JONAS.IO
SCHMEDTMANN

THE COMPLETE JAVASCRIPT COURSE

FROM ZERO TO EXPERT!

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SECTION

HOW JAVASCRIPT WORKS BEHIND THE SCENES

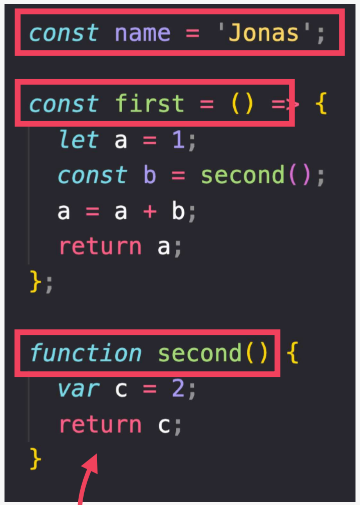
LECTURE

EXECUTION CONTEXTS AND THE CALL STACK

JS

WHAT IS AN EXECUTION CONTEXT?

👉 **Human-readable code:**

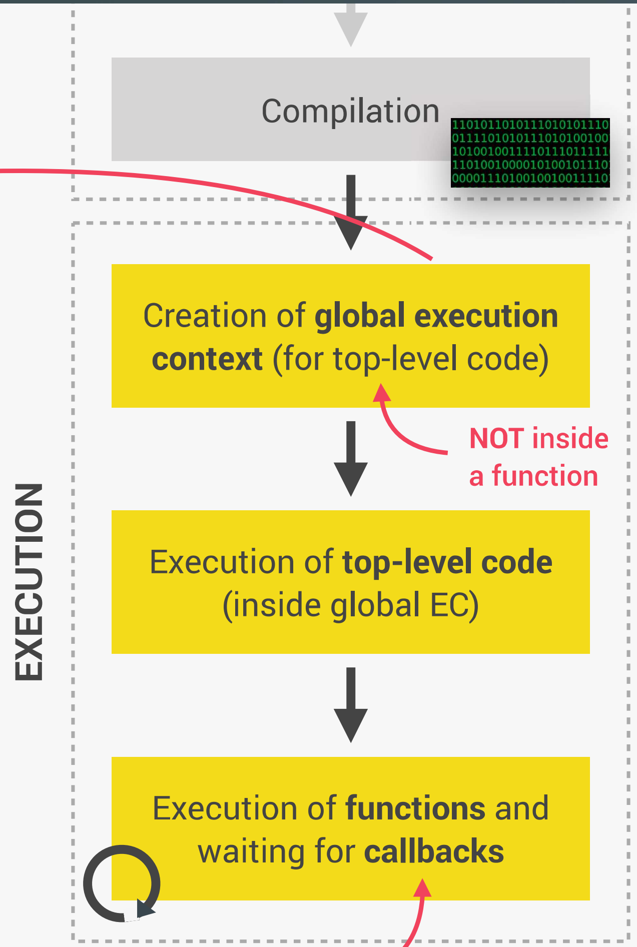


```
const name = 'Jonas';

const first = () => {
  let a = 1;
  const b = second();
  a = a + b;
  return a;
};

function second() {
  var c = 2;
  return c;
}
```

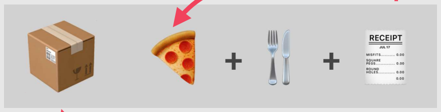
Function body only executed when called!


Compilation
Creation of **global execution context** (for top-level code)
NOT inside a function
Execution of **top-level code** (inside global EC)
Execution of **functions** and waiting for **callbacks**
EXECUTION

Example: click event callback

EXECUTION CONTEXT

Environment in which a piece of JavaScript is executed. Stores all the necessary information for some code to be executed.



👉 **Exactly one global execution context (EC):** Default context, created for code that is not inside any function (top-level).

👉 **One execution context per function:** For each function call, a new execution context is created.

All together make the call stack

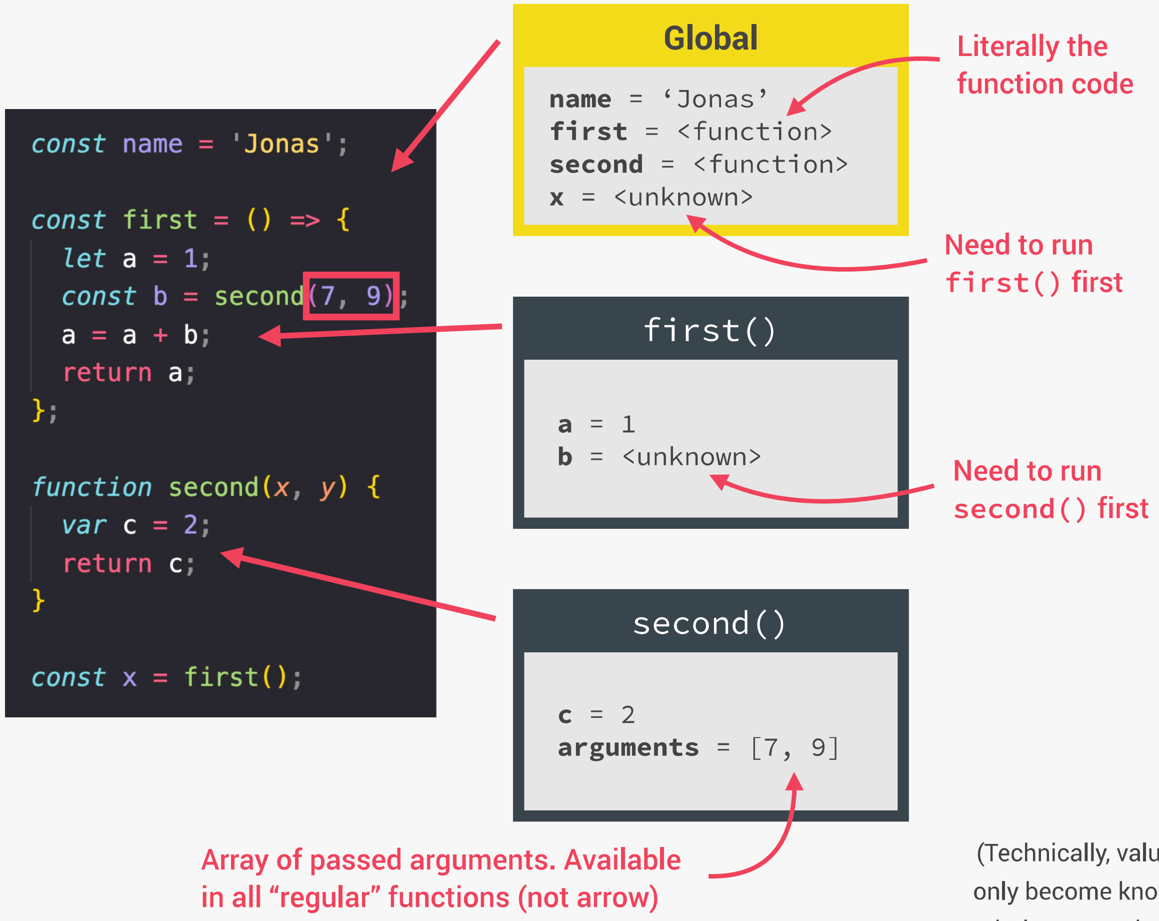
EXECUTION CONTEXT IN DETAIL

WHAT'S INSIDE EXECUTION CONTEXT?

1. Variable Environment
   - 👉 `let`, `const` and `var` declarations
   - 👉 Functions
   - 👉 ~~`arguments`~~ object
2. Scope chain
3. ~~`this`~~ keyword

NOT in arrow functions!

Generated during "creation phase", right before execution



```
const name = 'Jonas';

const first = () => {
  let a = 1;
  const b = second(7, 9);
  a = a + b;
  return a;
};

function second(x, y) {
  var c = 2;
  return c;
}

const x = first();
```

Global

```
name = 'Jonas'
first = <function>
second = <function>
x = <unknown>
```

first()

```
a = 1
b = <unknown>
```

second()

```
c = 2
arguments = [7, 9]
```

Literally the function code
Need to run first() first
Need to run second() first

Array of passed arguments. Available in all "regular" functions (not arrow)

(Technically, values only become known during execution)

THE CALL STACK

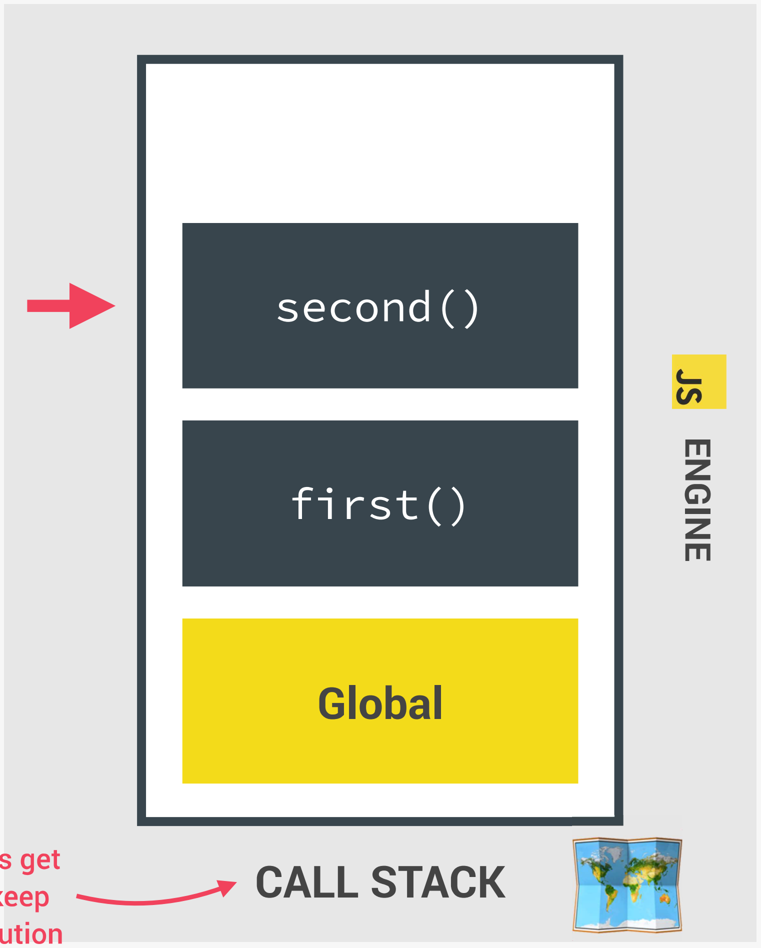
👉 Compiled code starts execution

```
const name = 'Jonas';

const first = () => {
  let a = 1;
  const b = second(7, 9);
  a = a + b;
  return a;
};

function second(x, y) {
  var c = 2;
  return c;
}

const x = first();
```



“Place” where execution contexts get stacked on top of each other, to keep track of where we are in the execution