THE COMPLETE JAVASCRIPT COURSE

FROM ZERO TO EXPERT!

SECTION

HOW JAVASCRIPT WORKS BEHIND THE SCENES

LECTURE

VARIABLE ENVIRONMENT: HOISTING AND THE TDZ

HOISTING IN JAVASCRIPT

👉 **Hoisting:** Makes some types of variables accessible/usable in the code before they are actually declared. “Variables lifted to the top of their scope”.

BEHIND THE SCENES

Before execution, code is scanned for variable declarations, and for each variable, a new property is created in the variable environment object.

EXECUTION CONTEXT

- 👉 Variable environment
- ✅ Scope chain
- 👉 `this` keyword

	HOISTED? 👇	INITIAL VALUE 👇	SCOPE 👇
`function` declarations	✅ YES	Actual function	Block
`var` variables	✅ YES	**`undefined`**	Function
`let` and **`const`** variables	🚫 NO	**`<uninitialized>`**, TDZ	Block
`function` expressions and arrows	🤷‍♂️ Depends if using **`var`** or **`let`**/**`const`**		

In strict mode. Otherwise: function!

Technically, yes. But not in practice

Temporal Dead Zone

TEMPORAL DEAD ZONE, LET AND CONST

```
const myName = 'Jonas';

if (myName === 'Jonas') {
  console.log(`Jonas is a ${job}`);
  const age = 2037 - 1989;
  console.log(age);
  const job = 'teacher';
  console.log(x);
}
```

TEMPORAL DEAD ZONE FOR `job` VARIABLE

👉 Different kinds of error messages:

```
ReferenceError: Cannot access 'job' before initialization
ReferenceError: x is not defined
```

WHY HOISTING?

👉 Using functions before actual declaration;

👉 `var` hoisting is just a byproduct.

WHY TDZ?

👉 Makes it easier to avoid and catch errors: accessing variables before declaration is bad practice and should be avoided;

👉 Makes `const` variables actually work

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THE THIS KEYWORD

HOW THE THIS KEYWORD WORKS

👉 **`this` keyword/variable:** Special variable that is created for every execution context (every function). Takes the value of (points to) the “owner” of the function in which the `this` keyword is used.

☝️ `this` is NOT static. It depends on how the function is called, and its value is only assigned when the function is actually called.

EXECUTION CONTEXT

- ✅ Variable environment
- ✅ Scope chain
- 👉 `this` keyword

Method 👉 `this` = <Object that is calling the method>

Simple function call 👉 `this = undefined`

In strict mode! Otherwise: **`window`** (in the browser)

Don’t get own **`this`**

Arrow functions 👉 `this` = <`this` of surrounding function (lexical `this`)>

Event listener 👉 `this` = <DOM element that the handler is attached to>

`new`, `call`, `apply`, `bind` 👉 *<Later in the course... ⏳>*

☝️ `this` does NOT point to the function itself, and also NOT the its variable environment!

👉 Method example:

```
const jonas = {
  name: 'Jonas',
  year: 1989,
  calcAge: function() {
    return 2037 - this.year;
  }
};
jonas.calcAge(); // 48
```

`calcAge` is method

`jonas`

`1989`

Way better than using `jonas.year`!

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GOT QUESTIONS? FEEDBACK?

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PRIMITIVES VS. OBJECTS (PRIMITIVE VS. REFERENCE TYPES)

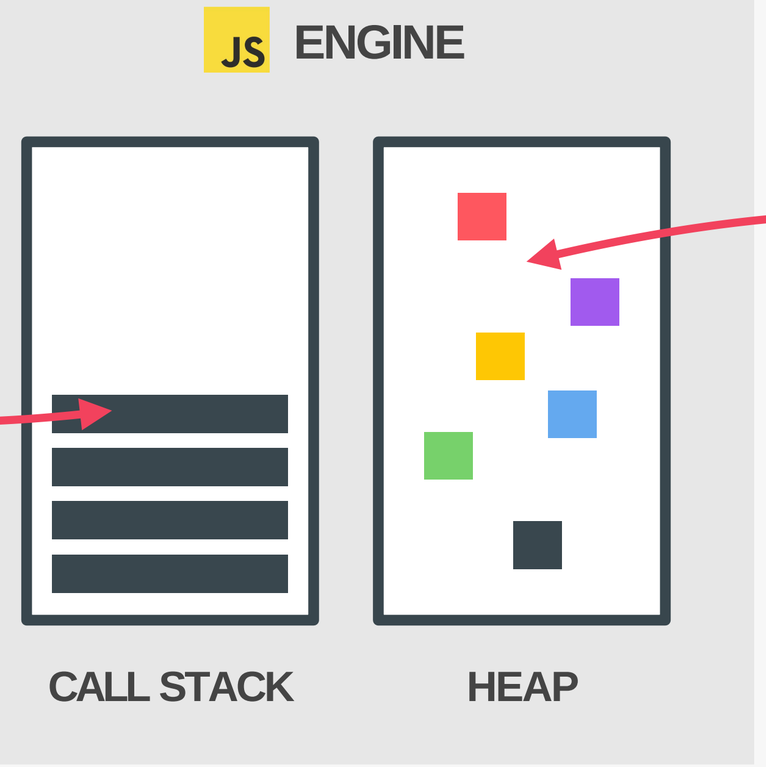
REVIEW: PRIMITIVES, OBJECTS AND THE JAVASCRIPT ENGINE

PRIMITIVES

- 👉 Number
- 👉 String
- 👉 Boolean
- 👉 Undefined
- 👉 Null
- 👉 Symbol
- 👉 BigInt

PRIMITIVE TYPES

STORED IN



STORED IN

OBJECTS

- 👉 Object literal
- 👉 Arrays
- 👉 Functions
- 👉 Many more…

REFERENCETYPES

PRIMITIVE VS. REFERENCE VALUES

👉 **Primitive** values example:

```
let age = 30;
let oldAge = age;
age = 31;
console.log(age); // 31
console.log(oldAge); // 30
```

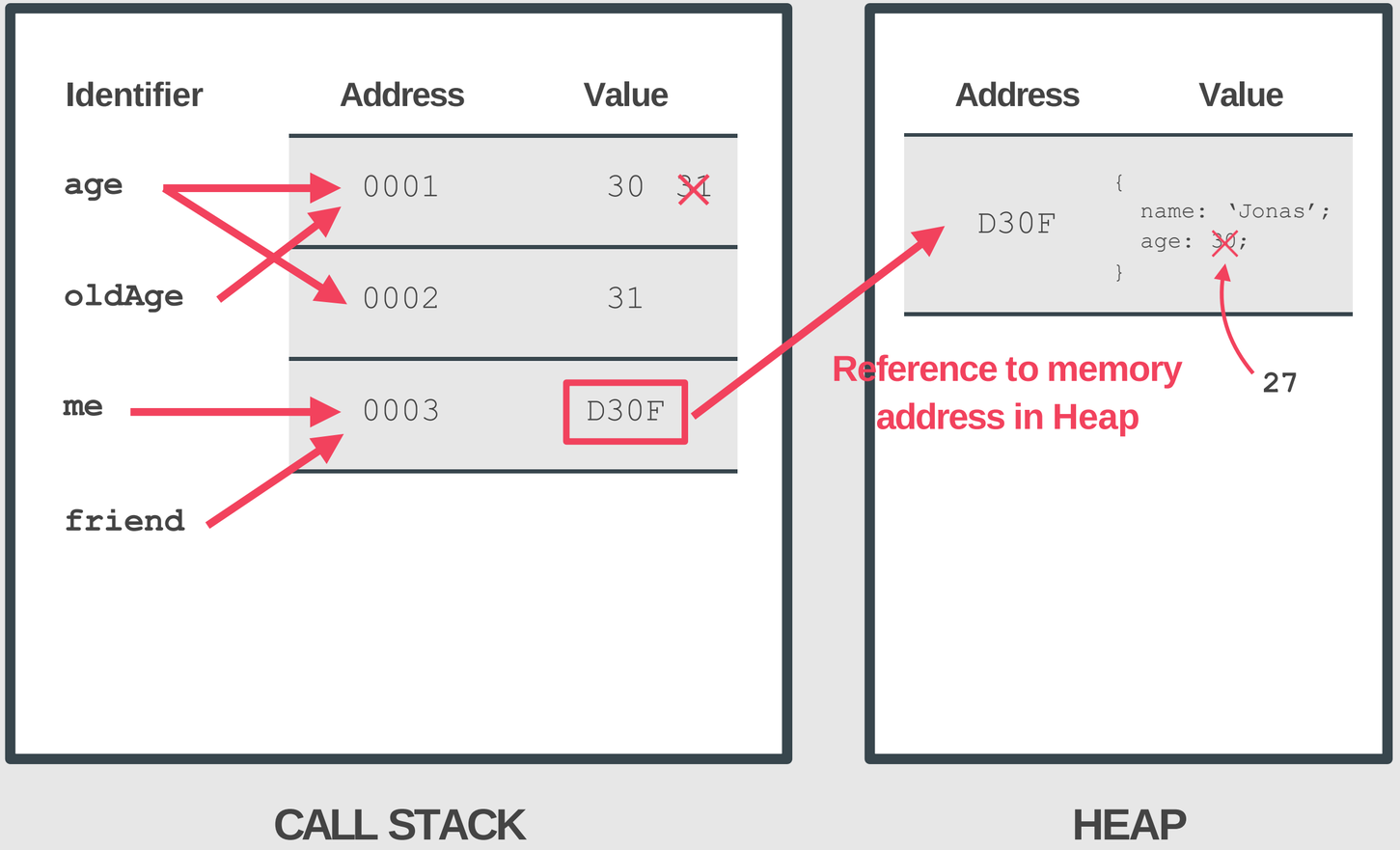
👉 **Reference** values example:

```
const me = {
  name: 'Jonas'
  age: 30
};
const friend = me;
friend.age = 27;

console.log('Friend:', friend);
// { name: 'Jonas', age: 27 }

console.log('Me:', me);
// { name: 'Jonas', age: 27 }
```

No problem, because we're NOT changing the *value* at address 0003!



“HOW JAVASCRIPT WORKS BEHIND THE SCENES” TOPICS FOR LATER... ⏳

1. Prototypal Inheritance 👉 Object Oriented Programming (OOP) With JavaScript
2. Event Loop 👉 Asynchronous JavaScript: Promises, Async/Await and AJAX
3. How the DOM Really Works 👉 Advanced DOM and Events