

OFFLINE FIRST!
@rowdyrabouw

rowdy.codes

rowdy.codes

Incognito



No Internet

Try:

- Checking the network cables, modem and router
- Reconnecting to Wi-Fi

ERR_INTERNET_DISCONNECTED

OFFLINE FIRST!
@rowdyrabouw

Downasaur

When using Google Chrome and your internet connectivity dies, you'll see a little Tyrannosaurus.

This is called the 'downasaur'.

https://www.urbandictionary.com/define.php?term=downasaur




OFFLINE FIRST!



OFFLINE FIRST!
@rowdyrabouw


• Build my first website in 1996
• Front-End Focused Senior DevOps Engineer
• Google Developer Expert in Web Technologies


STARTER CODE
https://github.com/rowdyrabouw/offline-first.nl/tree/01-starter-code

index.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Jurassic Park</title>
    <link rel="stylesheet" href="assets/css/style.css" />
    <link rel="icon" type="image/png" sizes="32x32" href="favicon.ico" />
  </head>
  <body>
    <main>
      <h1>Jurassic Park</h1>
      <img src="assets/img/jurassic-park.jpg" alt="" />
      <h2>Welcome to... Jurassic Park!</h2>
      <p>...</p>
      <ol>
        <li><a href="/jurassic-park-1993.html">Jurassic Park</a></li>
        ...
      </ol>
    </main>
  </body>
</html>
```

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



WELCOME TO... JURASSIC PARK!

Humans waited 65 million years for cloning technology to be advanced enough to re-create dinosaurs from DNA found in mosquitoes preserved in amber. If that's the timeline, the 29 years between Jurassic Park, the first film in the franchise, and the latest Jurassic World: Dominion doesn't seem all that long. But spreading six movies out across three decades does make it easy to lose track of exactly what happens in one or two along the way.


SERVICE WORKER
https://github.com/rowdyrabouw/offline-first.nl/tree/02-add-service-worker

Service Worker

- JavaScript file
- runs in the background in a separate thread; non-blocking
- scoped to a website
- can’t modify page; no access to DOM
- asynchronous; promises or async/await
- event driven



Service Workers | Can I use...

caniuse.com/serviceworkers

Service Workers - CR

Method that enables applications to take advantage of persistent background processing, including hooks to enable bootstrapping of web applications while offline.

Usage: Global — % of all users: 96.15% + 0.02% = 96.17%

Current aligned | Usage relative | Date relative | Filtered | All

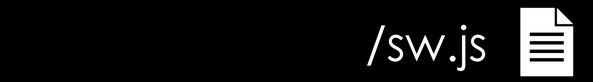
Chrome	Edge *	Safari	Firefox	Opera
			2-32	
			1 33-43	
			44	
			3 45	
			46-51	
			3 52	
			53-59	
			3 60	
4-39	12-14		61-67	10-26
40-44	2 15-16	3.1-11	3 68	27-31
45-114	17-114	11.1-16.4	69-114	32-99
115	115	16.5	115	100
116-118		16.6-TP	116-117	

Chrome for Android	Safari on iOS *	Samsung Internet	Opera Mini *	Opera Mobile *	UC Browser for Android	Android Browser *	Firefox for Android	QQ Browser	Baidu Browser	KaiOS Browser
	3.2-11.2									
	11.3-16.4	4-20		12-12.1		2.1-4.4.4				2.5
114	16.5	21	all	73	15.5	114	115	13.1	13.18	3.1
	16.6-17									

Notes | Test on a real browser | Known issues (1) | Resources (6) | Feedback


BROWSER
MORE JAVASCRIPT
SERVICE WORKER
SERVER

/sw.js



```
self.addEventListener("install", (event) => {
  console.log("%c[sw.js] Service Worker installed", "color: #FEC233");
});

self.addEventListener("activate", (event) => {
  console.log("%c[sw.js] Service Worker activated", "color: #FEC233");
});
```




```
if ("serviceWorker" in navigator) {
  window.addEventListener("load", () => {
    navigator.serviceWorker
      .register("sw.js")
      .then((reg) => {
        console.log("%c[app.js] Service Worker registered", "color: #00ABD2");
      })
      .catch((e) => {
        console.error(
          "%c[app.js] Error during service worker registration:",
          e
        );
      });
  });
}
```

index.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Jurassic Park</title>
    <link rel="stylesheet" href="assets/css/style.css" />
    <link rel="icon" type="image/png" sizes="32x32" href="favicon.png" />
    <script src="assets/js/app.js"></script>
  </head>
  <body>
    <main>
      <h1>Jurassic Park</h1>
      <img src="assets/img/jurassic-park.jpg" alt="" />
      <h2>Welcome to... Jurassic Park!</h2>
      <p>...</p>
      <ol>
        <li><a href="/jurassic-park-1993.html">Jurassic Park</a></li>
        ...
      </ol>
    </main>
  </body>
</html>
```

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



WELCOME TO... JURASSIC PARK!

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Network | Console | Application | Performance insights | Sources | Elements

Application
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- Storage

Storage
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- IndexedDB
- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
- Back/forward cache

Background Services
- Background Fetch

Service Workers

Offline | Update on reload | Bypass for network

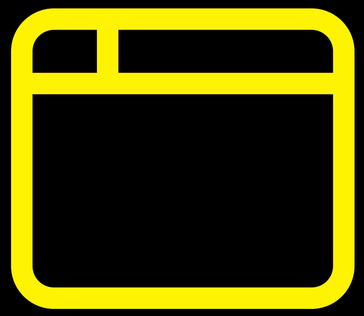
Service workers from other origins

See all registrations

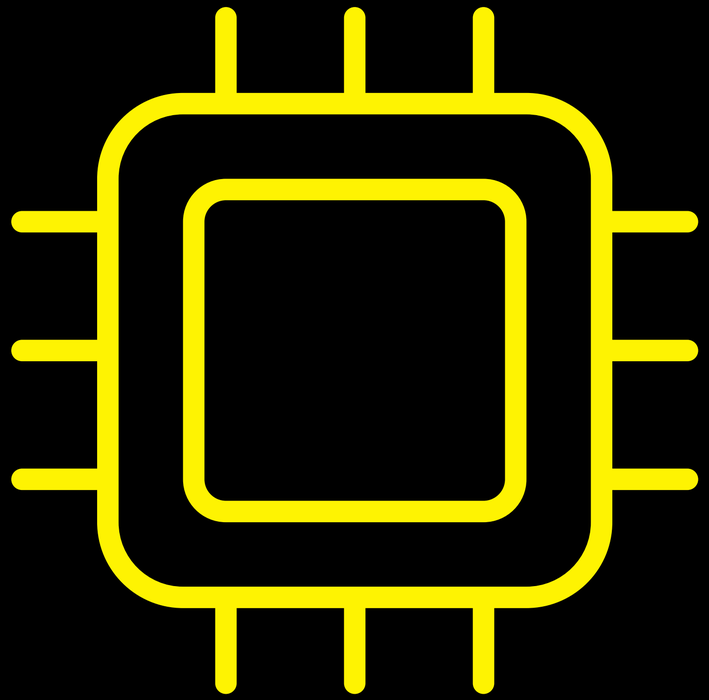
Console | What's New | Issues

top | Filter | Default levels | No Issues


CACHING STRATEGY



Browser



Service Worker



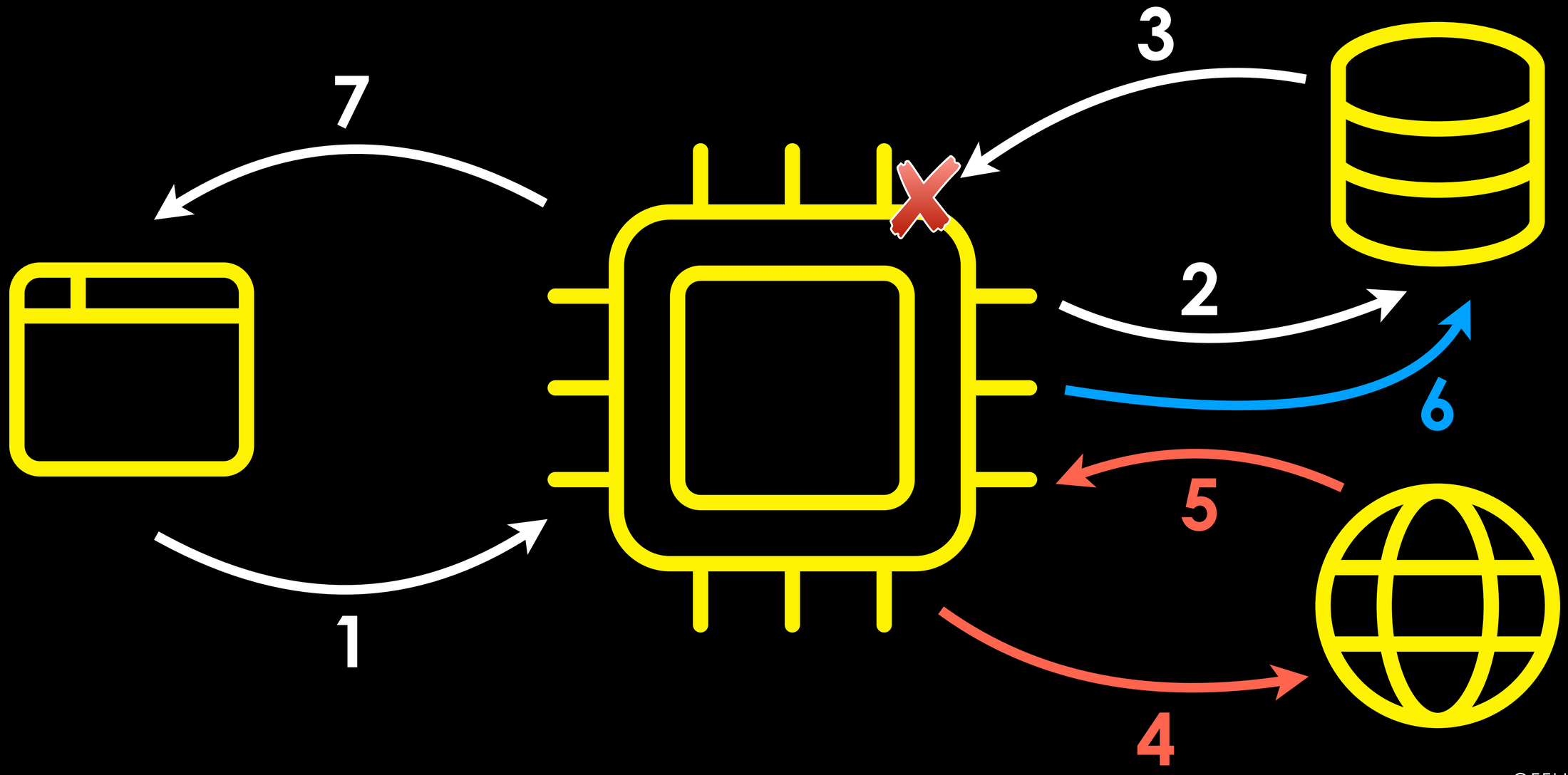
Cache

Network





Cache first - Network fallback




STATIC CACHE
https://github.com/rowdyrabouw/offline-first.nl/tree/03-add-static-cache

sw.js



```
const STATIC_CACHE = "static-v1";

const STATIC_FILES = [
  "/",
  "index.html",
  "/favicon.png",
  "assets/css/style.css",
  "assets/fonts/neuland_inline.woff2",
  "assets/img/jurassic-park.jpg",
  "assets/js/app.js",
];
```




sw.js



```
const STATIC_CACHE = "static-v1";

const STATIC_FILES = [
  "/",
  "index.html",
  "/favicon.png",
  "assets/css/style.css",
  "assets/fonts/neuland_inline.woff2",
  "assets/img/jurassic-park.jpg",
  "assets/js/app.js",
];

self.addEventListener("install", (event) ⇒ {
  console.log("%c[sw.js] Service Worker installed", "color: #FEC233");









});
```




sw.js

```
const STATIC_CACHE = "static-v1";

const STATIC_FILES = [
  "/",
  "index.html",
  "/favicon.png",
  "assets/css/style.css",
  "assets/fonts/neuland_inline.woff2",
  "assets/img/jurassic-park.jpg",
  "assets/js/app.js",
];

self.addEventListener("install", (event) => {
  console.log("%c[sw.js] Service Worker installed", "color: #FEC233");
  event.waitUntil(
    caches.open(STATIC_CACHE).then((cache) => {
      cache.addAll(STATIC_FILES).then(() => {
        console.log("%c[sw.js] Files added to static cache", "color: #FEC233");
        self.skipWaiting();
      });
    })
  );
});
```

app.js

```
if ("serviceWorker" in navigator) {
  window.addEventListener("load", () ⇒ {
    navigator.serviceWorker
      .register("sw.js")
      .then((reg) ⇒ {
        console.log("%c[app.js] Service Worker registered", "color: #00ABD2");
      })
      .catch((e) ⇒ {
        console.error("%c[app.js] Error during service worker registration:", e);
      });
  });
}
```

app.js

```
if ("serviceWorker" in navigator) {
  window.addEventListener("load", () => {
    navigator.serviceWorker
      .register("sw.js")
      .then((reg) => {
        console.log("%c[script.js] Service Worker registered", "color: #00ABD2");
        reg.onupdatefound = () => {
          const installingWorker = reg.installing;
          installingWorker.onstatechange = () => {
            if (installingWorker.state === "installed") {
              console.log("%c[app.js] New or updated content is available",
                          "color: #00ABD2");
              if (confirm("A new version is available.\n
                           Would you like to load the new version?")) {
                window.location.reload();
              }
            }
          };
        };
      })
      .catch((e) => {
        console.error("%c[app.js] Error during service worker registration:", e);
      });
  });
}
```

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



WELCOME TO... JURASSIC PARK!

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Network | Console | Application | Performance insights | Sources | Elements | Recorder

Application
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- Storage

Storage
- Local Storage
- Session Storage
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- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
- Back/forward cache

Background Services
- Background Fetch
- Background Sync
- Notifications
- Payment Handler

Service Workers

Offline | Update on reload | Bypass for network

http://localhost:1993/ — Network requests | Update | Unregister

Source: sw.js

Received 03/07/2022, 20:58:27

Status: #0 activated and is running stop

Clients: http://localhost:1993/ focus

Push: `Test push message from DevTools.` Push

Sync: `test-tag-from-devtools` Sync

Periodic Sync: `test-tag-from-devtools` Periodic Sync

Update Cycle

Version	Update Activity	Timeline
#0	Install	
#0	Wait	
#0	Activate	

Console | What's New | Issues

top | Filter | Default levels | No Issues

```
[app.js] Service Worker registered                app.js:6
[sw.js] Service Worker installed                  sw.js:2
[sw.js] Service Worker activated                  sw.js:6
```

>


FETCH CACHE
https://github.com/rowdyrabouw/offline-first.nl/tree/04-fetch-static-cache

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



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Network | Console | Application | Performance insights | Sources | Elements | Recorder

Preserve log | Disable cache | No throttling

Invert | Hide data URLs | All | Fetch/XHR | JS | CSS | Img | Media | Font | Doc | WS | Wasm | Manifest | Other

Has blocked cookies | Blocked Requests | 3rd-party requests

10 ms | 20 ms | 30 ms | 40 ms | 50 ms | 60 ms | 70 ms | 80 ms | 90 ms | 100 ms | 110

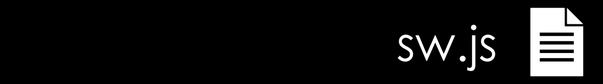
Recording network activity...

Perform a request or hit ⌘ R to record the reload

Learn more

Console | What's New | Issues

top | Filter | Default levels | No Issues



```
self.addEventListener("fetch", (event) ⇒ {
  event.respondWith(
    // look at all caches for a match on the key (= request)
    caches.match(event.request).then((response) ⇒ {
      if (response) {
        // return from cache
        return response;
      } else {
        // fetch from the server
        return fetch(event.request);
      }
    })
  );
});
```




Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



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Network | Console | Application | Performance insights | Sources | Elements | Recorder

Preserve log | Disable cache | No throttling

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Has blocked cookies | Blocked Requests | 3rd-party requests

10 ms | 20 ms | 30 ms | 40 ms | 50 ms | 60 ms | 70 ms | 80 ms | 90 ms | 100 ms | 110

Name	Status	Type	Initiator	Size	Time	Waterfall
localhost	200	document	Other	2.0 kB	8 ms	
style.css	200	stylesheet	(index)	1.7 kB	5 ms	
app.js	200	script	(index)	1.2 kB	7 ms	
jurassic-park.jpg	200	jpeg	(index)	114 kB	7 ms	
neuland_inline.woff2	200	font	style.css	29.6 kB	3 ms	

5 requests | 148 kB transferred | 147 kB resources | Finish: 28 ms | DOMContentLoaded: 24 ms | Load: 35 m

Console | What's New | Issues

top | Filter | Default levels | No Issues


OFFLINE FALLBACK
https://github.com/rowdyrabouw/offline-first.nl/tree/05-offline-fallback

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



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Network | Console | Application | Performance insights | Sources | Elements | Recorder

Preserve log | Disable cache | No throttling

Invert | Hide data URLs | All | Fetch/XHR | JS | CSS | Img | Media | Font | Doc | WS | Wasm | Manifest | Other

Has blocked cookies | Blocked Requests | 3rd-party requests

10 ms | 20 ms | 30 ms | 40 ms | 50 ms | 60 ms | 70 ms | 80 ms | 90 ms | 100 ms | 110

Recording network activity...

Perform a request or hit ⌘ R to record the reload.

Learn more

Console | What's New | Issues

top | Filter | Default levels | No Issues

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Jurassic Park - offline</title>
    <link rel="stylesheet" href="assets/css/style.css" />
    <link rel="icon" type="image/png" sizes="32x32" href="favicon.png" />
    <script src="assets/js/app.js"></script>
  </head>
  <body>
    <main>
      <h1>Jurassic Park is closed</h1>
      <img src="assets/img/jurassic-park.jpg" alt="" />
      <h2>It seems you are currently offline ...</h2>
      <p><strong>We're sorry, this page hasn't been cached yet :-(</strong></p>
      <p>But why don't you try one of our <a href="/">other pages</a>?</p>
    </main>
  </body>
</html>
```



```
const STATIC_CACHE = "static-v1";
const STATIC_FILES = [
  "/",
  "index.html",
  "/favicon.ico",
  "assets/css/style.css",
  "assets/fonts/neuland_inline.woff2",
  "assets/img/jurassic-park.jpg",
  "assets/js/app.js",

];
```






```
const STATIC_CACHE = "static-v2";
const STATIC_FILES = [
  "/",
  "index.html",
  "/favicon.ico",
  "assets/css/style.css",
  "assets/fonts/neuland_inline.woff2",
  "assets/img/jurassic-park.jpg",
  "assets/js/app.js",
  "offline.html",
];
```






```
self.addEventListener("fetch", (event) ⇒ {
  event.respondWith(
    // look at all caches for a match on the key (= request)
    caches.match(event.request).then((response) ⇒ {
      if (response) {
        // return from cache
        return response;
      } else {
        // fetch from the server
        return fetch(event.request)




      }
    })
  );
});
```




```
self.addEventListener("fetch", (event) ⇒ {
  event.respondWith(
    // look at all caches for a match on the key (= request)
    caches.match(event.request).then((response) ⇒ {
      if (response) {
        // return from cache
        return response;
      } else {
        // fetch from the server
        return fetch(event.request).catch(() ⇒ {
          return caches.open(STATIC_CACHE).then((cache) ⇒ {

              return cache.match("/offline.html");

          });
        });
      }
    })
  );
});
```



```
self.addEventListener("fetch", (event) ⇒ {
  event.respondWith(
    // look at all caches for a match on the key (= request)
    caches.match(event.request).then((response) ⇒ {
      if (response) {
        // return from cache
        return response;
      } else {
        // fetch from the server
        return fetch(event.request).catch(() ⇒ {
          return caches.open(STATIC_CACHE).then((cache) ⇒ {
            if (event.request.headers.get("accept").includes("text/html")) {
              return cache.match("/offline.html");
            }
          });
        });
      }
    })
  );
});
```




Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



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- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
  - static-v1 - http://localhost:1993
- Back/forward cache

Background Services
- Background Fetch
- Background Sync
- Notifications

Service Workers

Offline | Update on reload | Bypass for network

http://localhost:1993/ — Network requests | Update | Unregister

Source: sw.js

Received 04/07/2022, 16:09:15

Status: #0 activated and is running stop

Push: `Test push message from DevTools.` — Push

Sync: `test-tag-from-devtools` — Sync

Periodic Sync: `test-tag-from-devtools` — Periodic Sync

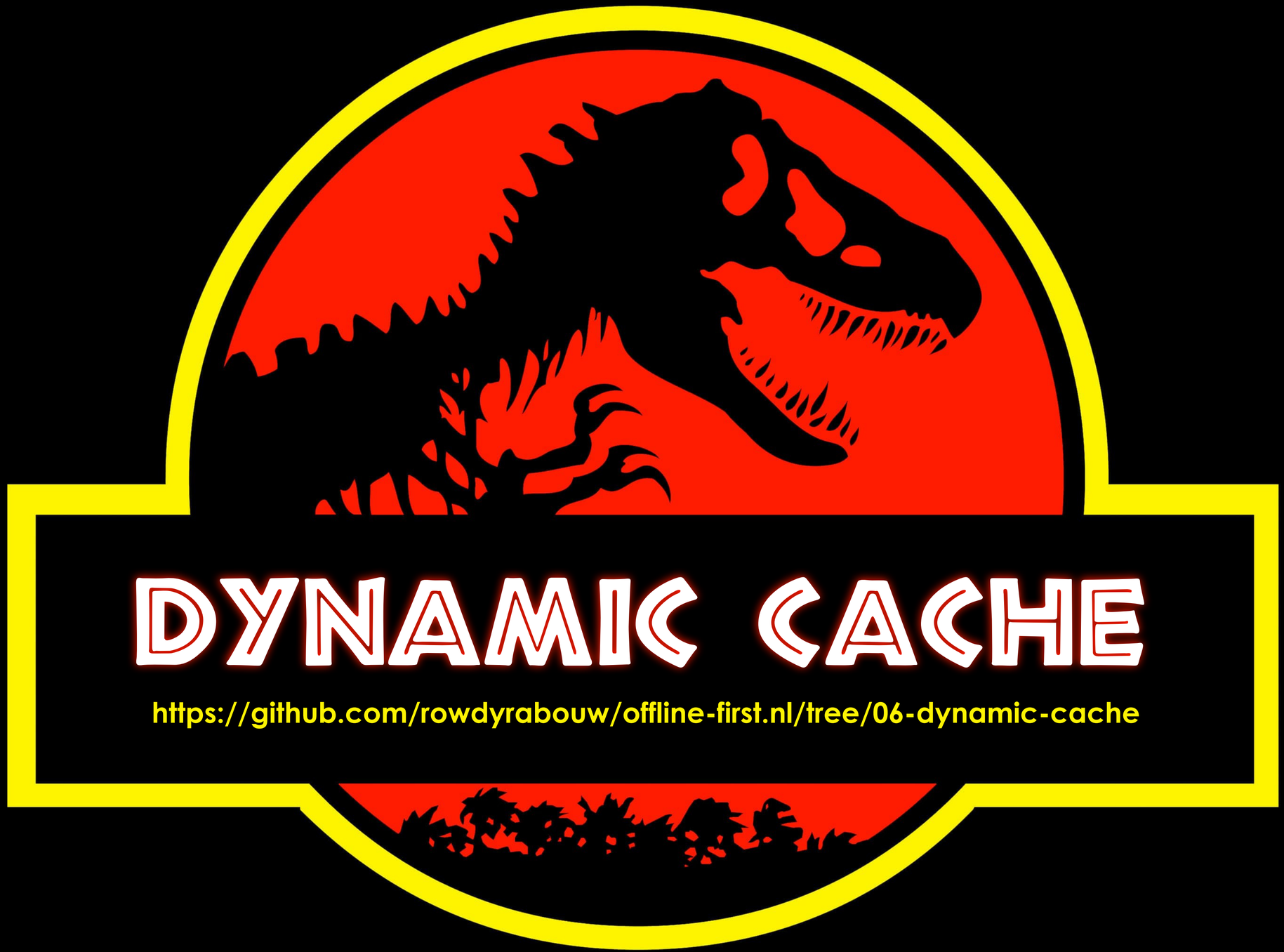
Update Cycle

Version	Update Activity	Timeline
#0	Install	
#0	Wait	
#0	Activate	

Console | What's New | Issues

top | Filter | Default levels | No Issues

```
[script.js] Service Worker registered                app.js:6
>
```

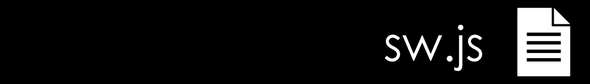

DYNAMIC CACHE
https://github.com/rowdyrabouw/offline-first.nl/tree/06-dynamic-cache



```
const DYNAMIC_CACHE = "dynamic-v1";
```




sw.js



```
self.addEventListener("fetch", (event) => {
  event.respondWith(
    // look at all caches for a match on the key (= request)
    caches.match(event.request).then((response) => {
      if (response) {
        // return from cache
        return response;
      } else {
        // fetch it from the server and save to cache
        return fetch(event.request)

          .catch(() => {
            return caches.open(STATIC_CACHE).then((cache) => {
              if (event.request.headers.get("accept").includes("text/html")) {
                return cache.match("/offline.html");
              }
            });
          });
      }
    })
  );
});
```




sw.js

```
self.addEventListener("fetch", (event) => {
  event.respondWith(
    // look at all caches for a match on the key (= request)
    caches.match(event.request).then((response) => {
      if (response) {
        // return from cache
        return response;
      } else {
        // fetch it from the server and save to cache
        return fetch(event.request)
          .then((res) => {
            return caches.open(DYNAMIC_CACHE).then((cache) => {
              cache.put(event.request.url, res.clone());
              return res;
            });
          })
          .catch(() => {
            return caches.open(STATIC_CACHE).then((cache) => {
              if (event.request.headers.get("accept").includes("text/html")) {
                return cache.match("/offline.html");
              }
            });
          });
      }
    })
  );
});
```

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



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- Interest Groups

Cache
- Cache Storage
  - static-v1 - http://localhost:1993
  - static-v2 - http://localhost:1993
- Back/forward cache

Background Services
- Background Fetch
- Background Sync

Service Workers

Offline | Update on reload | Bypass for network

http://localhost:1993/ — Network requests | Update | Unregister

Source: sw.js

Received 04/07/2022, 16:17:05

Status: #1 activated and is running stop

Push: Test push message from DevTools. — Push

Sync: test-tag-from-devtools — Sync

Periodic Sync: test-tag-from-devtools — Periodic Sync

Update Cycle

Version	Update Activity	Timeline
#1	Install	
#1	Wait	
#1	Activate	

Console | What's New | Issues

top | Filter | Default levels | No Issues

>

The Lost World: Jurassic Park

localhost:1993/jurassic-park-1997.html

Incognito

THE LOST WORLD: JURASSIC PARK



PLOT SYNOPSIS

The movie opens with an incident on the island of Isla Sorna (code-named "Site B" by the InGen company), located in the vicinity of Isla Nublar, where the film "Jurassic Park" took place.

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- IndexedDB
- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
  - static-v1 - http://localhost:1993
  - static-v2 - http://localhost:1993
- Back/forward cache

Background Services
- Background Fetch

Filter by Path

#	Name	Respons..	Content-..	Content-..	Time Ca...	Vary Hea..
0	/assets/img/jurassic-park-1993.jpg	basic	image/jpeg	137,013	04/07/2...	
1	/assets/img/jurassic-park-1997.jpg	basic	image/jpeg	74,859	04/07/2...	
2	/jurassic-park-1993.html	basic	text/html...	9,463	04/07/2...	
3	/jurassic-park-1997.html	basic	text/html...	10,744	04/07/2...	

Select a cache entry above to preview

Total entries: 4

Console | What's New | Issues

top | Filter | Default levels | No Issues

[script.js] Service Worker registered app.js:6

>


CACHE CLEANUP
https://github.com/rowdyrabouw/offline-first.nl/tree/07-cache-cleanup

Jurassic Park - offline

localhost:1993/jurassic-park-2001.html

Incognito

JURASSIC PARK IS CLOSED



IT SEEMS YOU ARE CURRENTLY OFFLINE ...

We're sorry, this page hasn't been cached yet :-(

But why don't you try one of our other pages?

Network | Console | Application | Performance insights | Sources | Elements | Recorder

Application
- Manifest
- Service Workers
- Storage

Storage
- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
  - static-v1 - http://localhost:1993
  - static-v2 - http://localhost:1993
  - dynamic-v1 - http://localhost:19

Background Services
- Background Fetch

Service Workers

Offline | Update on reload | Bypass for network

http://localhost:1993/ — Network requests | Update | Unregister

Source: sw.js

Received 04/07/2022, 16:17:38

Status: #2 activated and is running stop

Push: Test push message from DevTools. — Push

Sync: test-tag-from-devtools — Sync

Periodic Sync: test-tag-from-devtools — Periodic Sync

Update Cycle

Version	Update Activity	Timeline
#2	Install	
#2	Wait	
#2	Activate	

Console | What's New | Issues

top | Filter | Default levels | No Issues

[script.js] Service Worker registered — app.js:6

>



```
self.addEventListener("activate", (event) => {

  console.log("%c[sw.js] Service Worker activated", "color: #FEC233");
});
```




```
self.addEventListener("activate", (event) => {
  event.waitUntil(
    // will return an array of cache names
    caches.keys().then((keys) => {
      return Promise.all(
        // go over all available keys
        keys.map((key) => {
          if (key !== STATIC_CACHE && key !== DYNAMIC_CACHE) {
            console.log("%c[sw.js] Deleting old caches", "color: #FEC233");
            return caches.delete(key);
          }
        })
      );
    })
  );
  console.log("%c[sw.js] Service Worker activated", "color: #FEC233");
});
```

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



WELCOME TO... JURASSIC PARK!

Humans waited 65 million years for cloning technology to be advanced enough to re-create dinosaurs from DNA found in mosquitoes preserved in amber. If that's the timeline, the 29 years between Jurassic Park, the first film in the franchise, and the latest Jurassic World: Dominion doesn't seem all that long. But spreading six movies out across three decades does

Network | Console | Application | Performance insights | Sources | Elements | Recorder

Application
- Manifest
- Service Workers
- Storage

Storage
- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
  - static-v1 - http://localhost:1993
  - static-v2 - http://localhost:1993
- Back/forward cache

Background Services
- Background Fetch

Service Workers

Offline | Update on reload | Bypass for network

http://localhost:1993/ — Network requests | Update | Unregister

Source: sw.js

Received 04/07/2022, 16:29:59

Status: #4 activated and is running stop

Clients: http://localhost:1993/ focus

Push: `Test push message from DevTools.` Push

Sync: `test-tag-from-devtools` Sync

Periodic Sync: `test-tag-from-devtools` Periodic Sync

Update Cycle

Version	Update Activity	Timeline
#4	Install	
#4	Wait	
#4	Activate	

Console | What's New | Issues

top | Filter | Default levels | No Issues

```
[script.js] Service Worker registered                app.js:6
>
```


PREFETCH

Prefetch

Prefetching is when content is downloaded in the background, this is based on the assumption that the content will likely be requested, enabling the content to load instantly if and when the user requests it.

The content is downloaded and cached for anticipated future use without the user making an explicit request for it.

https://developer.mozilla.org/en-US/docs/Glossary/Prefetch



/index.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Jurassic Park</title>
    <link rel="stylesheet" href="assets/css/style.css" />
    <link rel="icon" type="image/png" sizes="32x32" href="favicon.ico" />
    <script src="assets/js/app.js"></script>
    <link rel="prefetch" href="jurassic-park-1993.html"/>
  </head>
  <body>

  ...

  </body>
</html>
```

app.js

```
const addPrefetchLink = (url) => {
  link = document.createElement("link");
  link.rel = "prefetch";
  link.href = url;
  document.head.appendChild(link);
};
```

```
const addPrefetchLink = (url) => {
  link = document.createElement("link");
  link.rel = "prefetch";
  link.href = url;
  document.head.appendChild(link);
};


const linkList = document.querySelectorAll("a");
if (linkList) {
  linkList.forEach((link) => {
    addPrefetchLink(link);
  });
}
```

Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



WELCOME TO... JURASSIC PARK!

Humans waited 65 million years for cloning technology to be advanced enough to re-create dinosaurs from DNA found in mosquitoes preserved in amber. If that's the timeline, the 29 years between Jurassic Park, the first film in the franchise, and the latest Jurassic World: Dominion doesn't seem all that long. But spreading six movies out across three decades does

Network | Console | Application | Performance insights | Sources | Elements | Recorder | 1

```
<!DOCTYPE html>
<html lang="en">
▼<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Jurassic Park</title>
  <link rel="stylesheet" href="assets/css/style.css">
  <link rel="icon" type="image/png" sizes="32x32" href="favicon.png">
  <script src="assets/js/app.js"></script>
  <link rel="prefetch" href="http://localhost:1993/jurassic-park-1993.html">
  <link rel="prefetch" href="http://localhost:1993/jurassic-park-1997.html">
  <link rel="prefetch" href="http://localhost:1993/jurassic-park-2001.html">
  <link rel="prefetch" href="http://localhost:1993/jurassic-world-2015.html">
  <link rel="prefetch" href="http://localhost:1993/jurassic-world-2018.html">
  <link rel="prefetch" href="http://localhost:1993/jurassic-world-2022.html">
</head>
▼<body>
  ▼<main>
    <h1>Jurassic Park</h1>
    <img src="assets/img/jurassic-park.jpg" alt>
    <h2>Welcome to... Jurassic Park!</h2>
    ▶<p>…</p>
    ▶<p>…</p>
    ▶<ol>…</ol>
  </main>
</body>
…</html> == $0
```

html

Styles | Computed | Layout

Filter :hov .cls

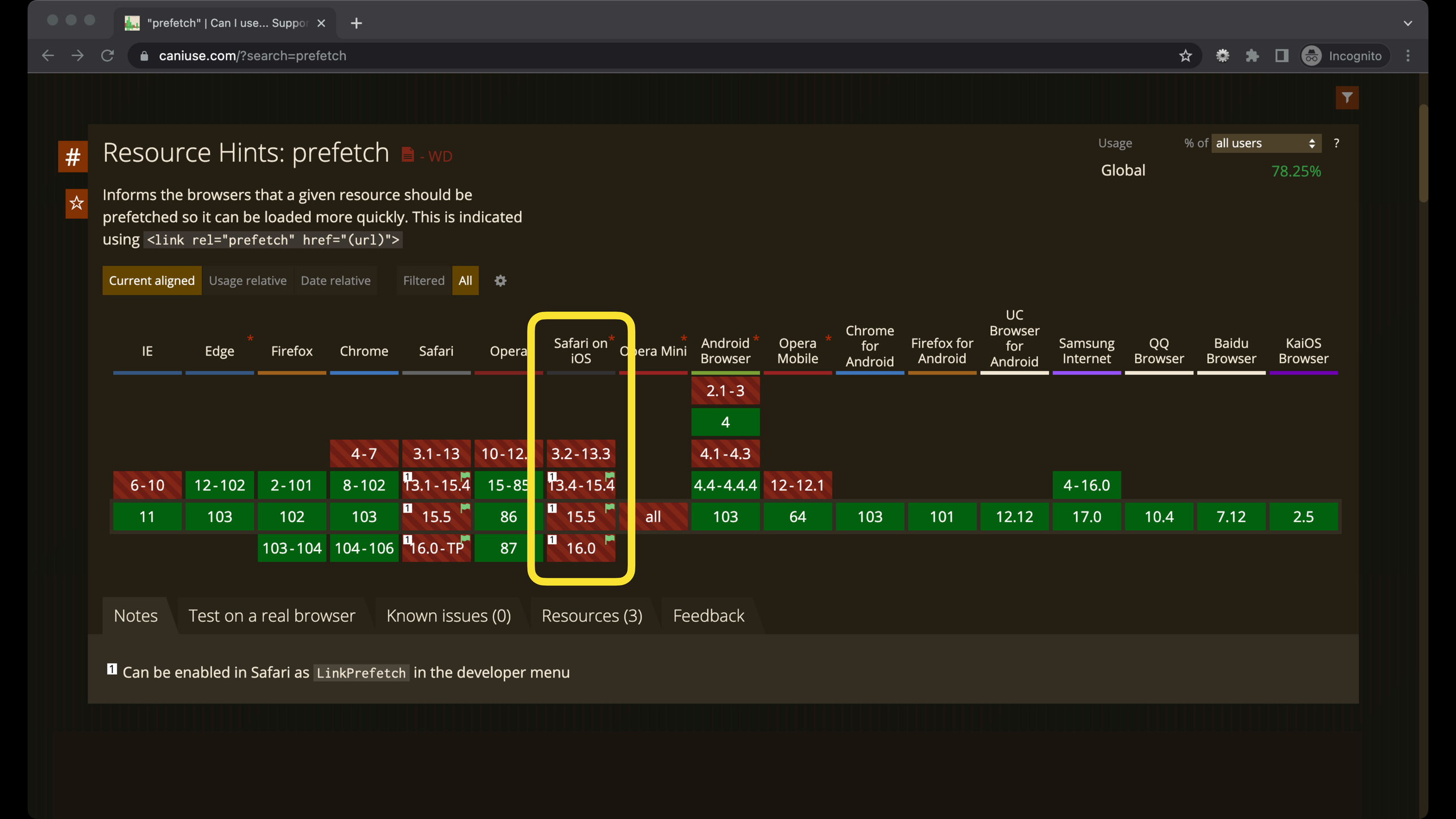
```
element.style {
}
:root {                                   style.css:8
  --primary: rgb(250, 250, 250);
  --secondary: rgb(255, 27, 2);
  --tertiary: rgb(254, 246, 6);
  --dark: rgb(34, 34, 35);
  --light: rgb(220, 220, 220);
}
html {                                    style.css:16
  background-color: var(--dark);
  font-family: Arial, Helvetica,
       sans-serif;
  font-size: 1.5rem;
  color: var(--light);
}
html[Attributes Style] {
  -webkit-locale: "en";
}
html {                          user agent stylesheet
  display: block;
}
```

margin -
border -
padding -

Console | What's New | Issues

top | Filter | Default levels | No Issues

```
[script.js] Service Worker registered                    app.js:6
```



"prefetch" | Can I use... Suppor

caniuse.com/?search=prefetch

Incognito

Resource Hints: prefetch - WD

Usage % of all users ?

Global 78.25%

Informs the browsers that a given resource should be prefetched so it can be loaded more quickly. This is indicated using `<link rel="prefetch" href="(url)">`

Current aligned | Usage relative | Date relative | Filtered | All

IE	Edge *	Firefox	Chrome	Safari	Opera	Safari on iOS *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	Firefox for Android	UC Browser for Android	Samsung Internet	QQ Browser	Baidu Browser	KaiOS Browser
								2.1-3								
								4								
			4-7	3.1-13	10-12.	3.2-13.3		4.1-4.3								
6-10	12-102	2-101	8-102	[1] 13.1-15.4	15-85	[1] 13.4-15.4		4.4-4.4.4	12-12.1				4-16.0			
11	103	102	103	[1] 15.5	86	[1] 15.5	all	103	64	103	101	12.12	17.0	10.4	7.12	2.5
		103-104	104-106	[1] 16.0-TP	87	[1] 16.0										

Notes | Test on a real browser | Known issues (0) | Resources (3) | Feedback

[1] Can be enabled in Safari as `LinkPrefetch` in the developer menu


OPTIMISED PREFETCH
https://github.com/rowdyrabouw/offline-first.nl/tree/08-optimised-prefetch



```
// get all links on the page
const linkList = document.querySelectorAll("a");
```



```
<a data-skip-prefetch href="...">...</a>

// get all links on the page without data-skip-prefetch attribute
const linkList = document.querySelectorAll("a:not([data-skip-prefetch])");
```

Intersection Observer API

The Intersection Observer API provides a way to asynchronously observe changes in the intersection of a target element with an ancestor element or with a top-level document's viewport.

https://developer.mozilla.org/en-US/docs/Web/API/Intersection_Observer_API



app.js

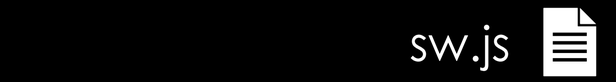
```
const observer = new IntersectionObserver(
  (entries) => {
    entries.forEach((entry) => {
      // if the link is in the viewport
      if (entry.intersectionRatio === 1) {



        fetch(entry.target.href, { cache: "no-store" });




      }
    });
  },
  { threshold: 1 }
);
```

app.js

```
const observer = new IntersectionObserver(
  (entries) => {
    entries.forEach((entry) => {
      // if the link is in the viewport
      if (entry.intersectionRatio === 1) {



          fetch(entry.target.href, { cache: "no-store" });




      }
    });
  },
  { threshold: 1 }
);

// get all links on the page without data-skip-prefetch attribute
const linkList = document.querySelectorAll("a:not([data-skip-prefetch])");
if (linkList) {
  linkList.forEach((link) => {
    observer.observe(link);
  });
}
```

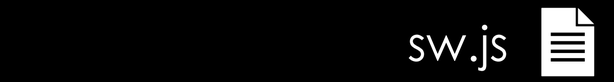
app.js

```
const observer = new IntersectionObserver(
  (entries) => {
    entries.forEach((entry) => {
      // if the link is in the viewport
      if (entry.intersectionRatio === 1) {
        const isFetched = localStorage.getItem(entry.target.href);
        // if the link is not fetched yet
        if (!isFetched) {
          fetch(entry.target.href, { cache: "no-store" }).then(() => {
            // save link information
            localStorage.setItem(entry.target.href, entry.target.innerText);
          });
        }
      }
    });
  },
  { threshold: 1 }
);

// get all links on the page without data-skip-prefetch attribute
const linkList = document.querySelectorAll("a:not([data-skip-prefetch])");
if (linkList) {
  linkList.forEach((link) => {
    observer.observe(link);
  });
}
```



```
const STATIC_CACHE = "static-v2";
```



```
const STATIC_CACHE = "static-v3";
```




Jurassic Park

localhost:1993

Incognito

JURASSIC PARK



WELCOME TO... JURASSIC PARK!

Humans waited 65 million years for cloning technology to be advanced enough to re-create dinosaurs from DNA found in mosquitoes preserved in amber. If that's the timeline, the 29 years between Jurassic Park, the first film in the franchise, and the latest Jurassic World: Dominion doesn't seem all that long. But spreading six movies out across three decades does

Network | Console | Application | Performance insights | Sources | Elements | Recorder

Application
- Manifest
- Service Workers
- Storage

Storage
- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache
- Cache Storage
  - static-v2 - http://localhost:1993
  - dynamic-v1 - http://localhost:1
- Back/forward cache

Background Services
- Background Fetch
- Background Sync

Service Workers

Offline | Update on reload | Bypass for network

http://localhost:1993/ — Network requests | Update | Unregister

Source: sw.js

Received 04/07/2022, 17:26:45

Status: #5 activated and is running stop

Push: Test push message from DevTools. — Push

Sync: test-tag-from-devtools — Sync

Periodic Sync: test-tag-from-devtools — Periodic Sync

Update Cycle

Version	Update Activity	Timeline
#5	Install	
#5	Wait	
#5	Activate	

Console | What's New | Issues

top | Filter | Default levels | No Issues

```
[script.js] Service Worker registered                app.js:6
>
```

NetworkInformation.effectiveType

The effectiveType read-only property returns the effective type of the connection meaning one of 'slow-2g', '2g', '3g', or '4g'.



https://developer.mozilla.org/en-US/docs/Web/API/NetworkInformation/effectiveType

"effectiveType" | Can I use... Su

caniuse.com/?search=effectiveType

Incognito

NetworkInformation API: effectiveType

Usage % of all users ?

Global 71.75%

Current aligned | Usage relative | Date relative | Filtered | All

IE	Edge *	Firefox	Chrome	Safari	Opera	Safari on iOS *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	Firefox for Android	UC Browser for Android	Samsung Internet	QQ Browser	Baidu Browser	KaiOS Browser
	12-18		4-60		10-47											
6-10	79-102	2-101	61-102	3.1-15.4	48-85	3.2-15.4		2.1-4.4.4	12-12.1				4-16.0			
11	103	102	103	15.5	86	15.5	all	103	64	103	101	12.12	17.0	10.4	7.12	2.5
		103-104	104-106	16.0	87	16.0										
				TP												

Notes | Test on a real browser | Feedback

This feature is **experimental**. Use caution before using in production.

See full reference on MDN Web Docs.

Support data for this feature provided by:

MDN browser-compat-data

NetworkInformation.saveData

The saveData read-only property returns true if the user has set a reduced data usage option on the user agent.



https://developer.mozilla.org/en-US/docs/Web/API/NetworkInformation/effectiveType

"saveData" | Can I use... Suppo

caniuse.com/?search=saveData

Incognito

NetworkInformation API: saveData

Usage % of all users ?

Global 71.37%

Current aligned | Usage relative | Date relative | Filtered | All

IE	Edge *	Firefox	Chrome	Safari	Opera	Safari on iOS *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	Firefox for Android	UC Browser for Android	Samsung Internet	QQ Browser	Baidu Browser	KaiOS Browser
	12-18		4-64		10-51								4-8.2			
6-10	79-102	2-101	65-102	3.1-15.4	52-85	3.2-15.4		2.1-4.4.4	12-12.1				9.2-16.0			
11	103	102	103	15.5	86	15.5	all	103	64	103	101	12.12	17.0	10.4	7.12	2.5
		103-104	104-106	16.0	87	16.0										
				TP												

Notes | Test on a real browser | Feedback

This feature is **experimental**. Use caution before using in production.

See full reference on MDN Web Docs.

Support data for this feature provided by:

MDN browser-compat-data


API RESPONSES
https://github.com/rowdyrabouw/offline-first.nl/tree/10-api-responses

IndexedDB

NoSQL database

Tables are object stores

Store values by keys

Supports transactions for reliability

Supports indexes



IndexedDB with usability

Promises enables async / await

Shortcuts for common transactions like getAll, put, delete

https://github.com/jakearchibald/idb



app.js

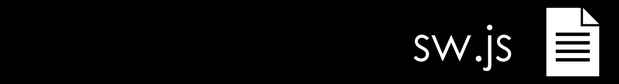
```
const fetchData = async (dino) => {
  const response = await fetch(`http://localhost:3000/${dino}`);
  const data = await response.json();
  document.querySelector("p").innerHTML = data.description;
}
```

app.js

```
const fetchData = async (dino) => {
  const response = await fetch(`http://localhost:3000/${dino}`);
  const data = await response.json();
  document.querySelector("p").innerHTML = data.description;
}


document.querySelector("#velo").addEventListener("click", () => {
  fetchData("Velociraptor");
});


document.querySelector("#trex").addEventListener("click", () => {
  fetchData("Tyrannosaurus");
});
```

```
import './idb.js';

let db;

const openDatabase = async () ⇒ {
  db = await idb.openDB('dino', 1, {
    upgrade(db, oldVersion, newVersion, transaction, event) {
      if (oldVersion < 1) {
        db.createObjectStore('dinosaurs', { keyPath: "name" });
      }
    }
  });
};
```

```
import './idb.js';

let db;

const openDatabase = async () => {
  db = await idb.openDB('dino', 1, {
    upgrade(db, oldVersion, newVersion, transaction, event) {
      if (oldVersion < 1) {
        db.createObjectStore('dinosaurs', { keyPath: "name" });
      }
    }
  });
};


self.addEventListener("activate", async () => {
  console.log("%c[sw.js] Service Worker activated", "color: #FEC233");
  await openDatabase();
  console.log("%c[sw.js] IndexedDB available", "color: #FEC233");
  return self.clients.claim();
});
```



```
self.addEventListener("fetch", (event) ⇒ {

});
```




```
self.addEventListener("fetch", (event) => {
  const url = new URL(event.request.url);
  if (url.host === "localhost:3000") {

    );
  }
});
```

sw.js



```
self.addEventListener("fetch", (event) => {
  const url = new URL(event.request.url);
  if (url.host === "localhost:3000") {
    event.respondWith(
      (async () => {
        const dinosaurName = url.pathname.substring(1);
        const cachedResponse = await db.get('dinosaurs', dinosaurName);
      })()
    );
  }
});
```




```
self.addEventListener("fetch", (event) => {
  const url = new URL(event.request.url);
  if (url.host === "localhost:3000") {
    event.respondWith(
      (async () => {
        const dinosaurName = url.pathname.substring(1);
        const cachedResponse = await db.get('dinosaurs', dinosaurName);
        if (cachedResponse) {
          console.log("%c[sw.js] Returning cached response", "color: #FEC233");
          return new Response(JSON.stringify(cachedResponse));
        }









      })()
    );
  }
});
```

sw.js

```
self.addEventListener("fetch", (event) => {
  const url = new URL(event.request.url);
  if (url.host === "localhost:3000") {
    event.respondWith(
      (async () => {
        const dinosaurName = url.pathname.substring(1);
        const cachedResponse = await db.get('dinosaurs', dinosaurName);
        if (cachedResponse) {
          console.log("%c[sw.js] Returning cached response", "color: #FEC233");
          return new Response(JSON.stringify(cachedResponse));
        }
        console.log("%c[sw.js] Fetching from network", "color: #FEC233");
        const response = await fetch(event.request);
        const clonedResponse = response.clone();
        const data = await clonedResponse.json();
        await db.put('dinosaurs', data);
        return response;
      })()
    );
  }
});
```

Jurassic Park

127.0.0.1:1993/dino/

Incognito

JURASSIC PARK



VELOCIRAPTOR

TYRANNOSAURUS

Application | Network | Console | Elements | Sources | Performance | Memory | Security | Lighthouse

Application
- Manifest
- Service workers
- Storage

Storage
- Local storage
- Session storage
- IndexedDB
- Cookies
- Private state tokens
- Interest groups
- Shared storage
- Cache storage
- Storage buckets

Background services
- Back/forward cache
- Background fetch
- Background sync

Service workers

Offline | Update on reload | Bypass for network

http://127.0.0.1:1993/dino/ Network requests | Update | Unregister

Source sw.js

Received 16/10/2024, 22:53:00

Status #1 activated and is running Stop

Push `Test push message from DevTools.` Push

Sync `test-tag-from-devtools` Sync

Periodic sync `test-tag-from-devtools` Periodic sync

Update Cycle

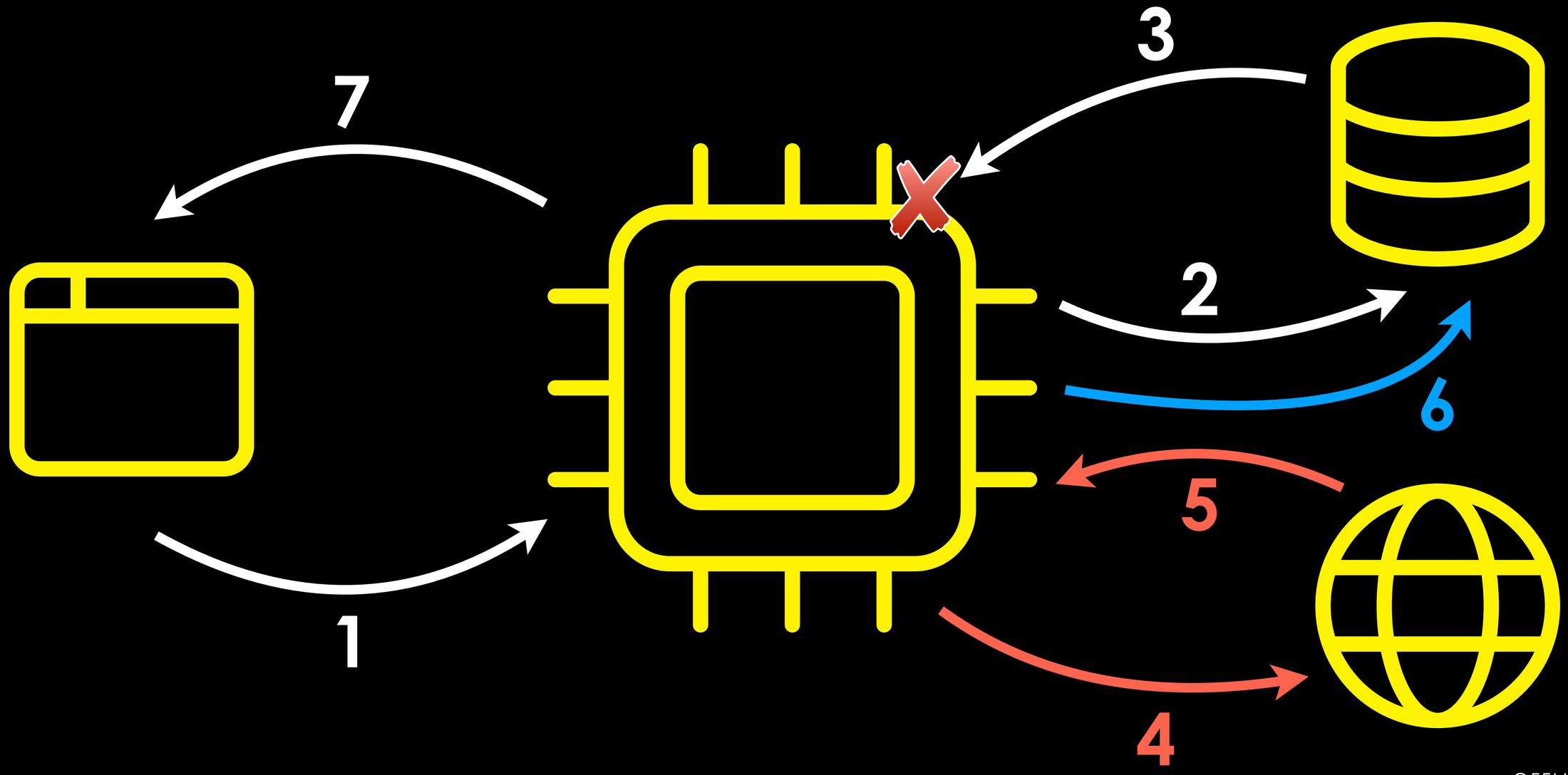
Version	Update Activity	Timeline
#1	Install	
#1	Wait	

Console | AI assistance

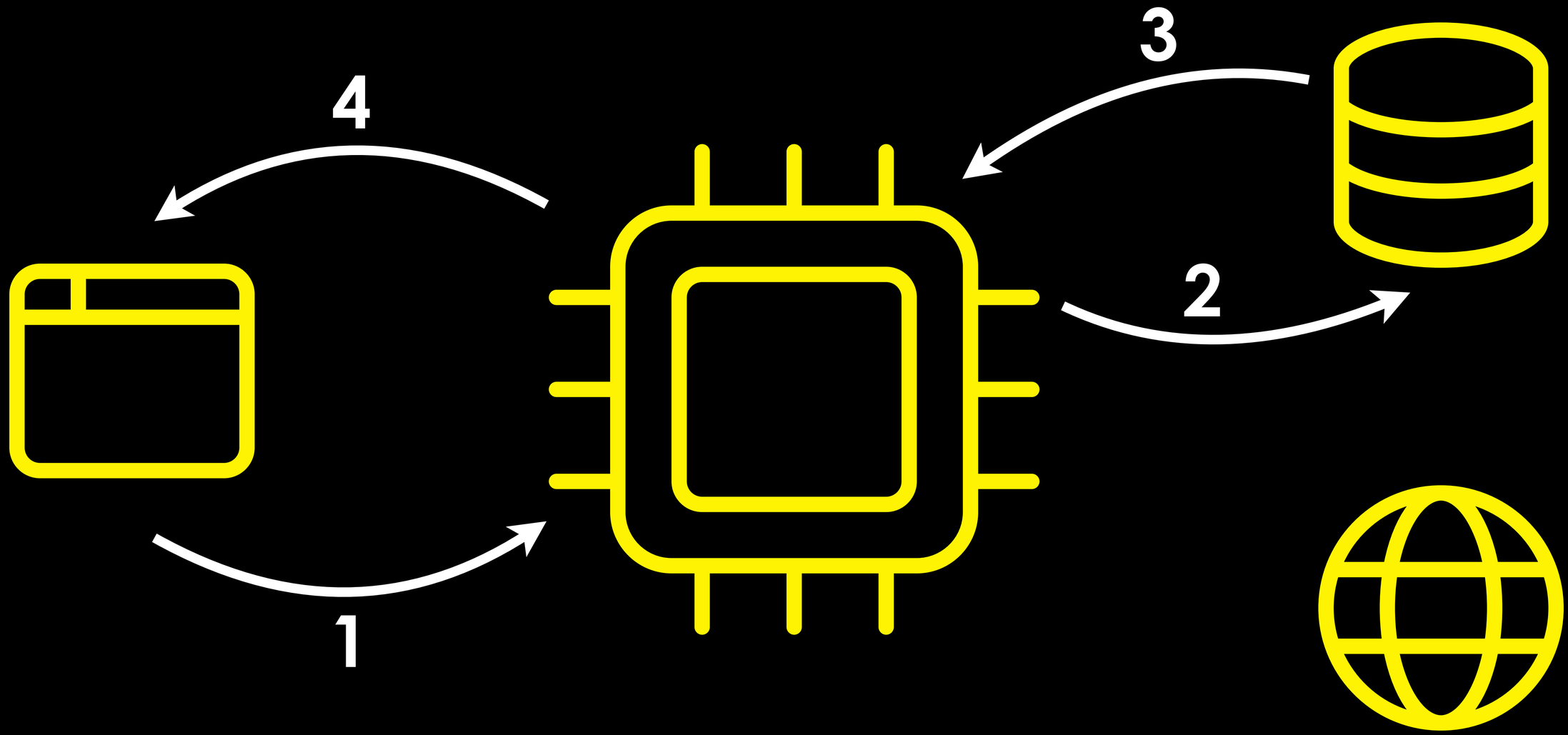
top | Filter | All levels | No Issues


CACHING STRATEGIES

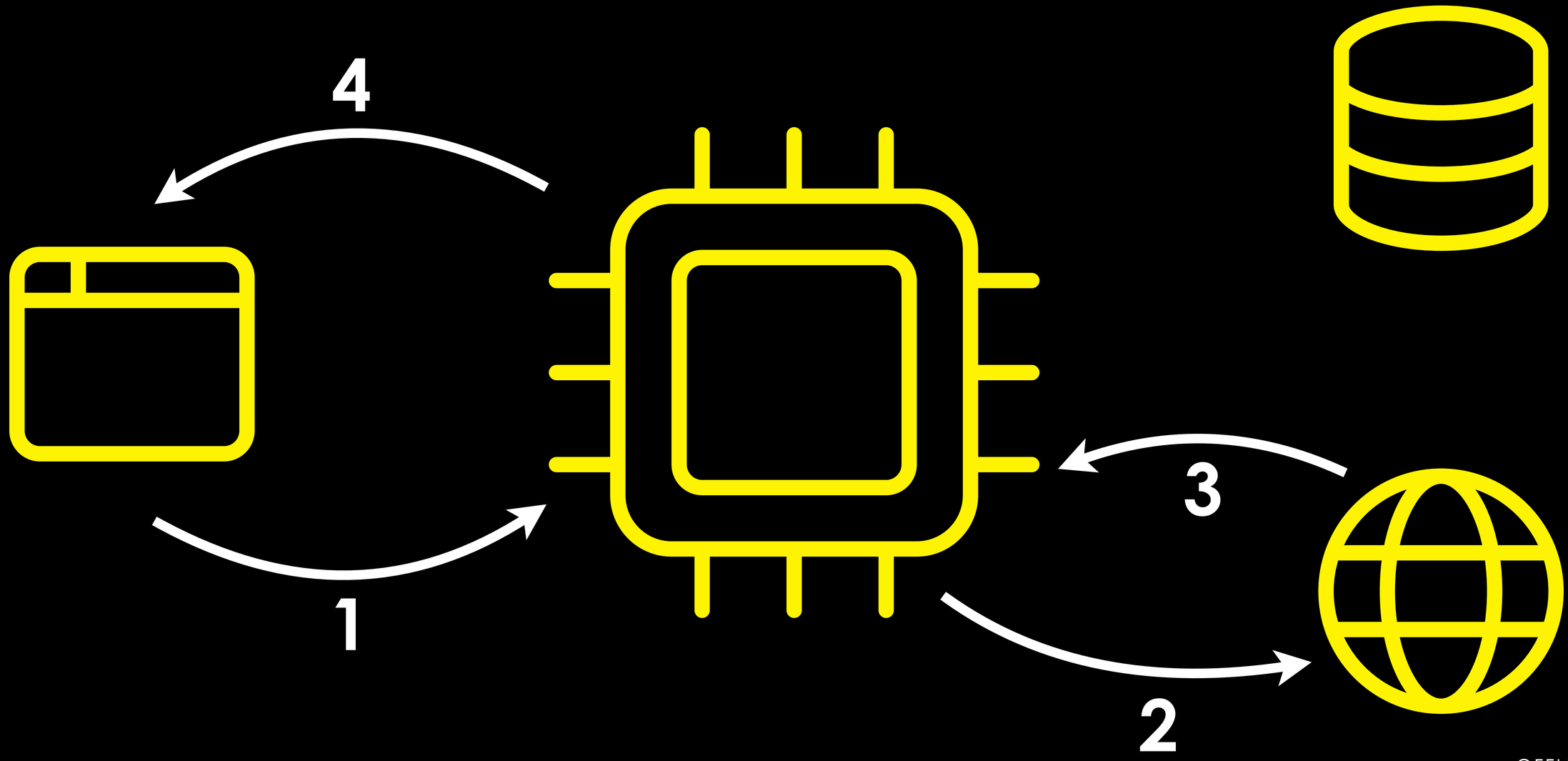
Cache first - Network fallback



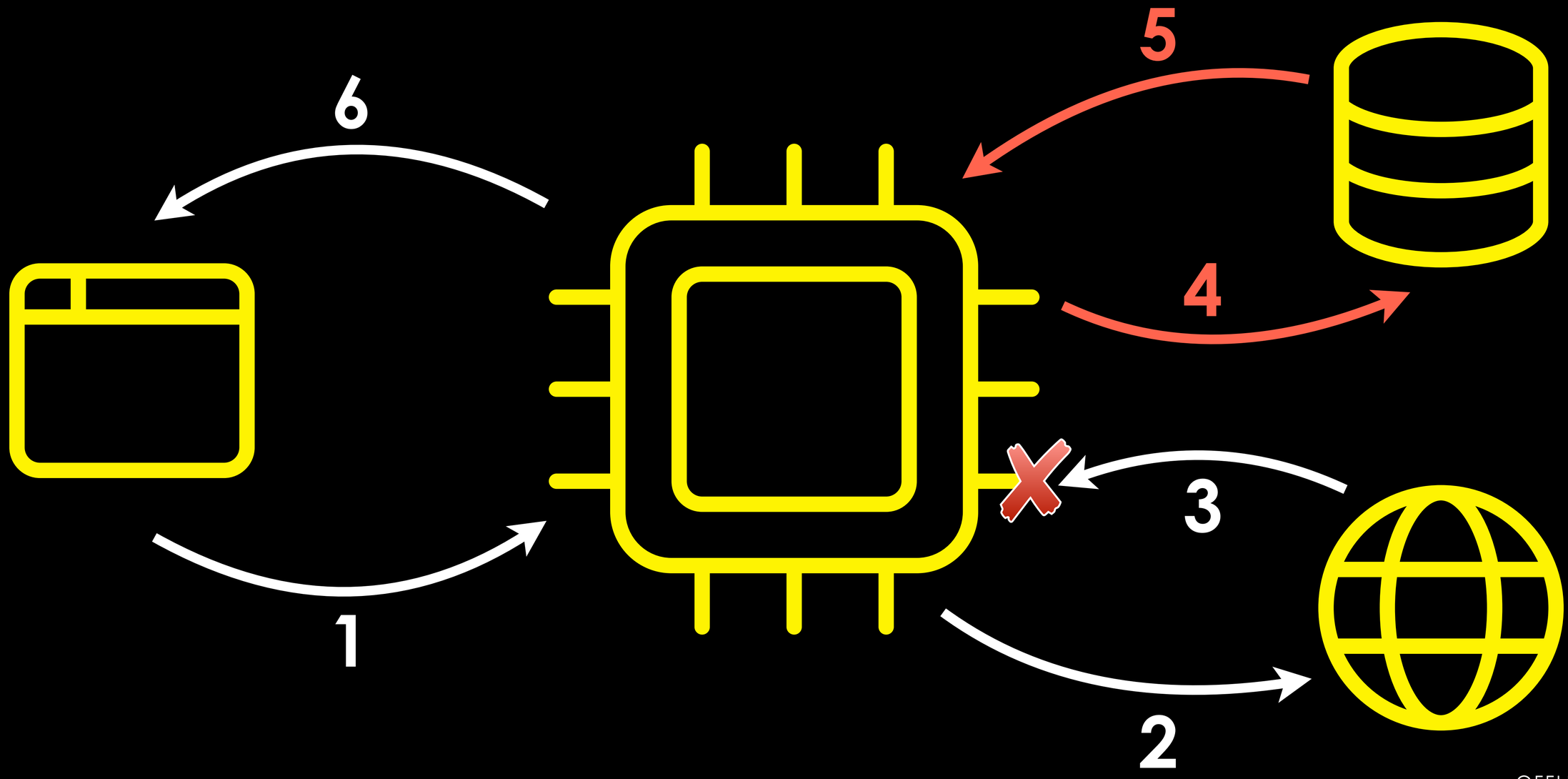
Cache only



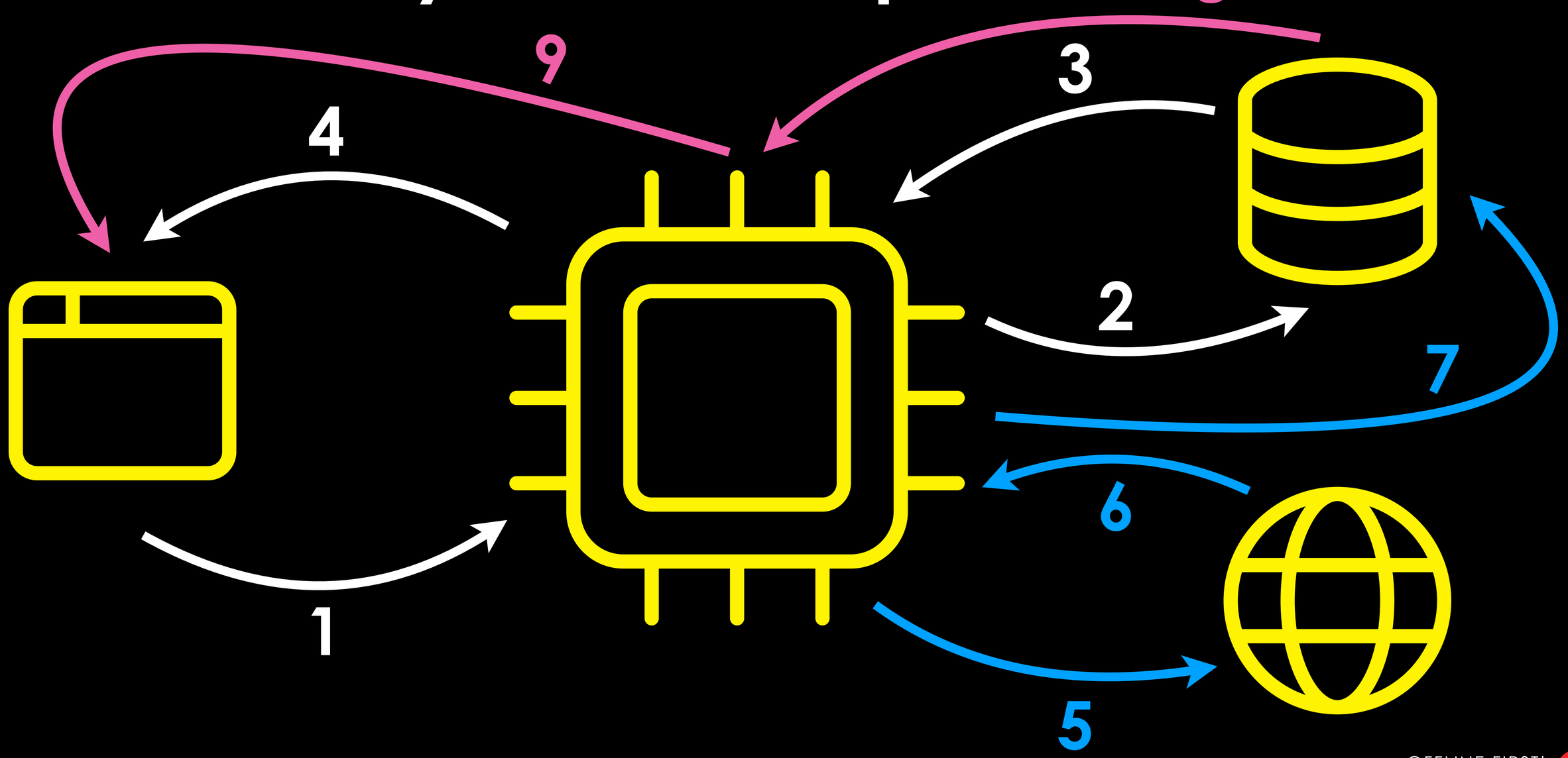
Network only

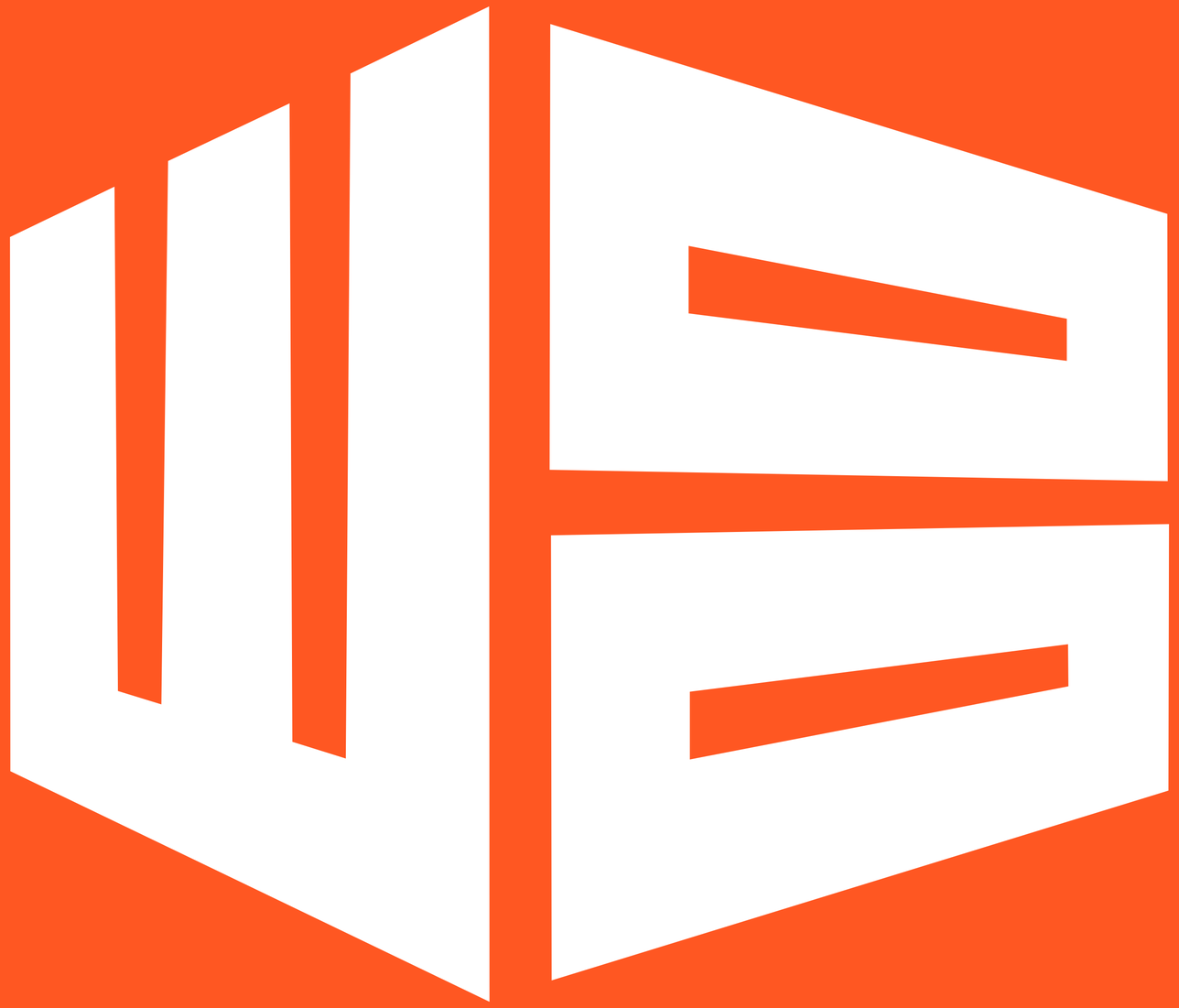


Network first - Cache fallback



Cache only - Cache update





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