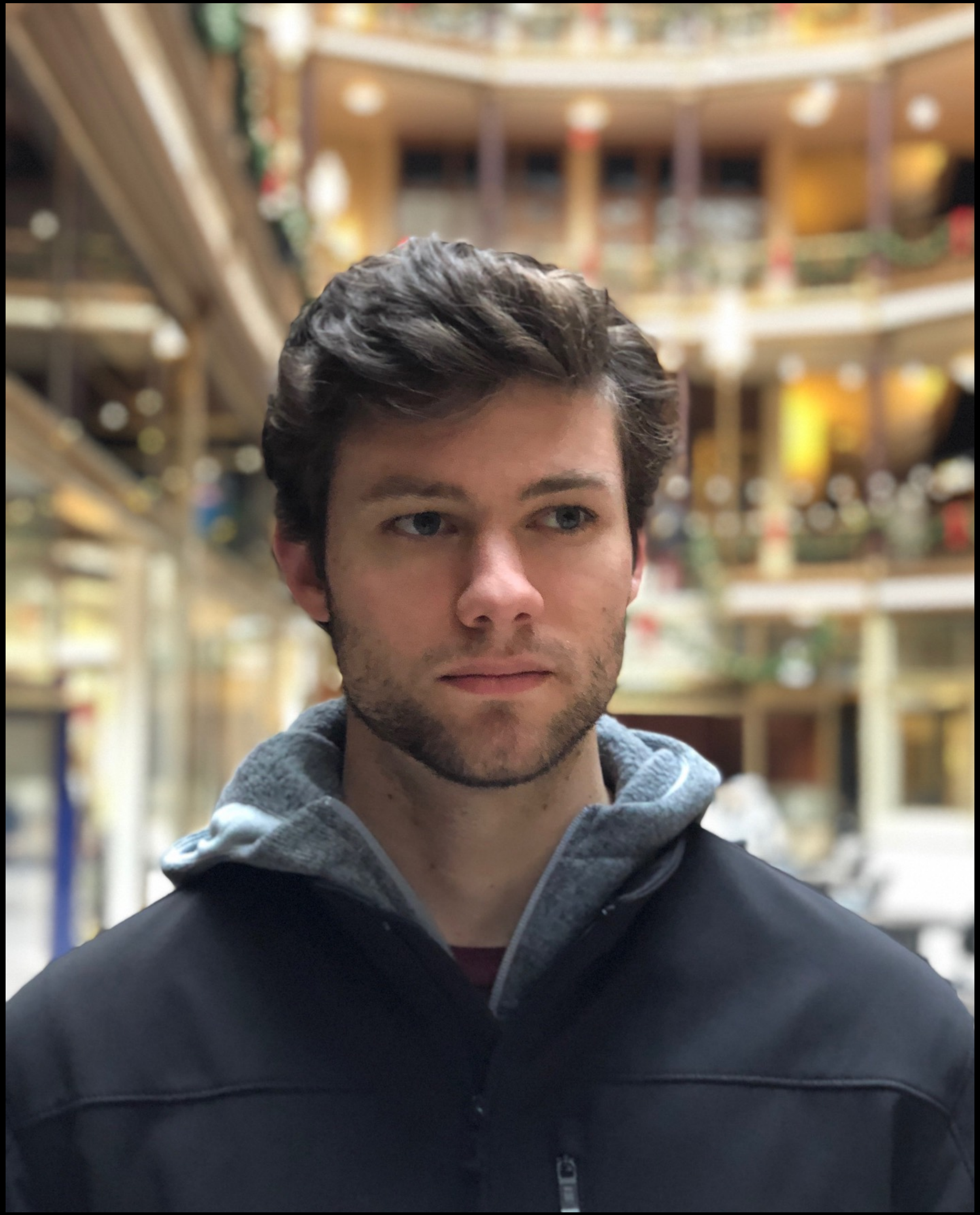
Hitchhiker’s Guide to Web Standards

Dominic Farolino

- Senior @ University of Cincinnati
- Previously Microsoft, Mozilla
- Incoming @ Google
- Chromium Committer
- WHATWG Editor

- twitter.com/domfarolino
- github.com/domfarolino
- dom@chromium.org



What is this talk?

Background & History

(this could really be its own talk)

Intro to technical bits of specs

How to get involved?

(you can do it!!)

What is a “standard”?

Depends on the context

“A document specifying observable effects of tech with multiple independent implementations”

–yours truly

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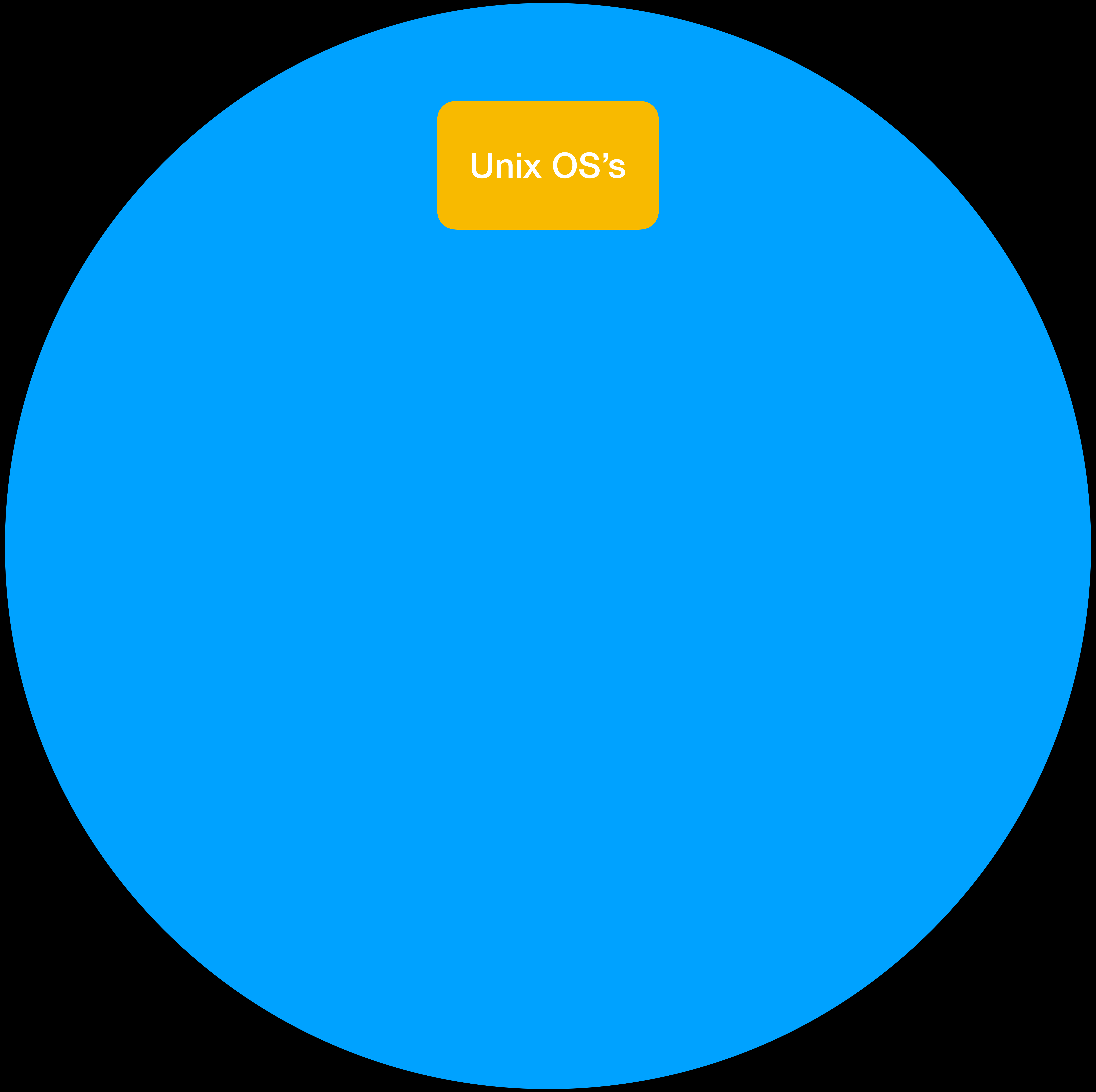
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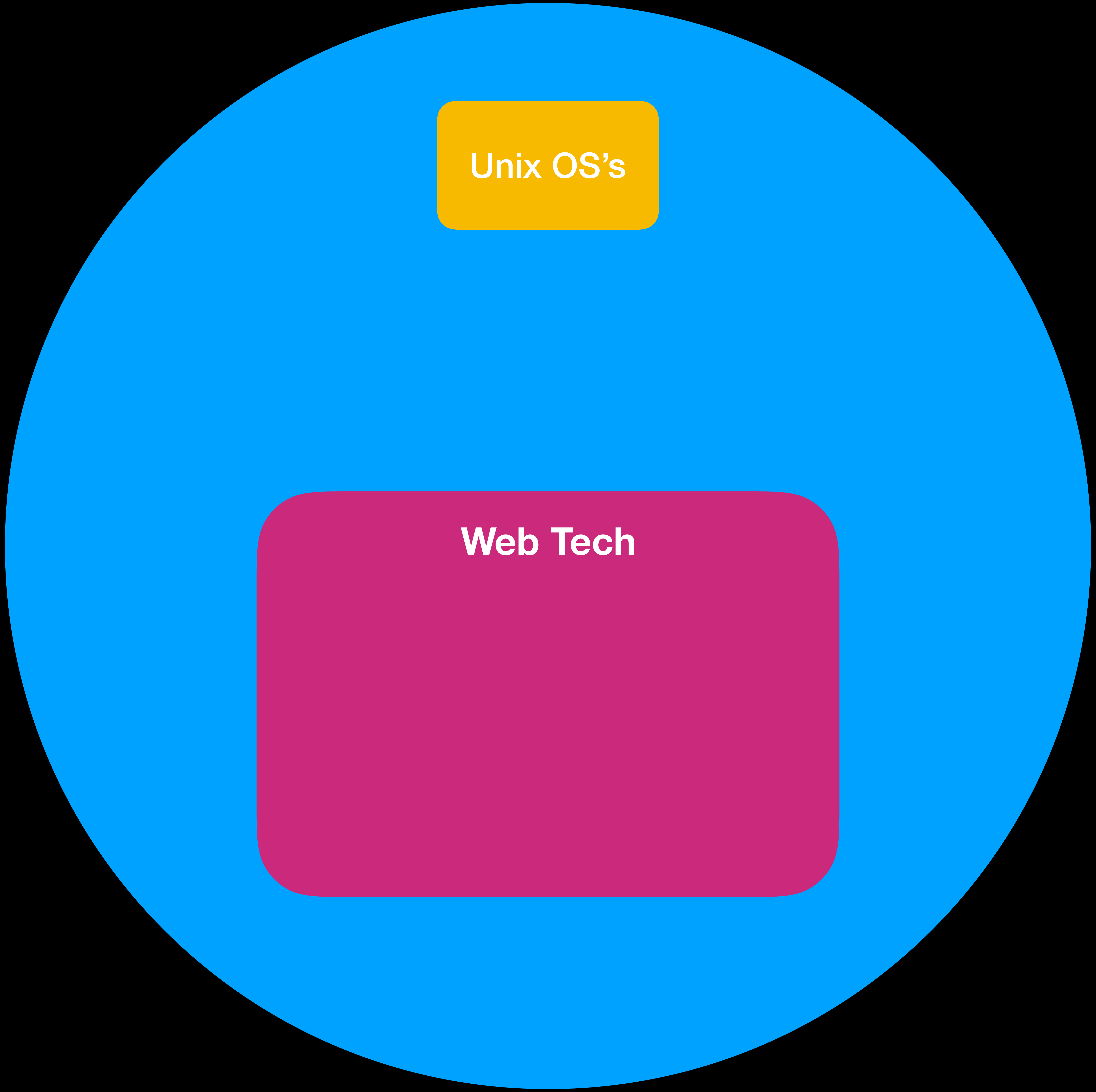
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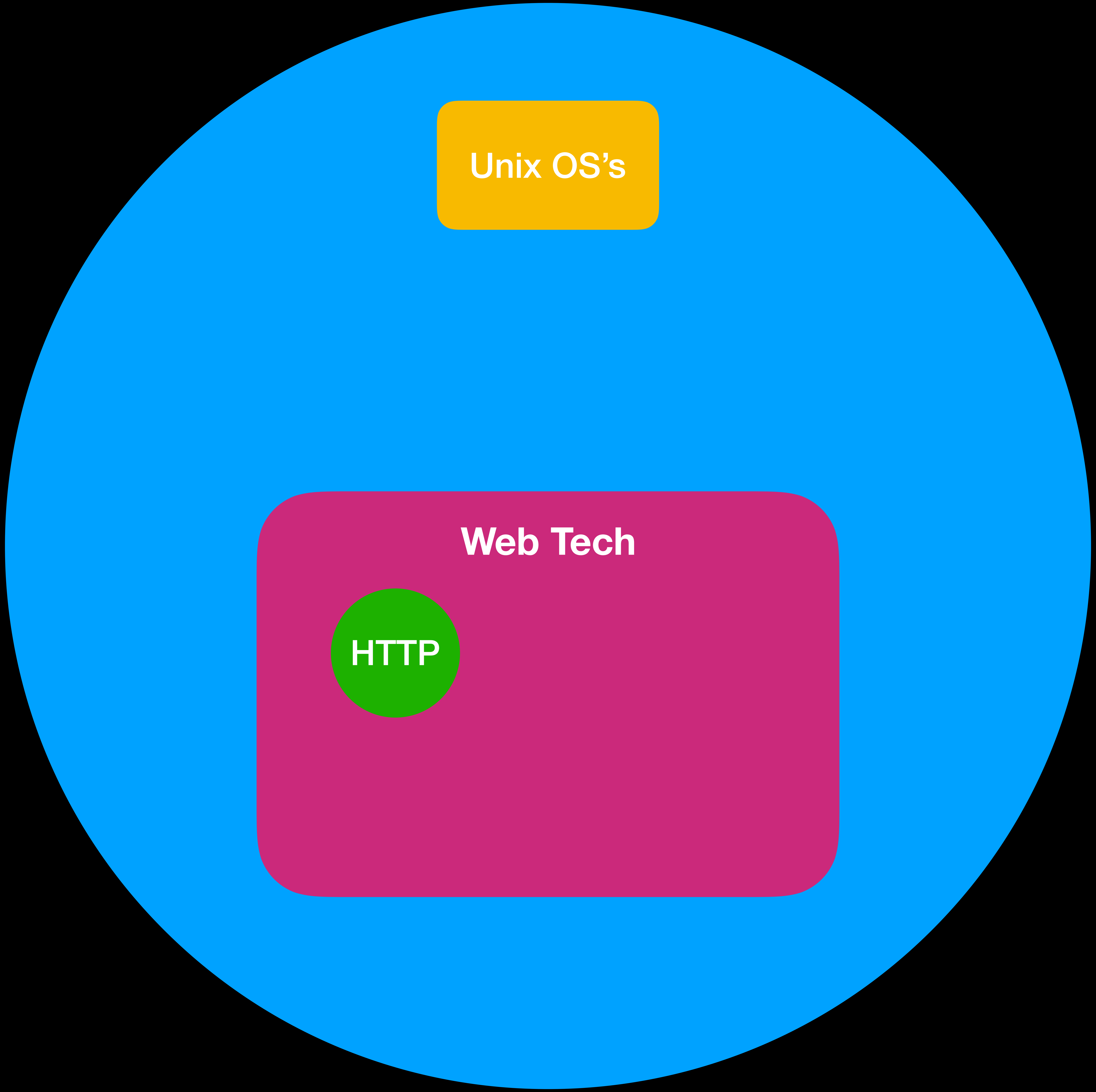
Web Tech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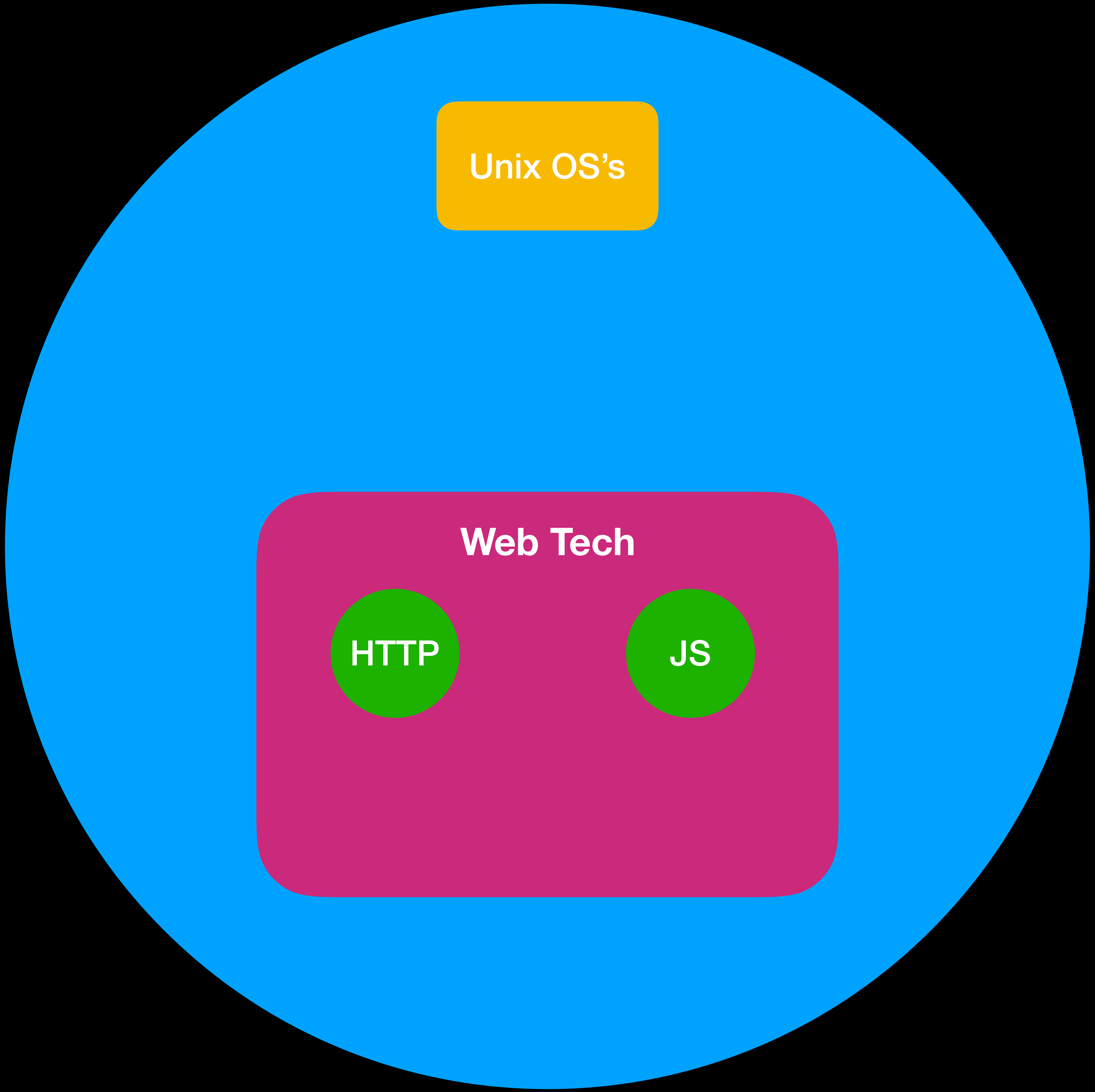
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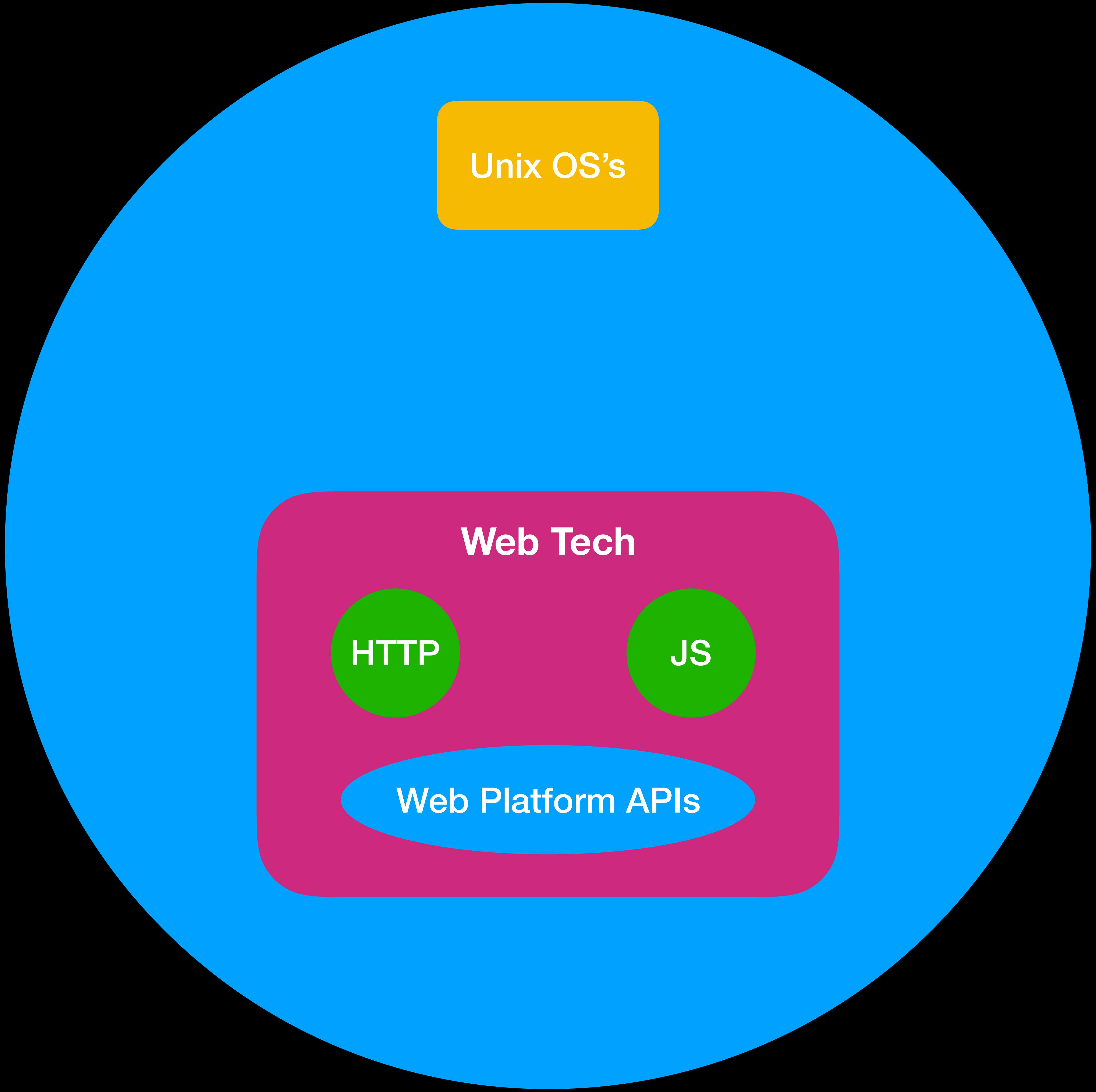
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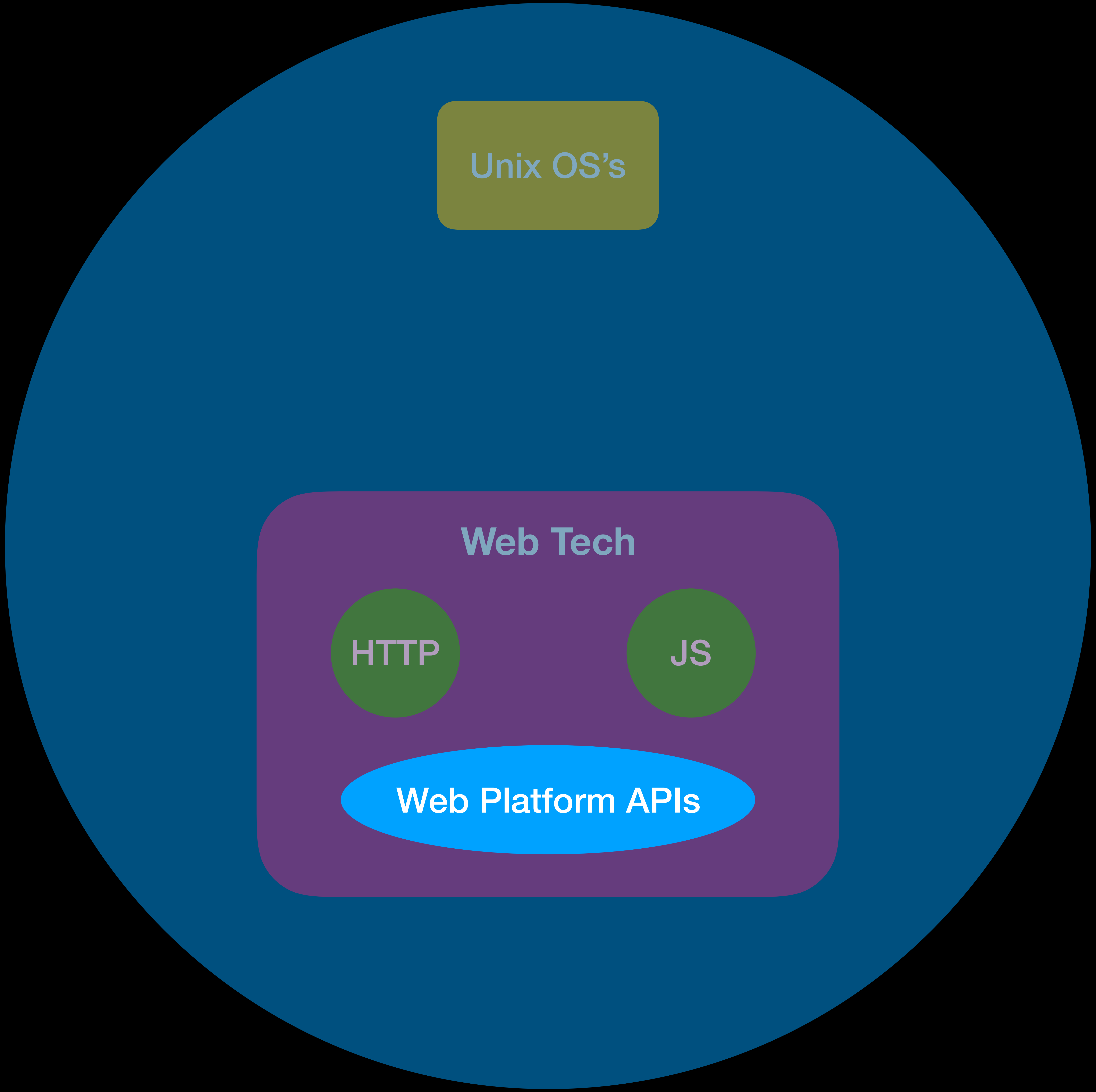
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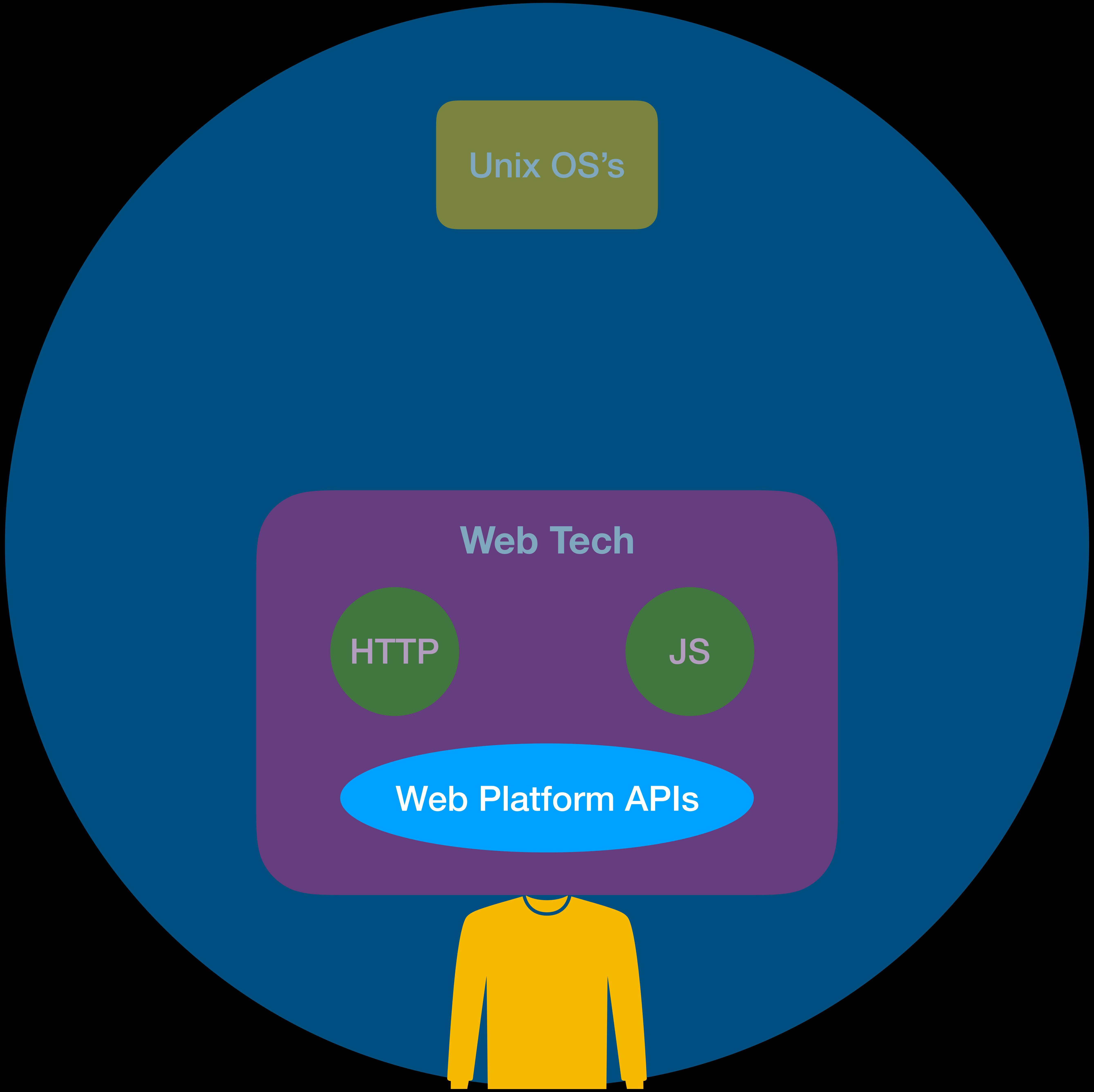
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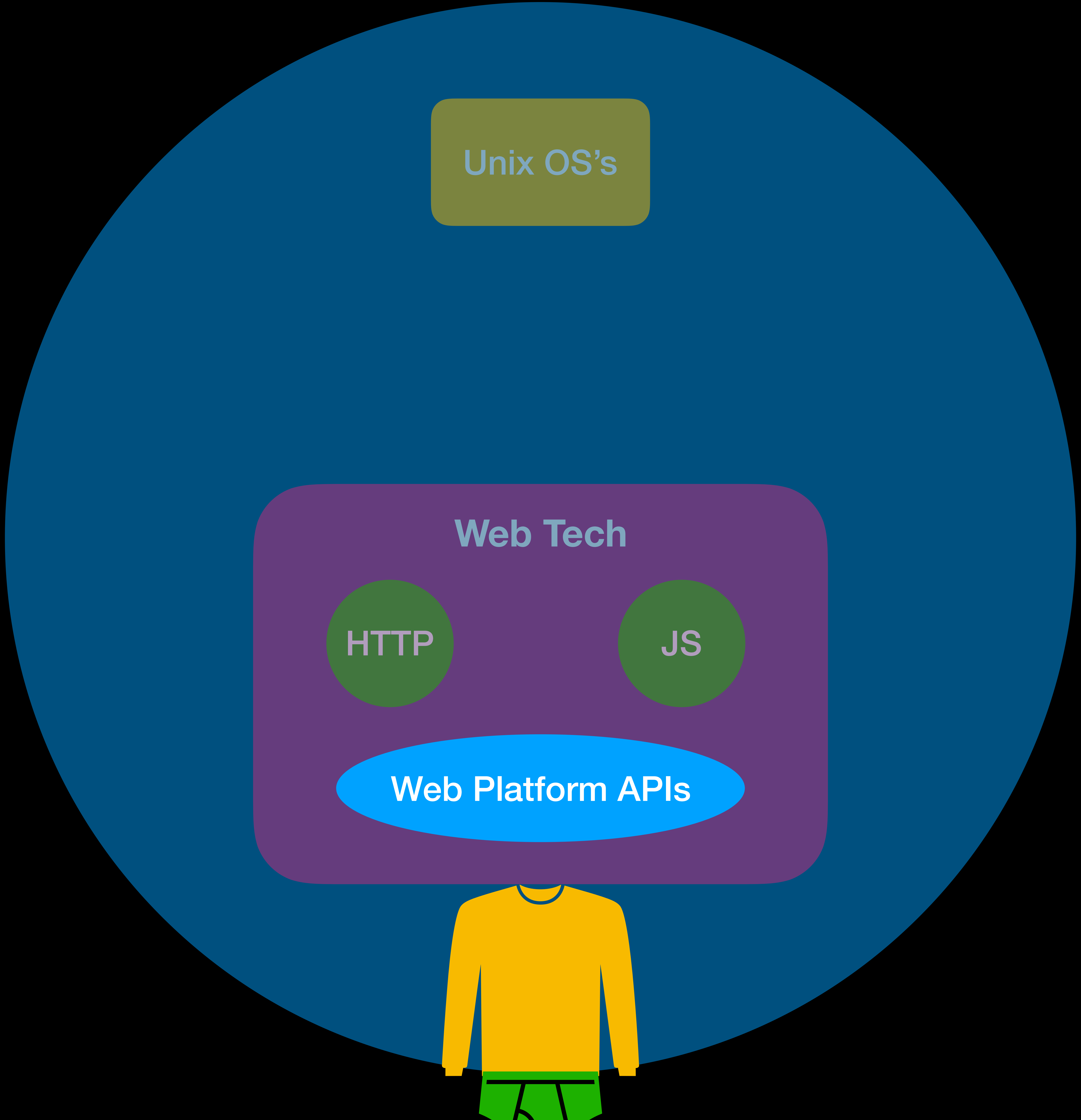
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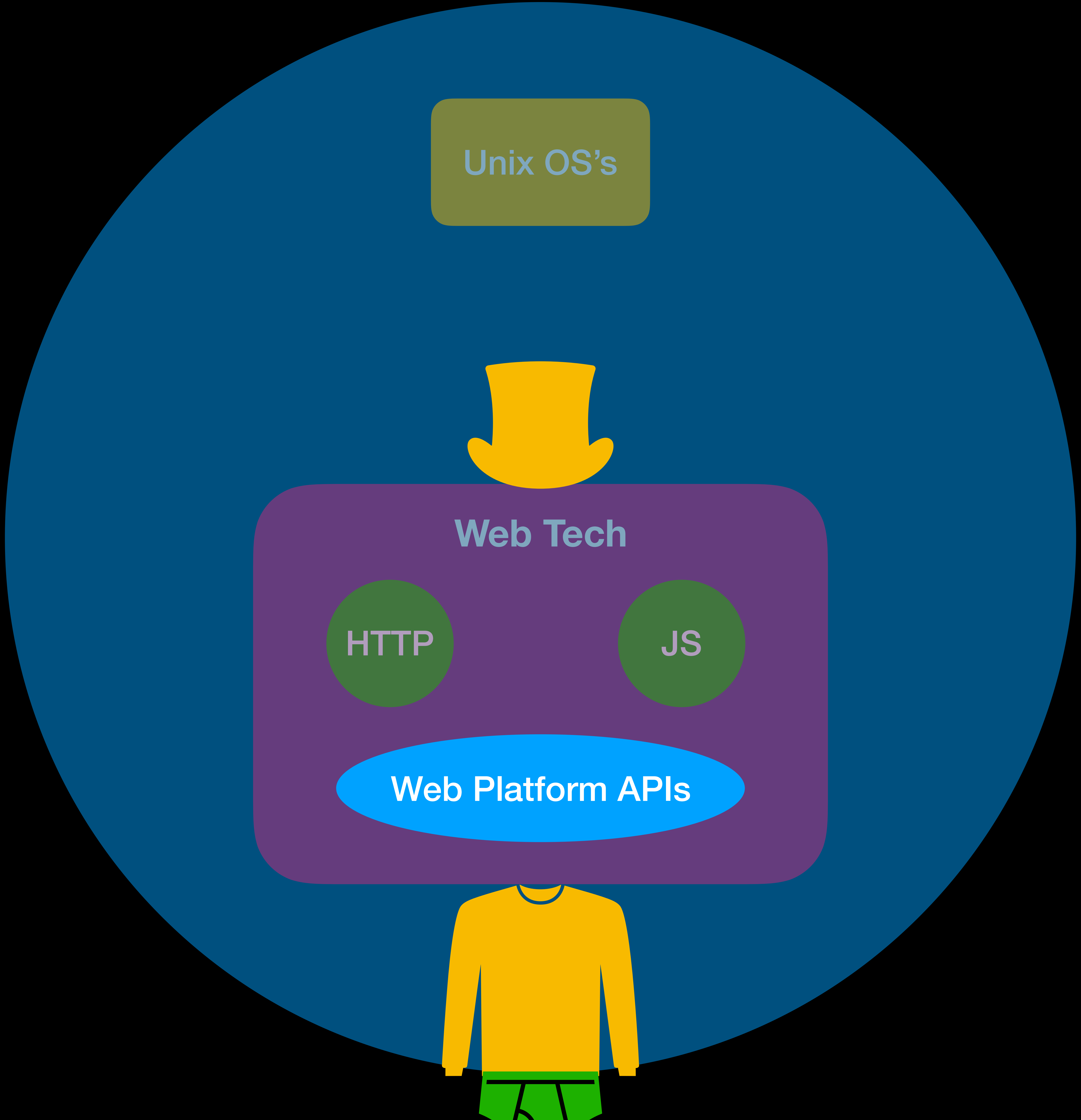
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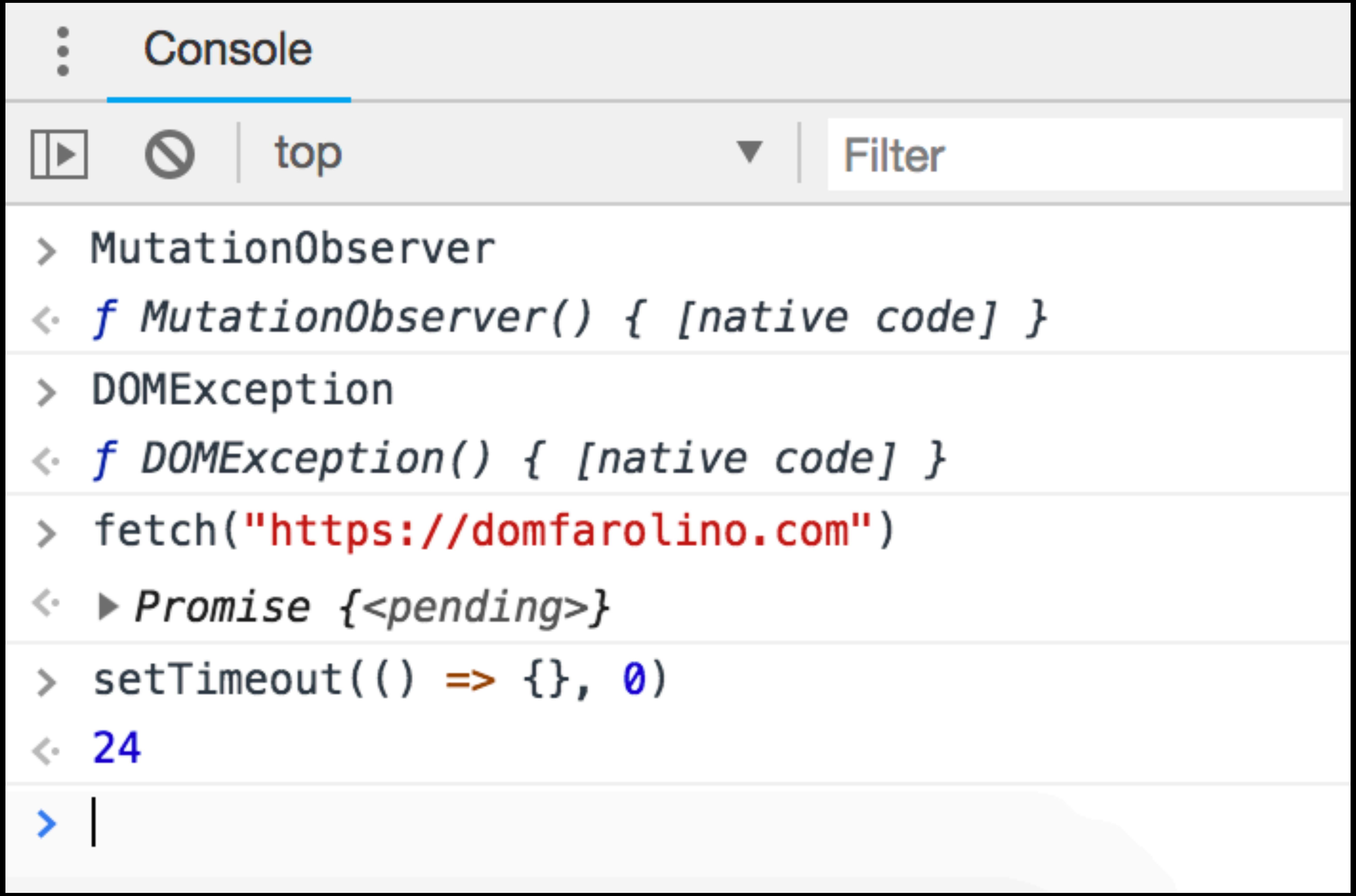
Where do Web APIs come from?

```
const logicalAnswer = “JavaScript”
```



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> DOMException
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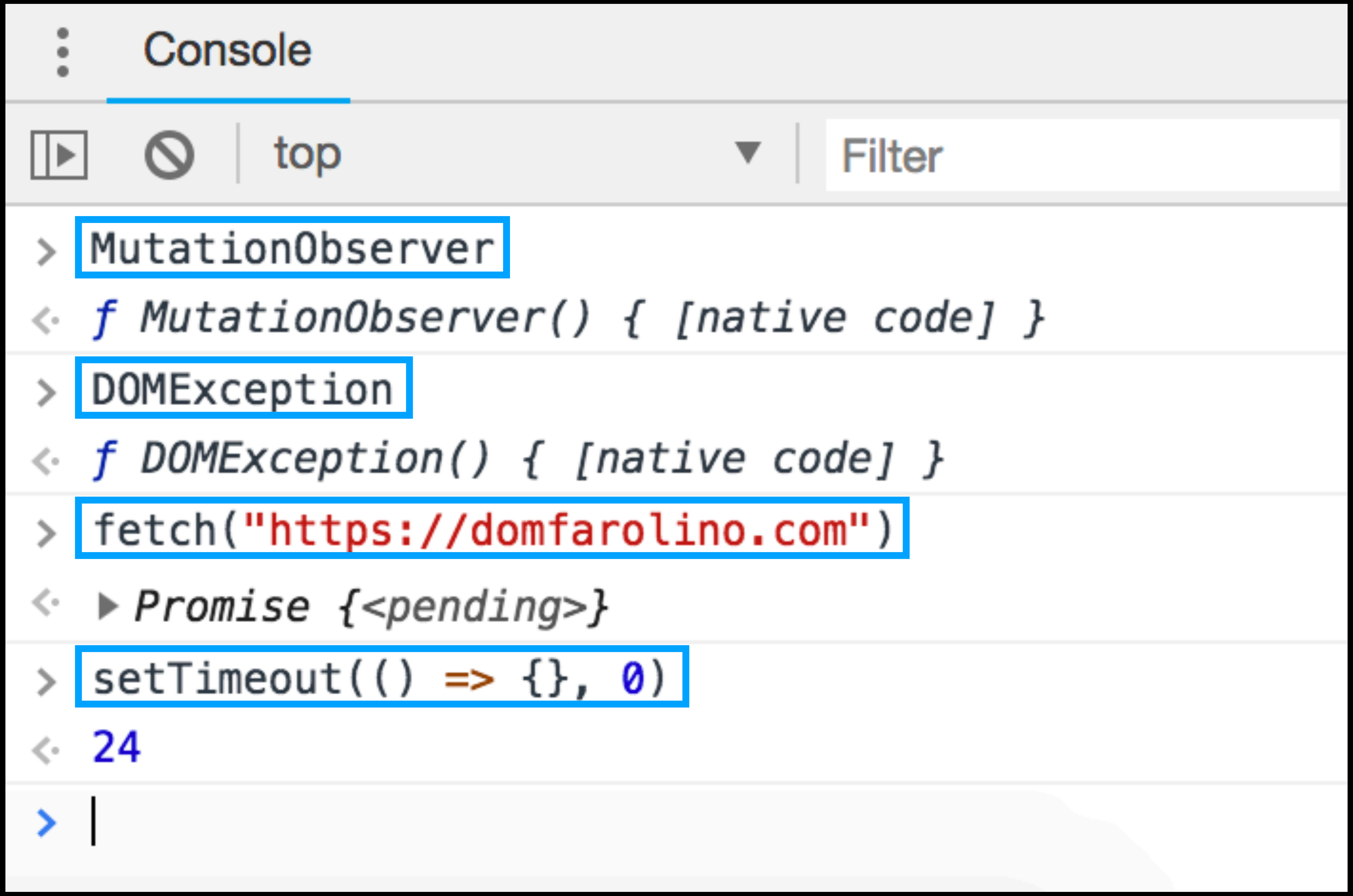
> fetch("https://domfarolino.com")
<· ▶ Promise {<pending>}
> setTimeout(() => {}, 0)
<· 24
> |
```



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What is JavaScript

- Just a language
- History
- Standardized by ECMAScript
- Multiple independent implementations exist

ES Engines

- V8 (Chrome)
- Chakra (Edge)
- SpiderMonkey (Firefox)
- JavaScriptCore (Safari/WebKit)

Search...

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27 Memory Model
A Grammar Summary
B Additional ECMAScript Features for Web Browsers

Google Chrome

Draft ECMA-262 / November 1, 2018

ECMAScript® 2019 Language Specification

ecma INTERNATIONAL

Contributing to this Specification

This specification is developed on GitHub with the help of the ECMAScript community. There are a number of ways to contribute to the development of this specification:

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Issues: All Issues, File a New Issue
Pull Requests: All Pull Requests, Create a New Pull Request
Test Suite: Test262
Editors:

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- Bradley Farias (@bradleymeck)
- Jordan Harband (@ljharb)

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Refer to the colophon for more information on how this document is created.

Search...
Google Chrome

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ECMAScript

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ECMAScript

- Needed to be a general standard
- Specifies *only* a language; separation of concerns
    - Syntax, semantics, constructs, primitives
    - Language should not know about its environment at all
    - No explicit knowledge of language’s host (DOM / fetch() / etc)

Web API Origins

- Not part of the language itself
- Effectively “mixins”, baked into UAs like browsers
- Browsers “support” implementations of these standards

Web Standards Bodies

WHATWG

WHATWG

- **W**eb **H**ypertext **A**pplication **T**echnology **W**orking **G**roup

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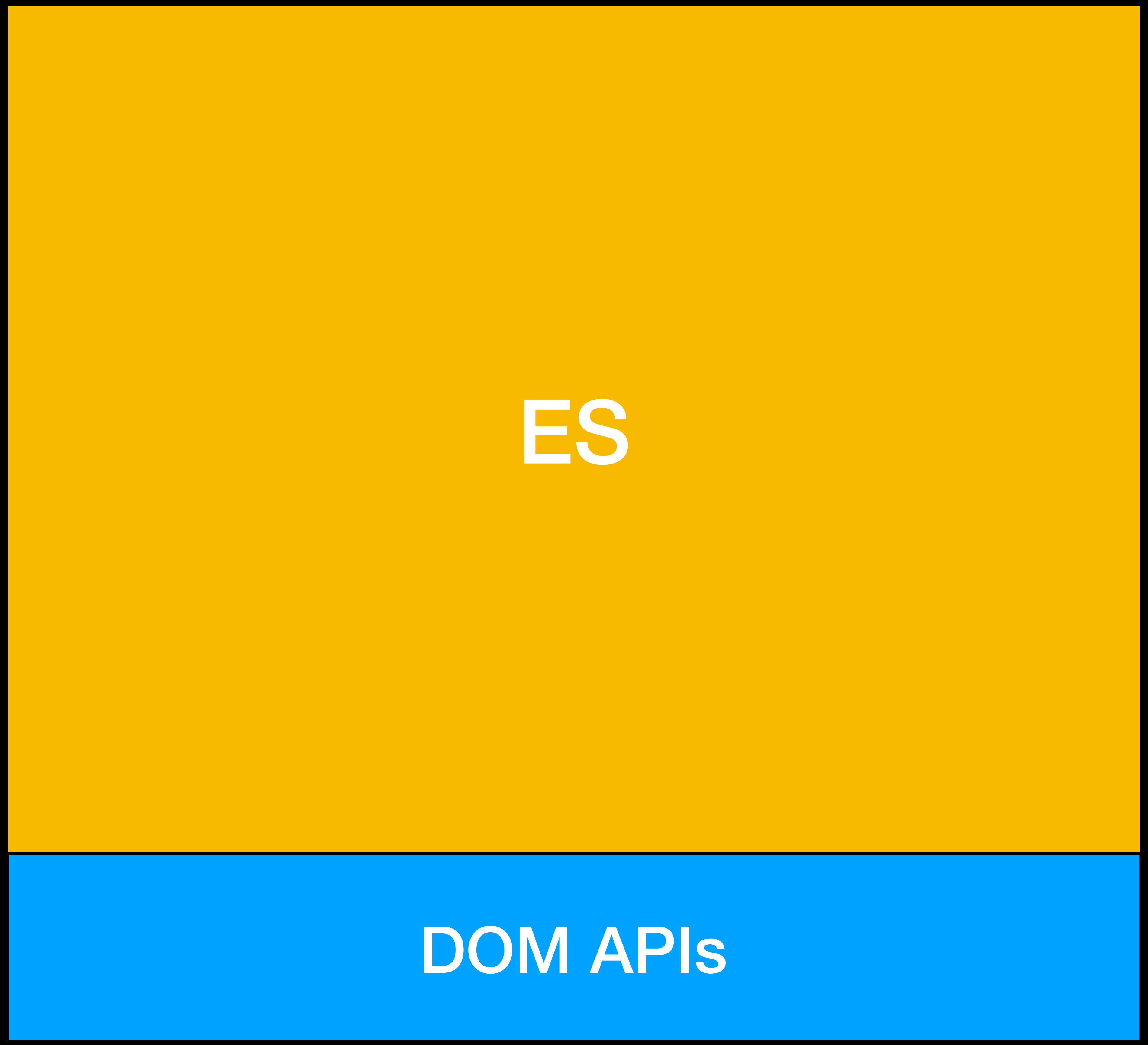
- **W**eb **H**ypertext **A**pplication **T**echnology **W**orking **G**roup
- Formed in 2004
- Canonical standards:
  - HTML
  - DOM
  - Fetch
  - Streams

`Array, WeakMap, Date`



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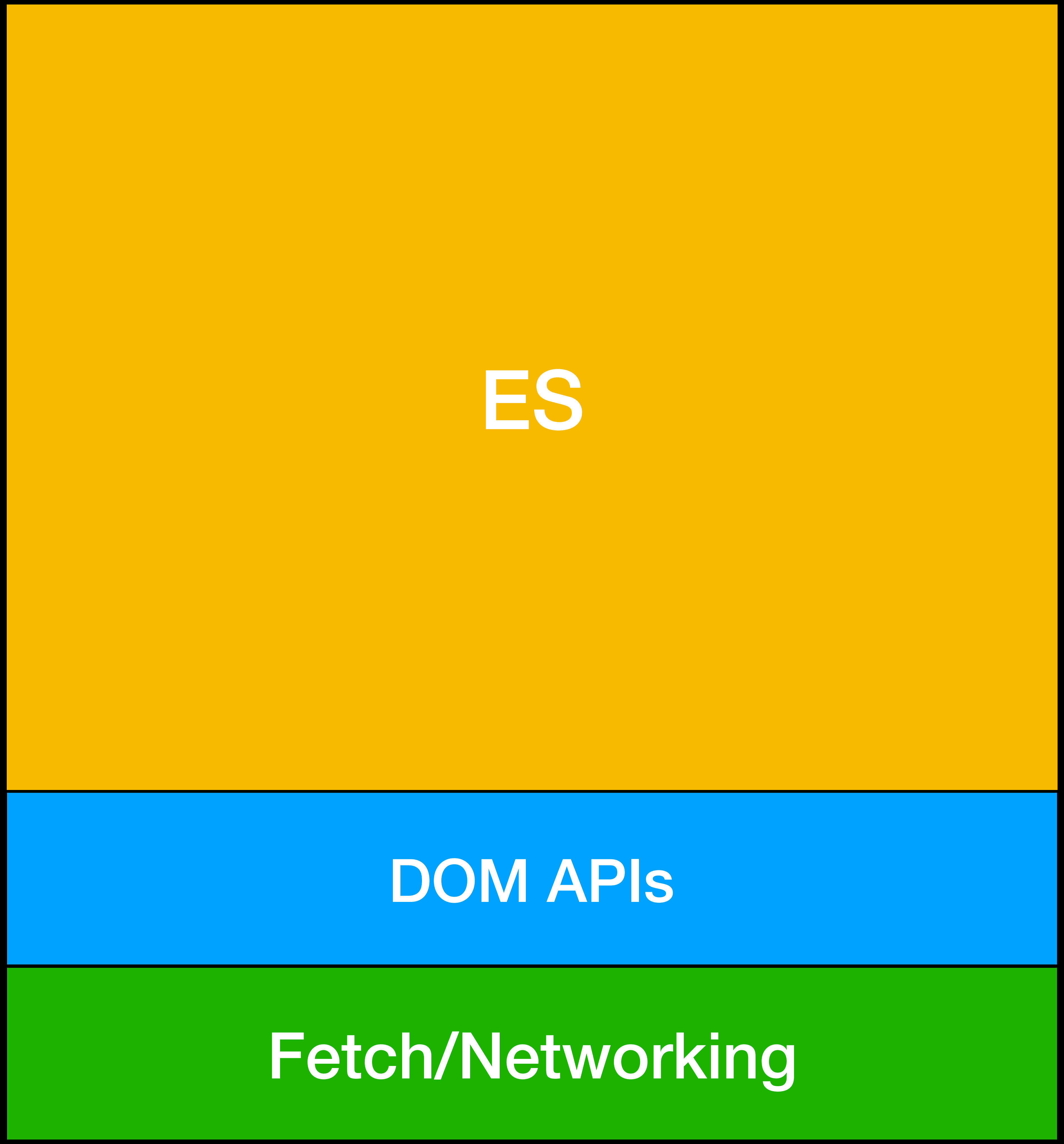

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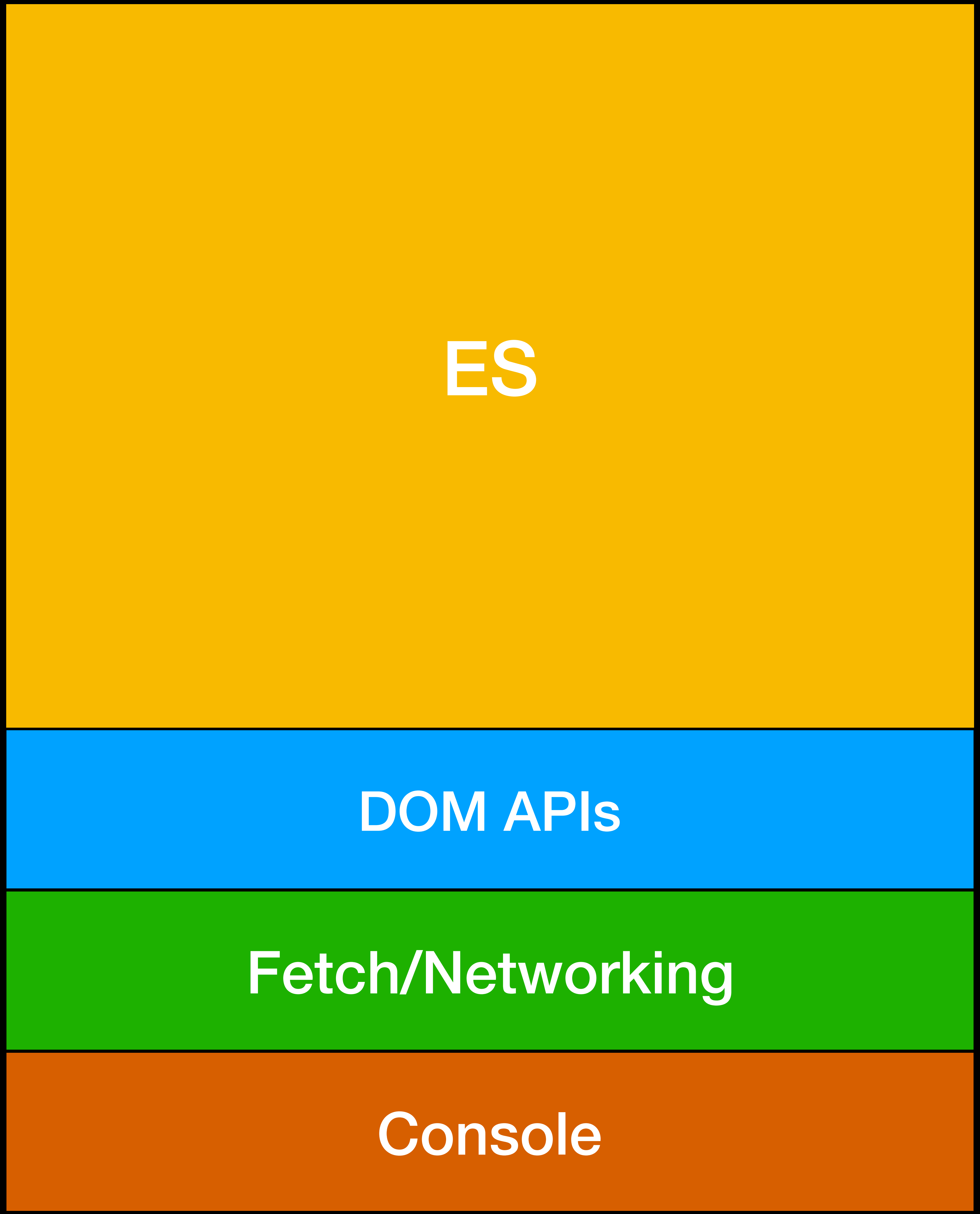


`Array, WeakMap, Date`

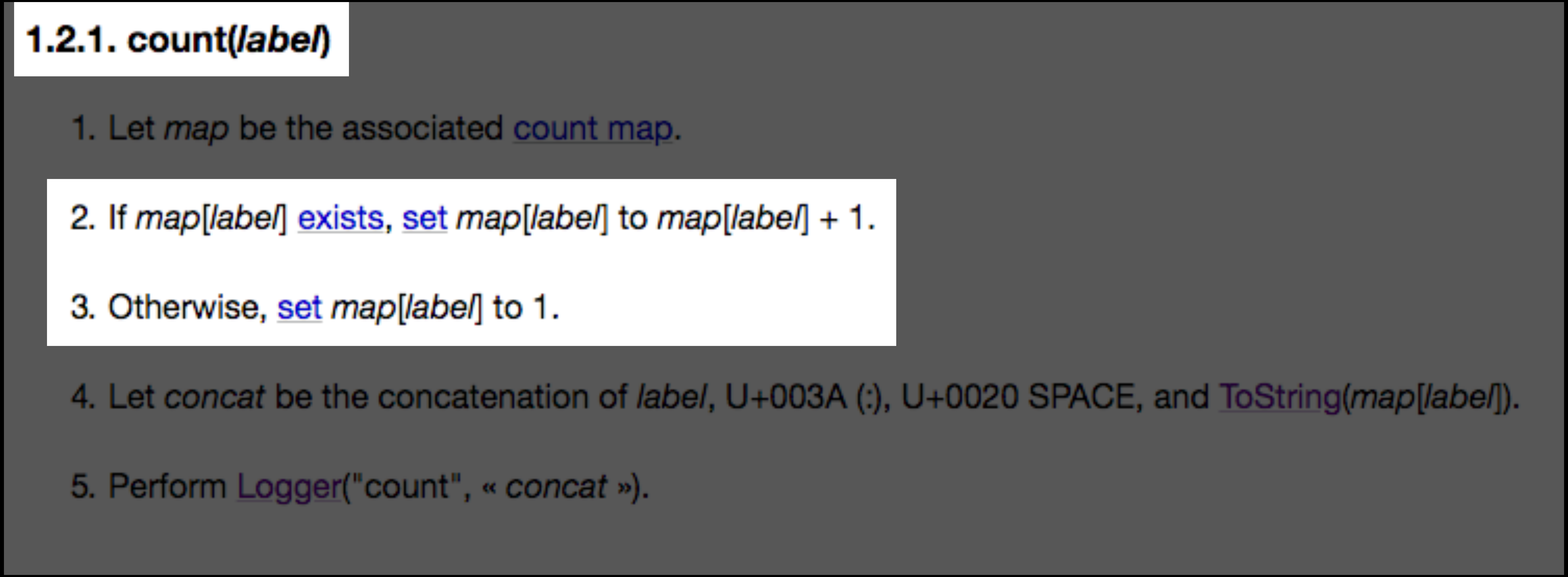
`document.querySelector`

`fetch(), Request(), …`

`console.{log, count, …}`

Anatomy of a standard

Algorithms



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1. Let *map* be the associated count map.
2. If *map*[*label*] exists, set *map*[*label*] to *map*[*label*] + 1.
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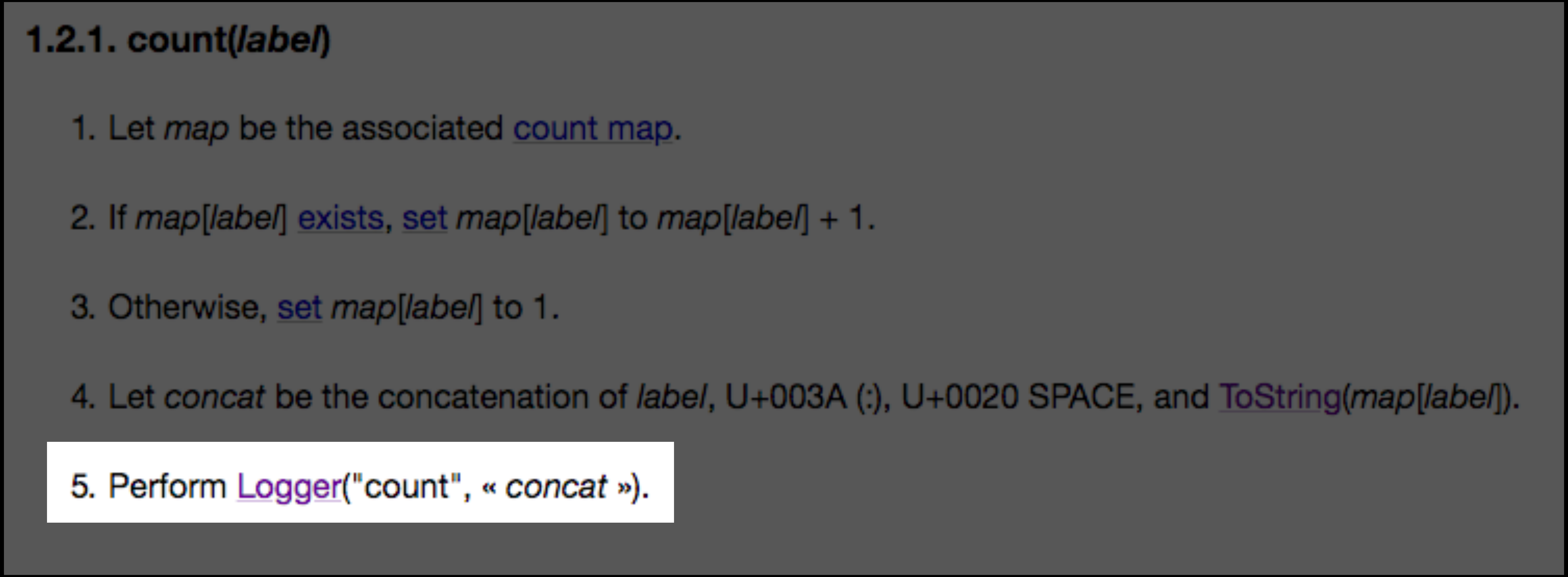
4. Let *concat* be the concatenation of *label*, U+003A (:), U+0020 SPACE, and ToString(*map*[*label*]).
5. Perform Logger("count", « *concat* »).

https://console.spec.whatwg.org/#count

@domfarolino

dom@chromium.org



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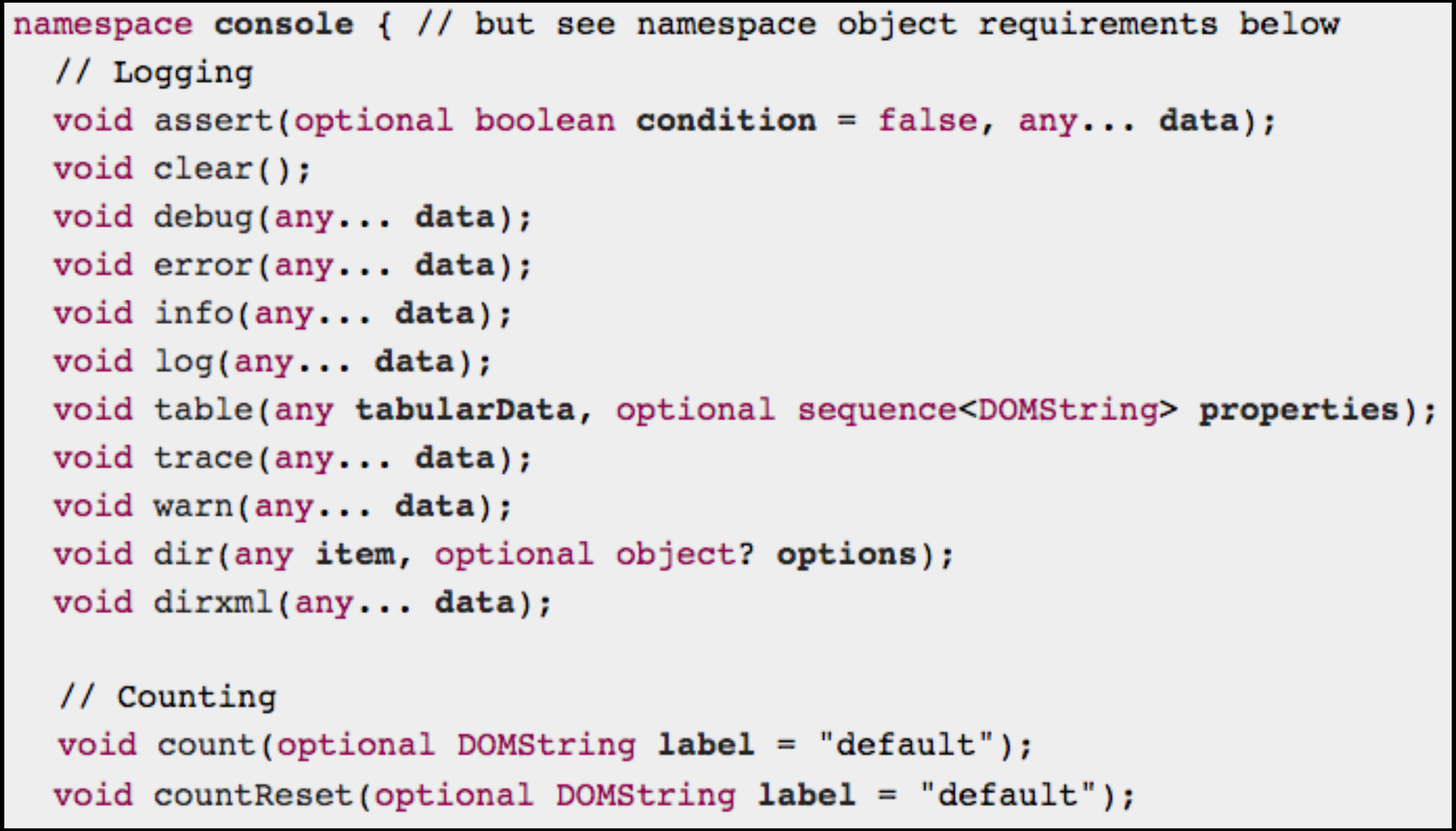
Look and Feel



```
namespace console { // but see namespace object requirements below
  // Logging
  void assert(optional boolean condition = false, any... data);
  void clear();
  void debug(any... data);
  void error(any... data);
  void info(any... data);
  void log(any... data);
  void table(any tabularData, optional sequence<DOMString> properties);
  void trace(any... data);
  void warn(any... data);
  void dir(any item, optional object? options);
  void dirxml(any... data);

  // Counting
  void count(optional DOMString label = "default");
  void countReset(optional DOMString label = "default");
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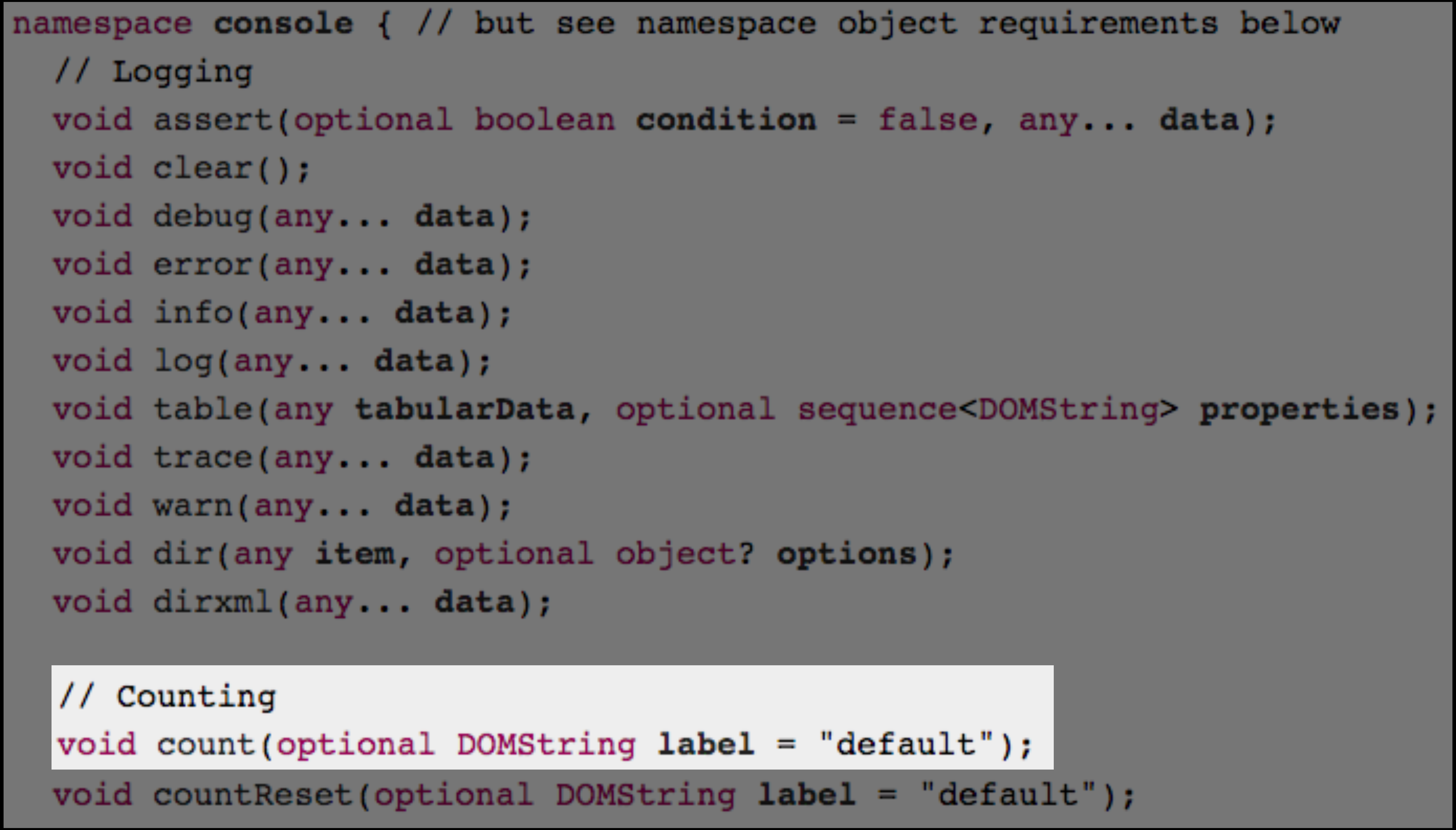

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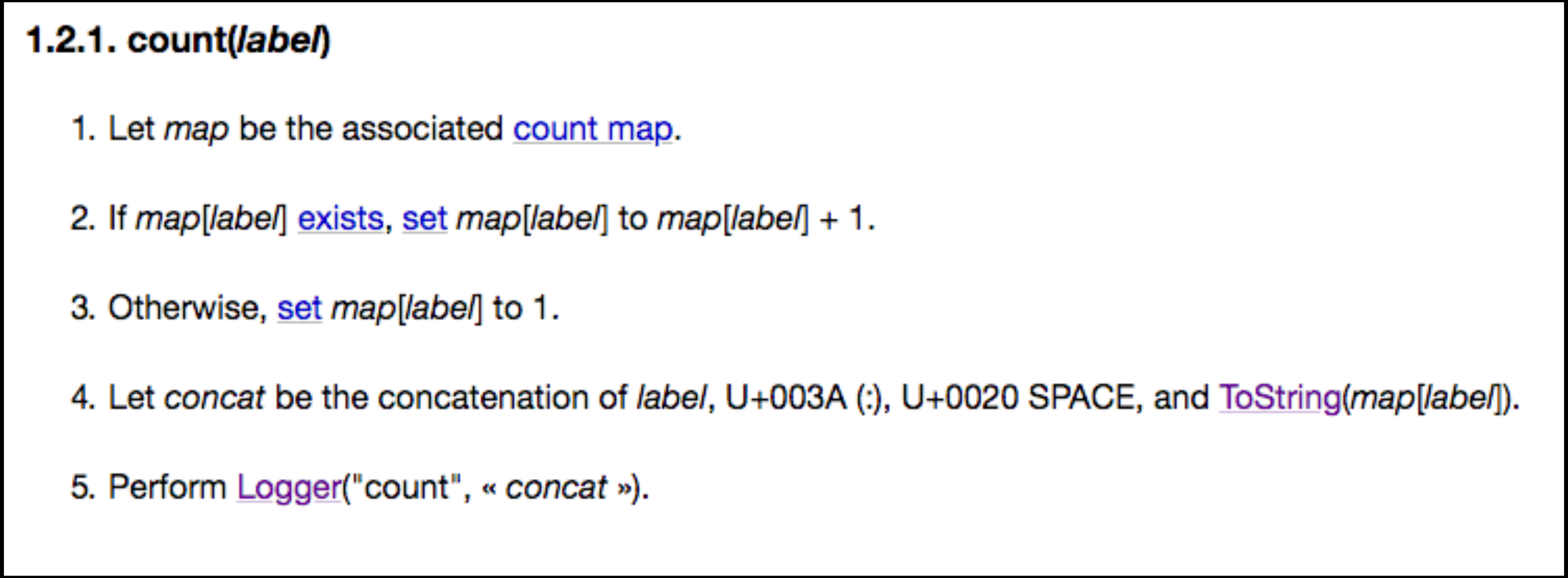

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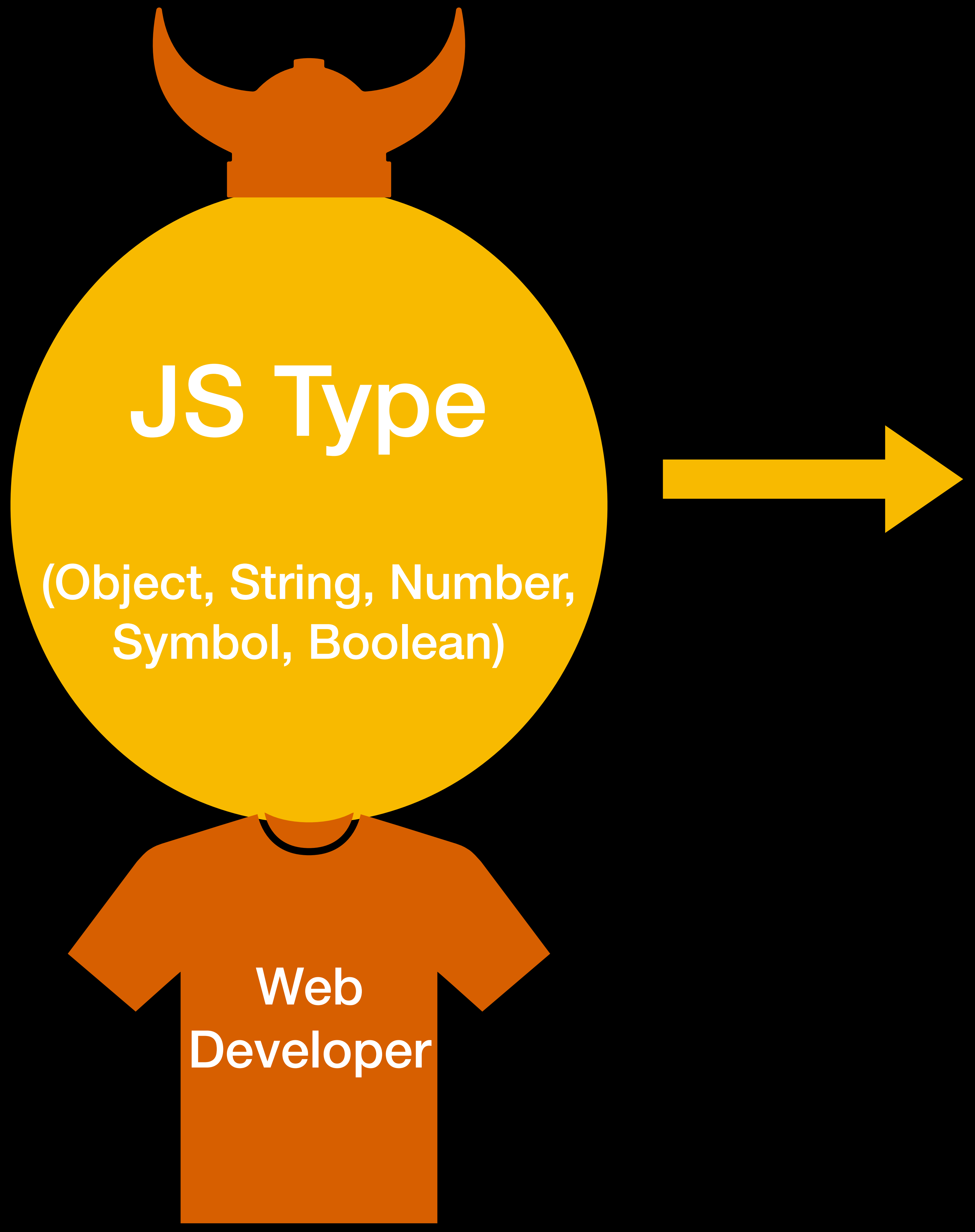
Web IDL Conversion



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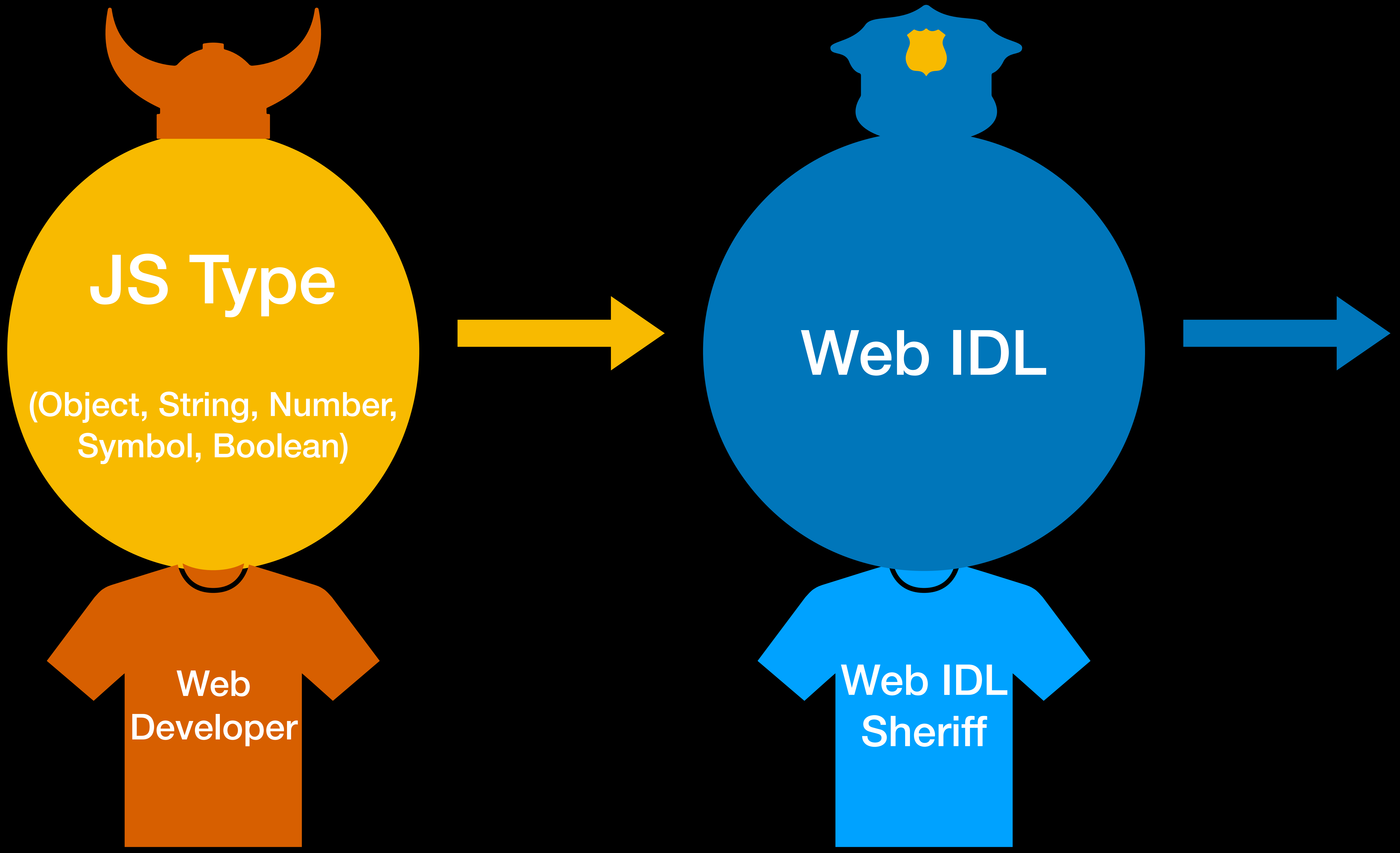

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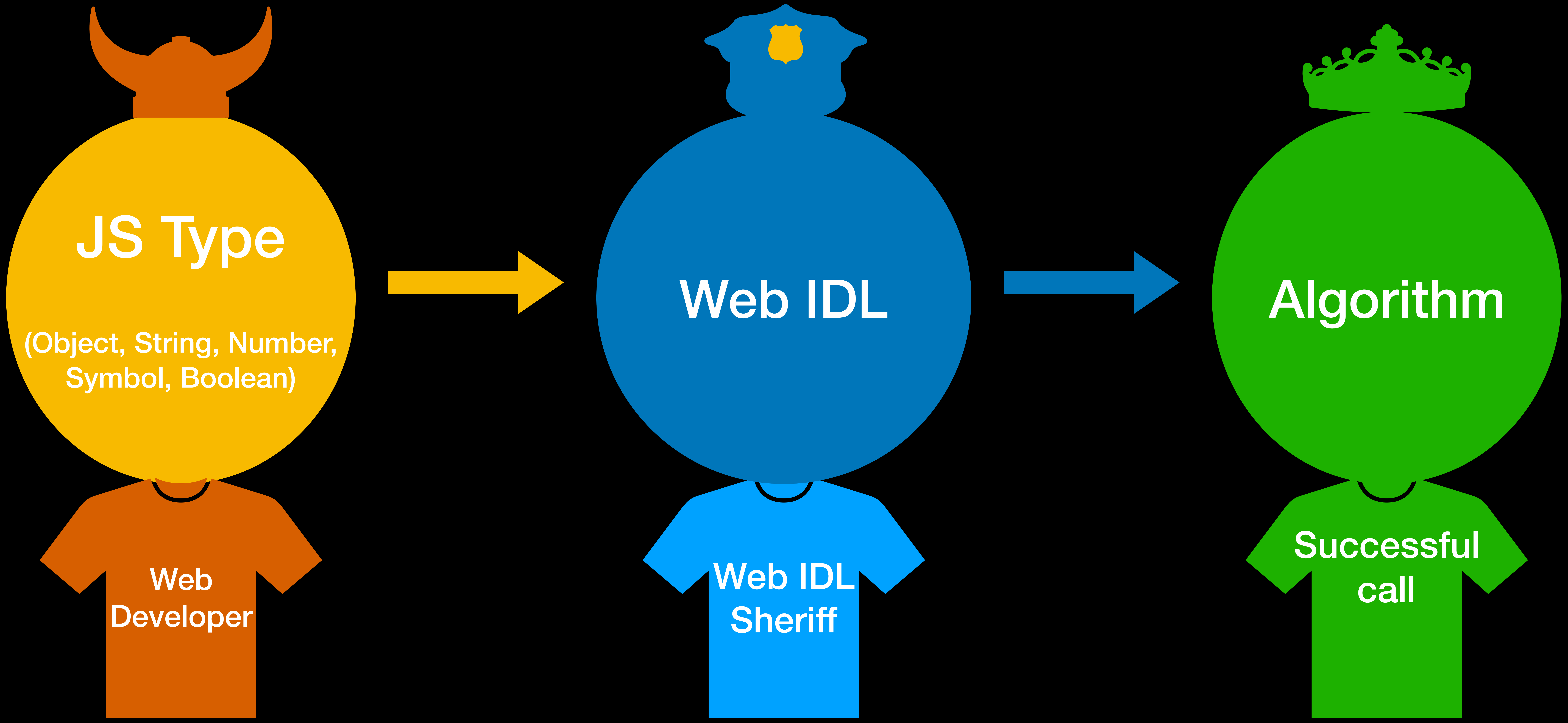

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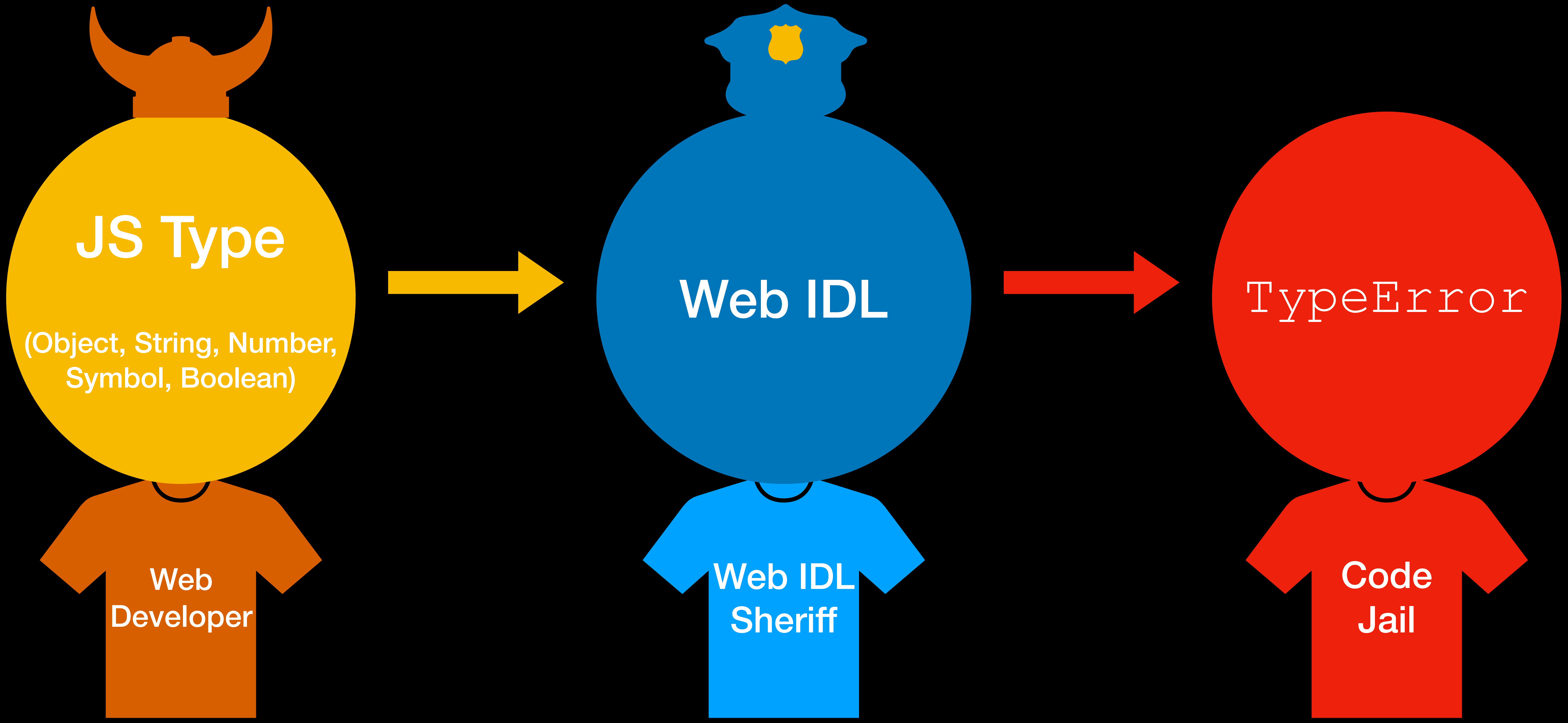

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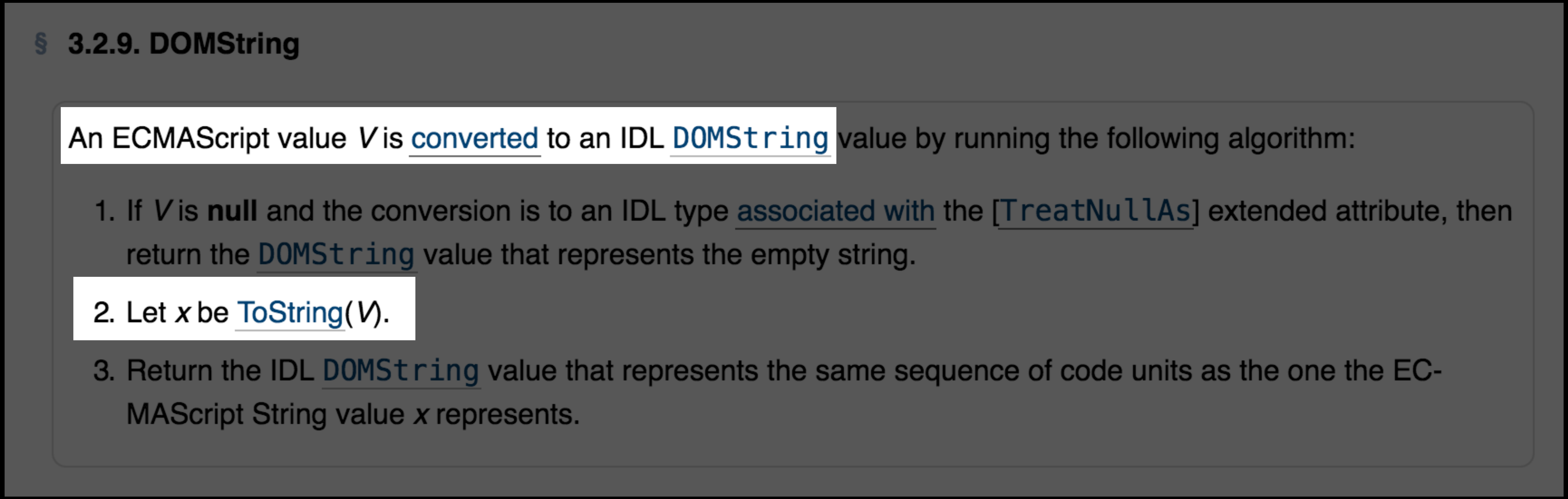
Web IDL



§ 3.2.9. DOMString

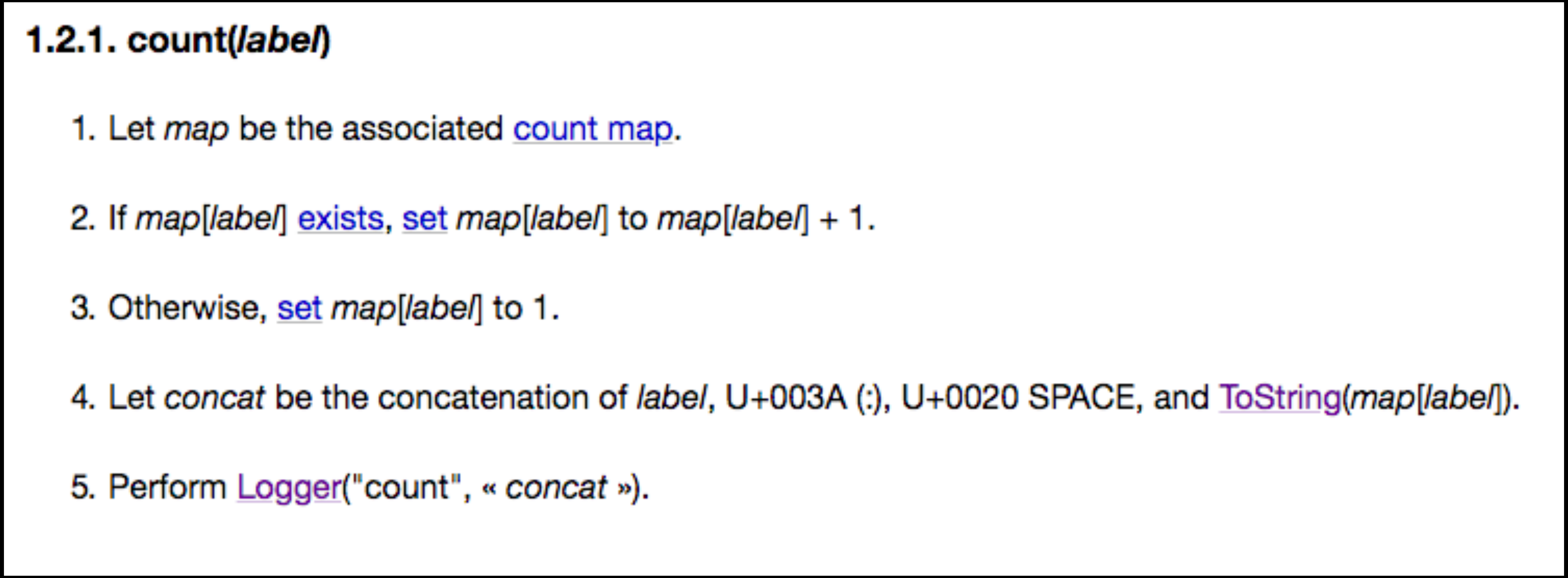
An ECMAScript value *V* is converted to an IDL `DOMString` value by running the following algorithm:

1. If *V* is **null** and the conversion is to an IDL type associated with the [`TreatNullAs`] extended attribute, then return the `DOMString` value that represents the empty string.
2. Let *x* be ToString(*V*).
3. Return the IDL `DOMString` value that represents the same sequence of code units as the one the EC-MAScript String value *x* represents.

https://heycam.github.io/webidl/#es-DOMString

@domfarolino

dom@chromium.org



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- Takes care of things for us:
  - Property init (Prototype chain, property descriptors, …)
  - Type conversion
  - Where to expose interfaces

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- Abstraction over ECMAScript text
- Takes care of things for us:
  - Property init (Prototype chain, property descriptors, …)
  - Type conversion
  - Where to expose interfaces
- Don’t have to use it

How I got involved?

@domfarolino

dom@chromium.org

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Domenic Denicola
domenic

Unfollow

Block or report user

Google
New York, NY

https://domenic.me/

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jsdom/jsdom A JavaScript implementation of the WHATWG DOM and HTML standards, for use with node.js ● JavaScript ★ 11k 1k	**jsdom/whatwg-url** An implementation of the WHATWG URL Standard in JavaScript ● JavaScript ★ 124 42
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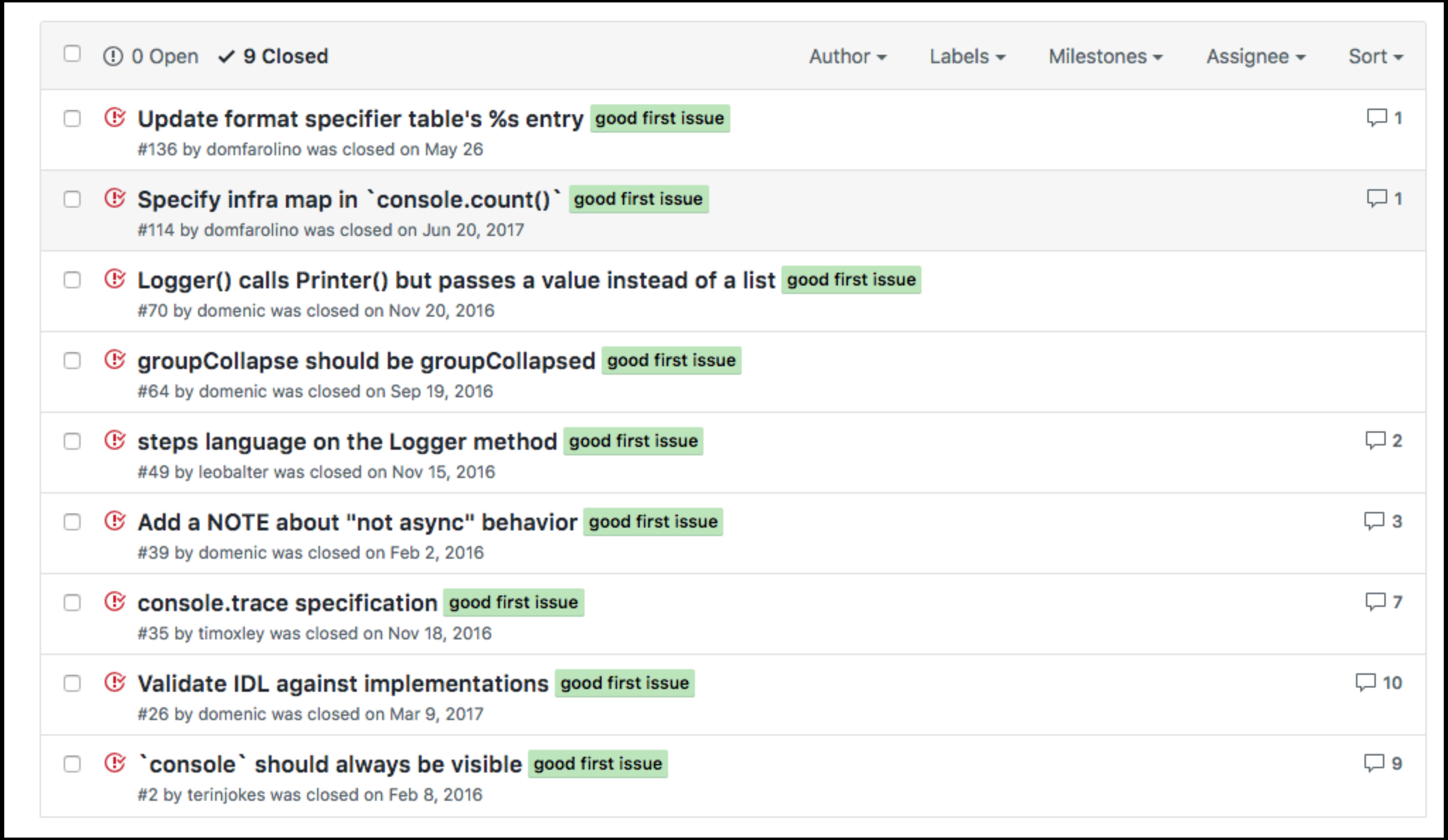

0 Open ✓ 9 Closed Author Labels Milestones Assignee Sort

Update format specifier table's %s entry good first issue 1
#136 by domfarolino was closed on May 26

Specify infra map in `console.count()` good first issue 1
#114 by domfarolino was closed on Jun 20, 2017

Logger() calls Printer() but passes a value instead of a list good first issue
#70 by domenic was closed on Nov 20, 2016

groupCollapse should be groupCollapsed good first issue
#64 by domenic was closed on Sep 19, 2016

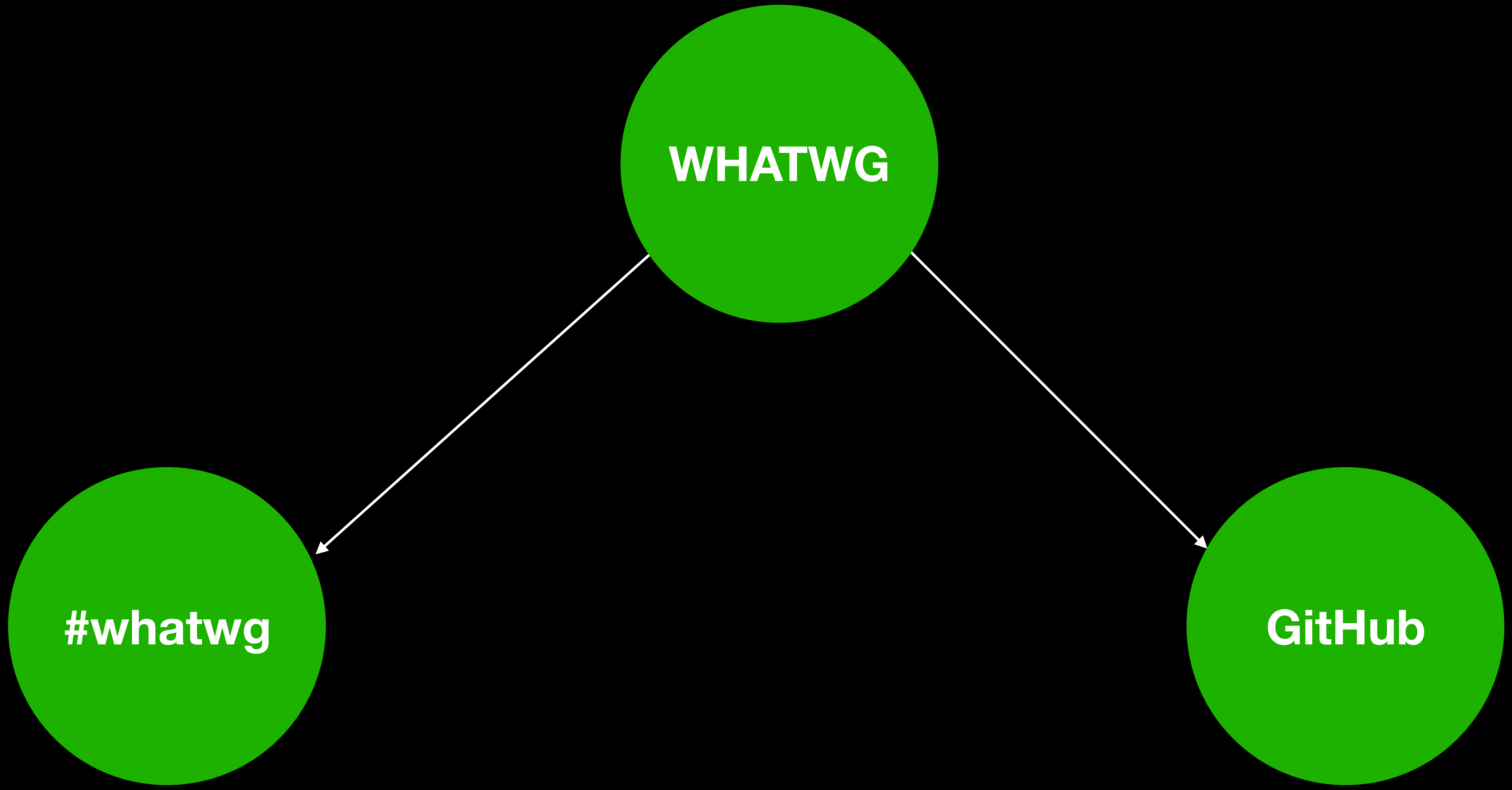
steps language on the Logger method good first issue 2
#49 by leobalter was closed on Nov 15, 2016

Add a NOTE about "not async" behavior good first issue 3
#39 by domenic was closed on Feb 2, 2016

console.trace specification good first issue 7
#35 by timoxley was closed on Nov 18, 2016

Validate IDL against implementations good first issue 10
#26 by domenic was closed on Mar 9, 2017

`console` should always be visible good first issue 9
#2 by terinjokes was closed on Feb 8, 2016


$$\begin{tikzcd}
 & \text{WHATWG} \arrow[dl] \arrow[dr] & \\
\text{\#whatwg} & & \text{GitHub}
\end{tikzcd}$$

Why?

domfarolino/cascadiajs

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