
  "lastName": "Smith",
  "age": 25,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021"
  },
  "phoneNumber": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
    {
      "type": "mobile",
      "number": "646 555-4567"
    }
  ],
  "member": false,
  "sponsor": null
}
```
Can be directly converted to JavaScript object via JavaScript's `eval()` method
  - Considered unsafe as it allows execution of arbitrary code

Modern browsers include safe parsers for JSON
  - Now part of the JavaScript standard as `JSON.parse()`
AJAX

- JSON is often used in AJAX-based web applications instead of XML
  - Asynchronous JavaScript and XML
    - Instead of making a standard HTTP request, JavaScript is used to make a background request to the server using an XMLHttpRequest object
    - A JavaScript callback function is called to handle the response
    - Was originally designed with XML in mind (hence the name) but JSON is often used instead