Objects in JavaScript

Module 1 Week 2

Notes Repo: https://github.com/C-Shi/lhl-flex-lecture

Who am I

1. Lighthouse Lab Graduate from 2018
2. Senior Full Stack Software Developer
3. Web Flex Instructor and Mentor
4. Used to be a food safety specialist
5. A Cat Person

Today's Objectives

1. Primitive Data Type
2. Object Fundamentals
3. Object Iteration
4. The keyword this
5. Function pass-by-value

Primitive Types

1. There are 7 types of primitive data

```
const bool = true;
const nul = null;
const undef = undefined;
const num = 15;
const str = "Hello World";
const bigInt = 9007199254740991n;
const sym = Symbol('symbol');
```

2. Primitive data is immutable

```
let age = 30;
console.log(age) // 30
age + 1;
console.log(age) // 30 -> age is primitive, it is immutable
age = age + 1;
console.log(age) // 31 -> primitive data can be re-assigned to a new value
```

3. Primitive data get **a fixed amount** of memory
4. You know how big is that data when you assigned, then it is a primitive data

Object

1. Any non-primitive types are **object**
2. Object variable

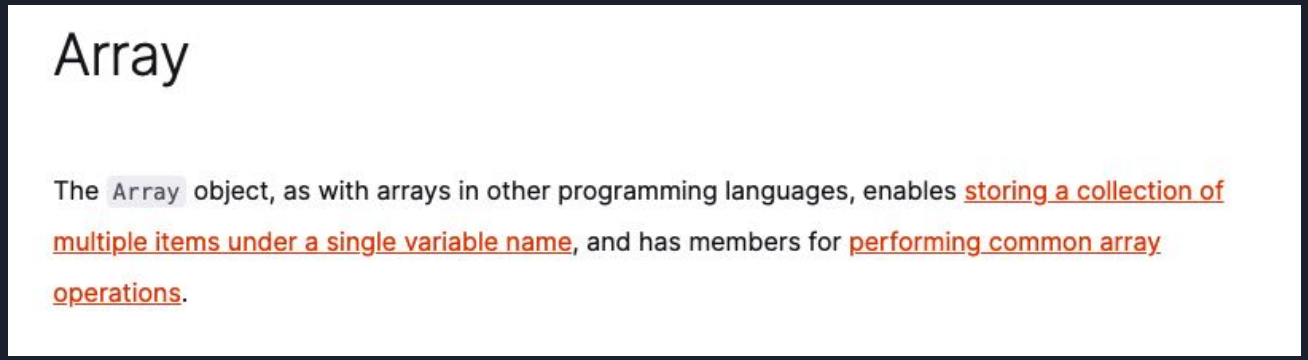
```
const person = {
  firstName: 'John',
  lastName: 'Smith',
  age: 31,
  fullName: function() {
    return `${this.firstName} ${this.lastName}`
  }
}
```

3. Object type

```
const obj = { key: 'value' };
const arr = [1, 2, 3, 4];
const func = function(){};
console.log(obj instanceof Object) // true
console.log(arr instanceof Object) // true
console.log(func instanceof Object) // true
```

Array as Object ?

1. Yes. Array is a special type of Object in javascript



2. But, developer should describe array as array.
   a. array is ordered, object is unordered
   b. Array contains different method than object
   c. Array's index is number, not string

Working with Object - Definition

Three types of Definition of Object:

1. Structural perspective: Object a data type that contains key-value pairs
2. Functional Perspective: Object is a collection of properties associated with values and method.
3. Behavioral perspective: Object is a data structure that describe what it is and what it can do.

```
const car = {
  make: "Ford",
  model: "Mustang",
  color: "Blue",
  mileage: 5000,
  drive: function(distance) {
    this.mileage += distance
  }
}
```

Working with Object - Read and Set value

1. Use Dot notation when you know the key
2. Use bracket notation when you know or don't know the key
3. Nonexistent key return undefined when reading
4. Nonexistent key get added setting
5. To set value, read the property first and set the value as you would for regular variable

```
const student = {
   name: 'John',
}


console.log(student.name) // John
console.log(student['name']) // John
console.log(student.gender) // undefined
student.gender = 'M'
console.log(student.gender) // M
```

6. Object Iteration

```
for (var key in obj) {
 console.log(key);
};
```

What is this ?

1. `this` is a reserved keyword that refer to the context.

2. The value of `this` depends on where it is used

3. In object method, normally, it refers to the object that is calling the method

```
const person = {
  name: 'John',
  printName: function() {
    console.log(this.name)
  }
}

person.printName() // John
```

Function pass-by-value

1. Function definition and Function execution

```
// function definition
function increment(x) {
  x = x + 1;
}

const y = 1
// function execution
increment(y)
```

2. Always pass by value (create a copy)

```
console.log(y) // what is y after increment and why ?
```

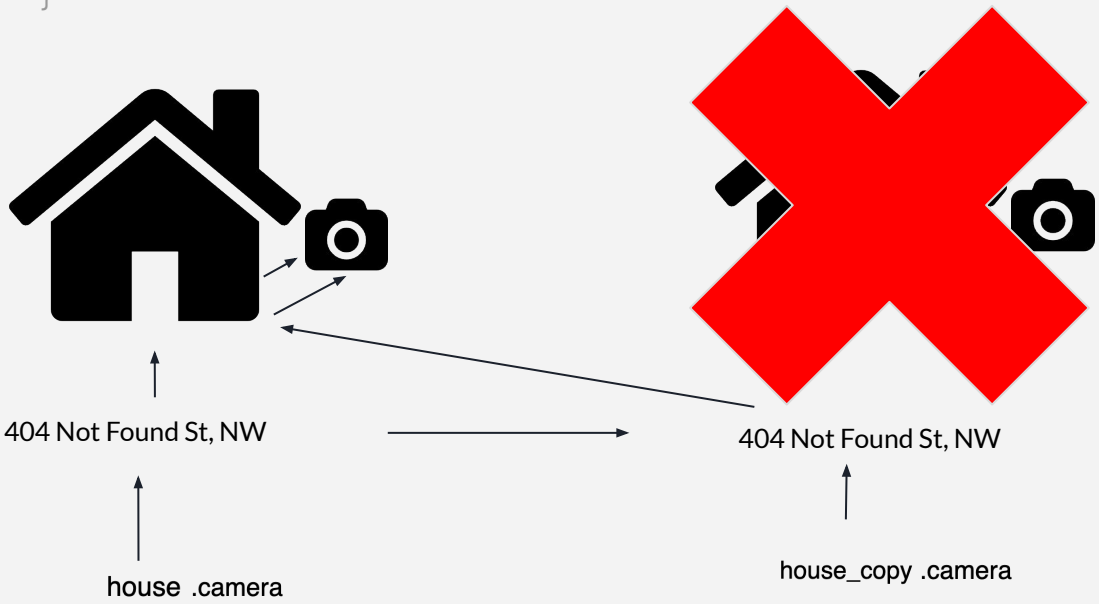
3. What if the parameter is an object ?

```
function emptyObj(obj) {
  obj = {}
  console.log(obj)
}
const student = {
  name: 'John'
}
emptyObj(student)
console.log(student)
```

```
function throwCamera(houseCopy) {
  houseCopy.camera = false
}
const house = {
  camera: true
}
console.log(house.camera)
throwCamera(house)
console.log(house.camera)
```

```
const house = {
  camera: true
}
```

```
const house_copy = house
```

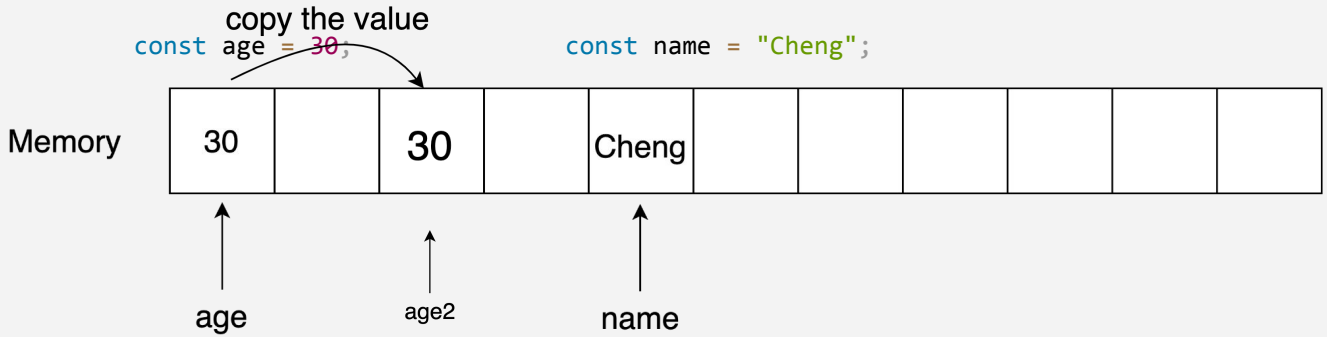



```
function throwCamera(houseCopy) {
  houseCopy.camera = false
}
const house = {
  camera: true
}
throwCamera(house)
```

Icon provided by http://fontawesome.io by Dave Gandy

Out of scope / Stretch Topics

Primitive type assignment - computer science



1. JavaScript find a memory slot/slots and name it whatever your variable name is.
2. JavaScript then put the value into that memory slot
3. What happens when you do `const age2 = age;` ?

This is a simplified explanation to help you understand. Not exactly what happens in computer

Object type assignment - computer science