

# JSON and YAML

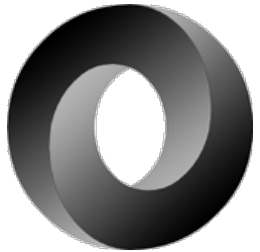
WASA: Web and Software Architecture

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# JSON - JavaScript Object Notation

- Lightweight format to exchange data (e.g. data sent with RESTful requests and responses)
- Used also to store data (.json extension)
- Text format (based on Javascript subset)



```
{  
  "user": {  
    "firstName": "John",  
    "lastName": "Smith",  
    "age": 27  
  }  
}
```

# Objects and Arrays

- `Json` uses only two familiar concepts:
  - object
  - array
- easy for humans to read and write
- easy for machines to parse and generate

# Object

Unordered collection of **name: value** pairs, enclosed in braces {}

- name:
  - string between ""
  - unique within the object
  - a.k.a. "key" or "field"
- value:
  - number, string, boolean, null, array, object

```
{  
  "WASA": {  
    "name": "Web and Software Architecture",  
    "semester": 1  
  }  
}
```

# Array

Ordered list of values, comma-separated, enclosed in brackets `[]`

```
{  
  "wasaWeekdays": ["tuesday", "thursday"]  
}
```

## JSON example

```
{
  "anObject": {
    "aNumber": 42,
    "aString": "This is a string",
    "aBoolean": true,
    "nothing": null,
    "anArray": [
      1,
      {"name": "value", "anotherName": 12},
      "something else"
    ]
  }
}
```

# YAML - YAML Ain't Markup Language

- Human-friendly data serialization language
- for configuration files, or to store data (.yaml), or to exchange data
- Text format (based on Python indentation)



```
---  
user:  
  firstName: John  
  lastName: Smith  
  age: 27
```

## YAML example

```
anObject:  
  aNumber: 42  
  aString: This is a string  
  aBoolean: true  
  nothing: null  
  anArray:  
    - 1  
    - anotherObject:  
      someName: some value  
      someOtherName: 1234  
    - something else
```



# YAML superset of JSON

JSON files are valid YAML

- {} accepted for maps (objects)
- [] accepted for lists (arrays)
- # Anything after a hash sign is a comment
- documents can optionally begin with --- and end with ...
- a file may contain more documents

```
anotherArray: [1,2,3]
```

```
anotherObject: {"city": "Rome", "country": "Italy"}
```

```
aStringWithColon: "COVID-19: procedure di accesso"
```

```
aNumericString: "0649911"
```

```
aLongString: |
```

```
  this string spans
```

```
  more lines
```

## Links

- <https://www.json.org/json-en.html>
- <https://en.wikipedia.org/wiki/JSON>
- <https://jsonlint.com>
- <https://en.wikipedia.org/wiki/YAML>
- <https://yaml.org>
- <https://onlineyamltools.com/validate-yaml>
- [https://docs.ansible.com/ansible/latest/reference\\_appendices/YAMLSyntax.html](https://docs.ansible.com/ansible/latest/reference_appendices/YAMLSyntax.html)
- [https://en.m.wikipedia.org/wiki/Recursive\\_acronym](https://en.m.wikipedia.org/wiki/Recursive_acronym)