COMPSCI 326 - Web Programming
JavaScript Objects

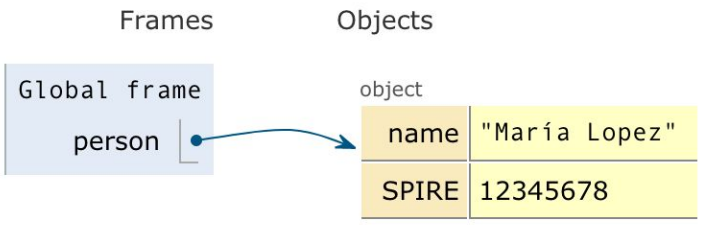
join on the Slack #q-and-a channel as well as Zoom
remember, you can ask questions of your teammates on your group Slack!
please **turn on your webcam** if you can
mute at all times when you aren't asking a question

Background resources:

(lots of details)
JavaScript data types and data structures - JavaScript | MDN
Object - JavaScript | MDN
Functions - JavaScript | MDN
https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/map
video tutorial about objects: https://www.youtube.com/watch?v=37YIF_evtEk

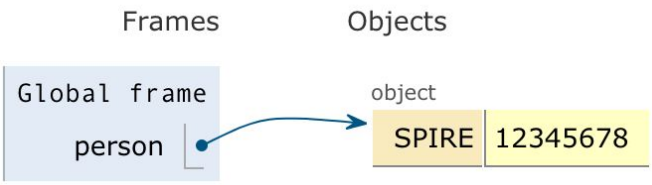
Today: JavaScript: Objects In-Depth

```
let person = { 'name' : 'María Lopez', 'SPIRE' : 12345678 };
```



Objects: previously discussed...

- brackets
  - `person['name'] → 'María Lopez'`
  - `let id = 'name';`
  - `person[id] → 'María Lopez'`
- dots
  - `person.name → 'María Lopez'`
- in an object
  - `'name' in person → true`
  - `'age' in person → false`
- remove a field
  - `delete person.name → person === { 'SPIRE' : 12345678 }`



What's really going on?

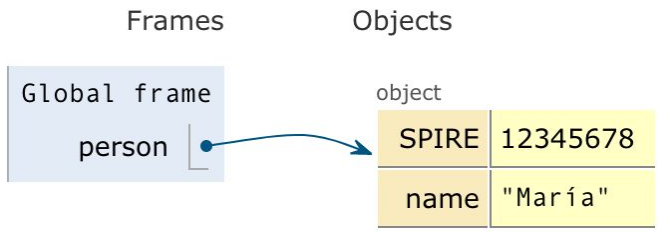
Objects have **properties**

Properties can be anything - you can add them by assigning one.

```
let person = {};  // same as let person = Object();
```

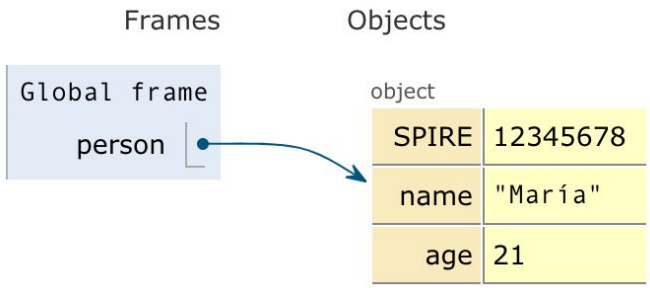
- strings

```
person.name = 'María';
```



- numbers

```
person.age = 21;
```



- more objects

```
person.hometown = { city: 'Miami', state: 'Florida', country: 'USA' };
```

- functions

```
person.print = function() {
  console.log(this.name + ' ' + this.SPIRE);
}
```

    - special variable **this** = the current object

Making new objects

- can make the object directly
    - as above with person
- or start with an empty, new Object
    - person = new Object();
    - person.name = '';
    - person.spire = '';

JSON

- what is JSON anyway?

    - **J**ava**S**cript **O**bject **N**otation
    - basically the text representation of an object
    - used for transmitting and receiving data - we will be doing this to communicate data between a web browser and a server
- JS has built-in functions to let you translate between a string representation and the internal representation
    - **`JSON.stringify`**
        - super useful for debugging, and for assertions!
            - `console.log(JSON.stringify(x));`
            - `console.assert(JSON.stringify(a) === JSON.stringify(b));`
    - **`JSON.parse`**
        - takes a string and returns a JavaScript object
        - `let obj = JSON.parse('{ "name" : "fred" }');`
        - `obj.name` → `"fred"`

characters (important for Scrabble and today's exercise):

ASCII / Unicode (UTF-8)

- characters of text internally represented as numbers
- originally very limited set, "Latin" alphabet - "ASCII", only 127 characters!
- now we use UTF-8
    - backwards compatible with ASCII
    - can represent all world's character sets
- for the "Latin" alphabet, can use:
  `str.charCodeAt(0)` to get the number, and `String.fromChar(num)` to get the character

  PythonTutor example code:

```
let person = { 'name' : 'María Lopez', 'SPIRE' : 12345678 };
delete person.name;
person.name = 'María';
person.age = 21;
person.hometown = { city: 'Miami', state: 'Florida', country:
'USA' };
person.print = function() {
  console.log(this.name + ' ' + this.SPIRE);
}
person.print();
```

```
person.name = "Carlos";
person.print();
let str = '{ "name" : "fred" }';
let obj = JSON.parse(str);
let test = 'tEst';
let upperList = test.split('').map((c) => { return
c.toUpperCase(); });
let upperStr = upperList.join('');
let alpha = 'abcABC';
alpha.split('').forEach((c) => { console.log(c.charCodeAt(0));
});
```

Exercise!

(COMPSCI 326 F20 - 3. JavaScript Exercises)