COMP4021
Internet Computing

A Quick Look at JSON

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JSON

- JSON stands for
  Java**S**cript **O**bject **N**otation

- It is an easy-to-use, text-based data format

- Although it has JavaScript in its name, it is language-independent

- It was created based on the structure of JavaScript objects and therefore it looks almost identical to them

The JSON Format

- Let's look at this example JSON content:

```
{
    "series": "Demon Slayer",
    "author": "Koyoharu Gotouge",
    "volumes": 23
}
```

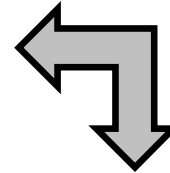- It is just like making a JavaScript object without a variable name!

JSON Vs JavaScript Objects

- JSON is different to JavaScript objects as JSON is always stored as a string, i.e.:
  - The keys of JSON can only be strings and they are enclosed by "..." only
  - JSON cannot contain functions or other things that cannot be shown as strings
- JSON can also be an array, rather than an object

More JSON Examples

JavaScript
```
const devices = {
    phone: ["Cisco", "IPhone"],
    tablet: "Surface",
    notebook: "Thinkpad"
}
```
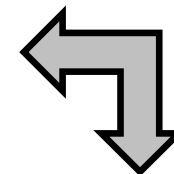
JSON
```
{"phone":["Cisco","IPhone"],"tablet":"Surface","notebook":"Thinkpad"}
```

JavaScript
```
const rainbow = [
    "Red", "Orange", "Yellow", "Green",
    "Lime", "Blue", "Purple"
];
```

JSON
```
["Red","Orange","Yellow","Green","Lime","Blue","Purple"]
```

Using JSON in JavaScript

- You can convert between JSON and JavaScript objects using two JavaScript functions:
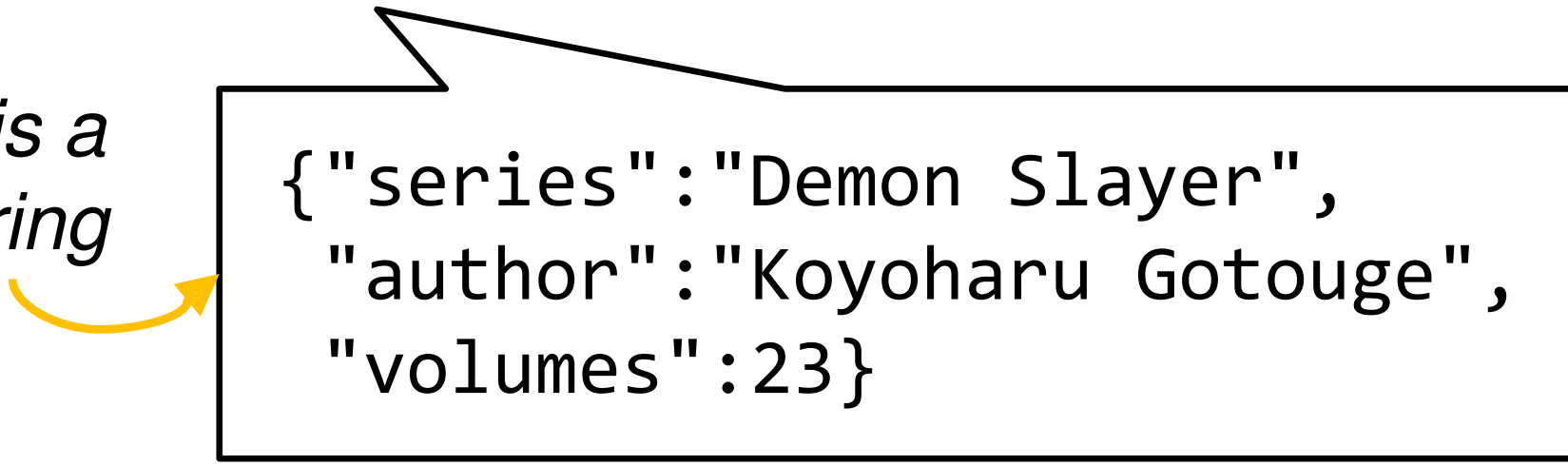
`JSON.stringify()` changes a JavaScript object to a JSON string

`JSON.parse()` changes a JSON string to a JavaScript object

Using JSON.stringify()

```
const item = {
    series: "Demon Slayer",
    author: "Koyoharu Gotouge",
    volumes: 23
};
const jsonItem = JSON.stringify(item);
```

It is a string

```
{"series":"Demon Slayer",
 "author":"Koyoharu Gotouge",
 "volumes":23}
```

Using `JSON.parse()`

```
const jsonItem =
    '{"series":"Demon Slayer",' +
    ' "author":"Koyoharu Gotouge",' +
    ' "volumes":23}';
const item = JSON.parse(jsonItem);
```

This is
an object

```
{series: "Demon Slayer",
 author: "Koyoharu Gotouge",
 volumes: 23}
```

Using JSON

- In the course later, you will see JSON used in different ways, e.g.:
  - For storing things in the browsers
  - For storing things on the server
  - As part of the message content in client-server communication