

HI 00092 00042



No Internet

Try:

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

ERR_INTERNET_DISCONNECTED

Downasaur

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

This is called the 'downasaur'.





Rowdy Rabouw

- Born and raised in Gouda, The Netherlands
- Front-End Focused Senior DevOps Engineer
- Build my first website in 1996





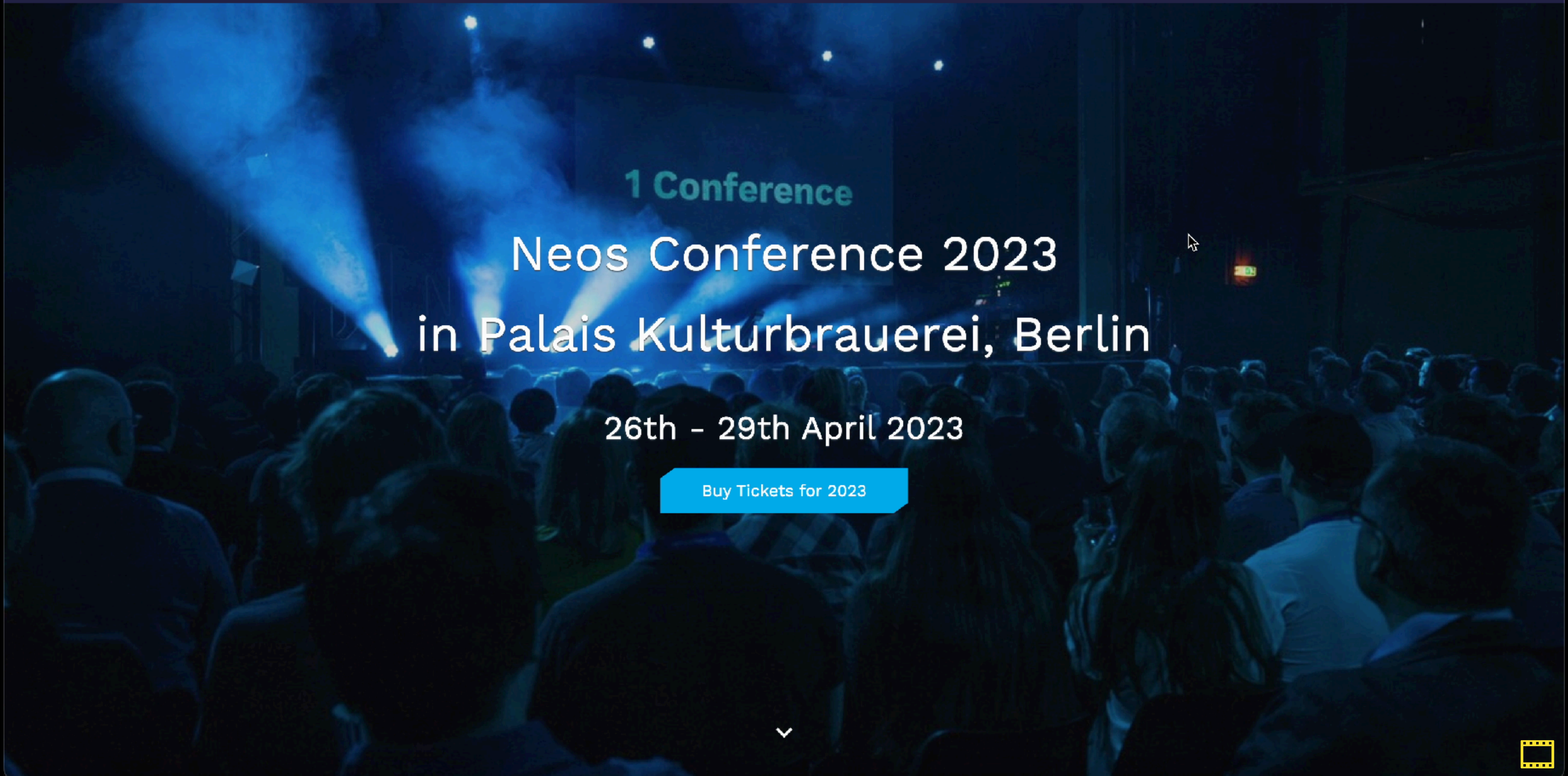
P **W** **A**



PWA features

- Linkable (url's)
- Secure (https)
- Discoverable (search engines)
- Responsive (works on every screen resolution)
- Progressively enhanced (excels on modern browsers)
- Installable (home screen)
- Re-engageable (push notifications)
- Network-independent (can work offline)





1 Conference

Neos Conference 2023 in Palais Kulturbrauerei, Berlin

26th - 29th April 2023

Buy Tickets for 2023





STARTER CODE

<https://github.com/rowdyrabouw/offline-first.nl/tree/01-starter-code>





EXPLORER



package.json ×



OFFLINE-FIRST.NL

> .vscode

dist

assets

css

style.css

fonts

neuland_inline.woff2

img

jurassic-park-1993.jpg

jurassic-park-1997.jpg

jurassic-park-2001.jpg

jurassic-park.jpg

jurassic-world-2015.jpg

jurassic-world-2018.jpg

jurassic-world-2022.jpg

★ favicon.ico

index.html

jurassic-park-1993.html

jurassic-park-1997.html

jurassic-park-2001.html

jurassic-world-2015.html

jurassic-world-2018.html

jurassic-world-2022.html

> node_modules

.editorconfig

.gitignore

package-lock.json

package.json

package.json > ...

You, 6 minutes ago | 1 author (You)

```
1  {
2    "name": "offline-first.nl",
3    "version": "1.0.0",
4    "description": "",
5    "main": "index.html",
6    "scripts": {
7      "start": "http-server dist --p=1993"
8    },
9    "author": "Rowdy Rabouw",
10   "license": "ISC",
11   "devDependencies": {
12     "http-server": "^14.1.1"
13   }
14 }
15
```



> OUTLINE

> TIMELINE

> HIDDEN ITEMS

```
<!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>
      
      <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



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 Workers

- 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





BROWSER

SERVER

MORE JAVASCRIPT

SERVICE WORKER


```
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");  
  // ensure that the Service Worker is activated correctly (fail-safe)  
  return self.clients.claim();  
});
```




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





```
<!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>
      
      <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



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

Developer Tools: Application, Performance insights, Sources, Elements

- Application
 - Manifest
 - Service Workers
 - Storage
- Storage
 - Local Storage
 - Session Storage
 - 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

Filter: top, Default levels, No Issues



Service Workers - CR

Usage % of **all users** ?

Global **94.29% + 0.09% = 94.38%**

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

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
		2-32														
		1 33-43														
		44														
		3 45														
		46-51														
		5 52														
		53-59														
		6 60														
	12-14	61-67	4-39		10-26											
	2 15-16	6 68	40-44	3.1-11	27-31	3.2-11.2										
6-10	17-102	69-101	45-102	11.1-15.4	32-85	11.3-15.4		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-TP	87	16.0										



STATIC CACHE

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




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



```
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",  
];
```



```
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");

});
```



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



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

```
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



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

Application

- Manifest
- Service Workers**
- Storage

Storage

- Local Storage
- Session Storage
- IndexedDB
- 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

Sync

Periodic Sync

Update Cycle

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

Console

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>



**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

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

>



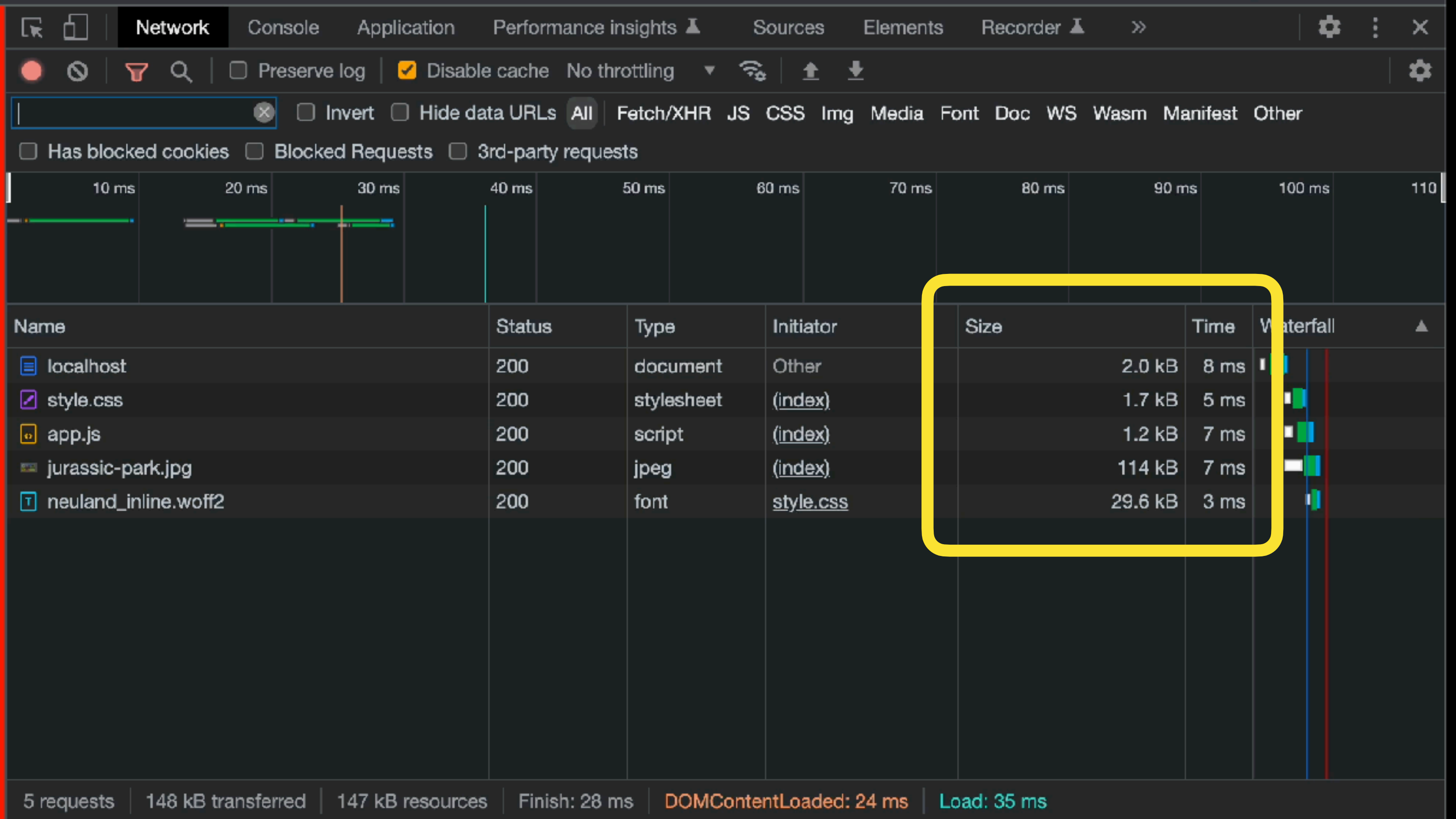
```
self.addEventListener("fetch", (event) => {  
  event.respondWith(  
    // look at all caches for a match on the key (= request)  
    caches.match(event.request).then((response) => {  
      if (response) {  
        // return from cache  
        return response;  
      } else {  
        //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





**WELCOME TO...
JURASSIC PARK!**

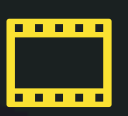
Humans waited 65 million years for cloning technology to be advanced enough to re-create dinosaurs from DNA found in mosquitoes preserved in amber. If that's the timeline, the 29 years between Jurassic Park, the first film in the franchise, and the latest Jurassic World: Dominion doesn't seem all that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

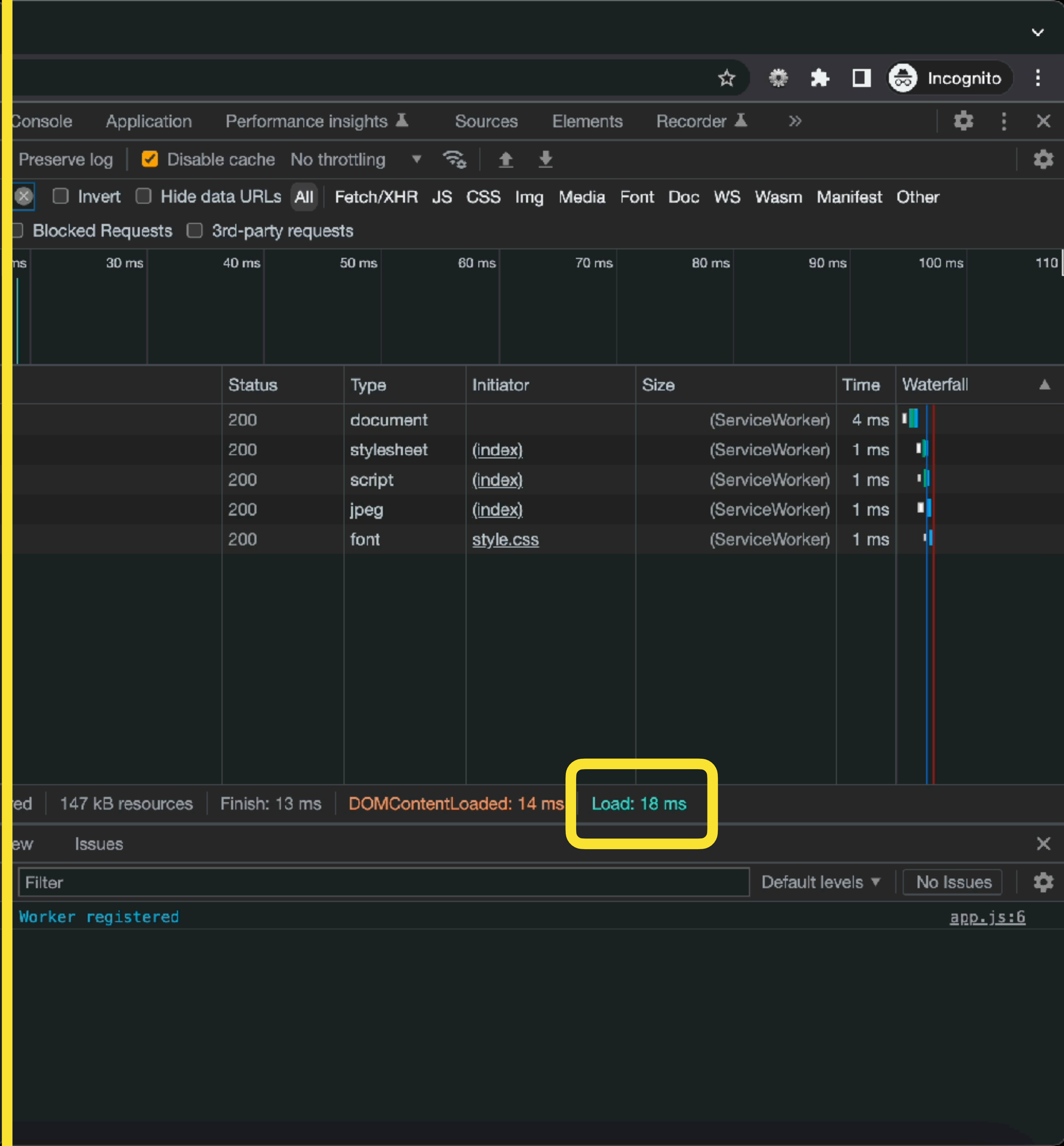
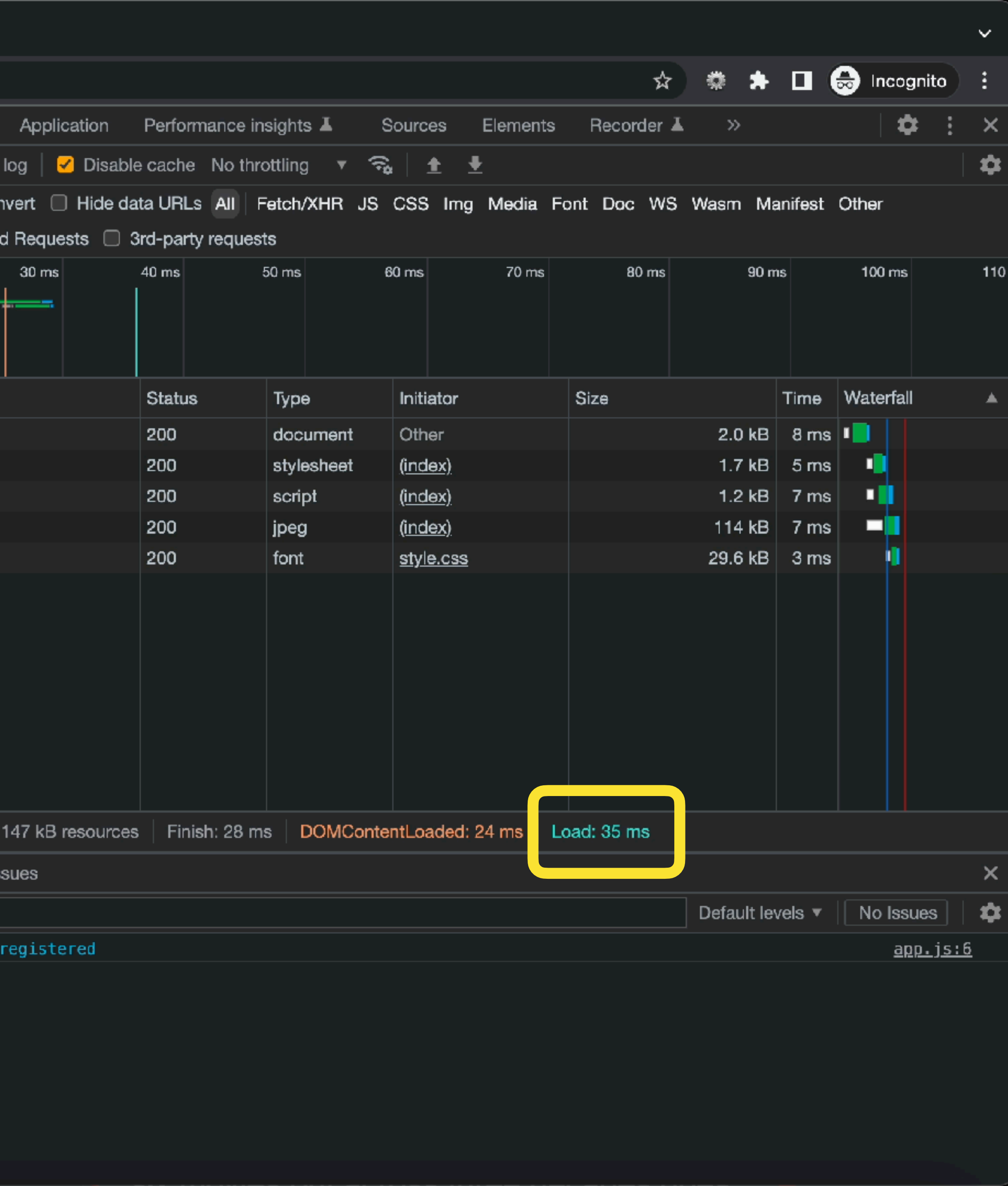


5 requests | 148 kB transferred | 147 kB resources | Finish: 28 ms | DOMContentLoaded: 24 ms | Load: 35 ms

Console | What's New | Issues

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









OFFLINE FALLBACK

<https://github.com/rowdyrabouw/offline-first.nl/tree/05-offline-fallback>



JURASSIC PARK



WELCOME TO... JURASSIC PARK!

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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.

>





```
<!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>
      
      <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_CACHE = "static-v2";
```



```
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",  
  
];
```



```
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



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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
- 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

Sync

Periodic Sync

Update Cycle

Version	Update Activity	Timeline
▶ #0	Install	<div style="width: 20px; height: 10px; background-color: teal;"></div>
▶ #0	Wait	<div style="width: 20px; height: 10px; background-color: purple;"></div>
▶ #0	Activate	<div style="width: 40px; height: 10px; background-color: orange;"></div>

Console

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";
```



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



```
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



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

Application | Service Workers

Application: Manifest, Service Workers, Storage

Storage: Local Storage, Session Storage, IndexedDB, Web SQL, Cookies, Trust Tokens, Interest Groups

Cache: Cache Storage (static-v1, static-v2, Back/forward cache)

Background Services: Background Fetch, Background Sync

Service Workers: http://localhost:1993/ (sw.js) - #1 activated and is running

Push: Test push message from DevTools.

Sync: test-tag-from-devtools

Periodic Sync: test-tag-from-devtools

Update Cycle:

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



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.

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

Total entries: 4

#	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

Console What's New Issues

Filter

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

>





CACHE CLEANUP

<https://github.com/rowdyrabouw/offline-first.nl/tree/07-cache-cleanup>



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](#)?

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:1993

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

Sync

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");  
    // ensure that the Service Worker is activated correctly (fail-safe)  
    return self.clients.claim();  
});
```



```
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");
  // ensure that the Service Worker is activated correctly (fail-safe)
  return self.clients.claim();
});
```





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

Application | Service Workers

Application: Manifest, Service Workers, Storage

Storage: Local Storage, Session Storage, IndexedDB, Web SQL, Cookies, Trust Tokens, Interest Groups

Cache: Cache Storage (static-v1, static-v2), Back/forward cache

Background Services: Background Fetch

Service Workers: http://localhost:1993/ (Source: sw.js, Received: 04/07/2022, 16:29:59, Status: #4 activated and is running)

Update Cycle: #4 Install, #4 Wait, #4 Activate

Console | What's New | Issues

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





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.



```
<!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>

  </head>
  <body>

    ...

  </body>
</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>
```



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





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

```
<!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>
      
      <h2>Welcome to... Jurassic Park!</h2>
      <p>...</p>
      <p>...</p>
      <ol>...</ol>
    </main>
  </body>
</html> == $0
```

Styles Computed Layout

Filter :hov .cls +

```
element.style {
}

:root {
  --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 {
  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

Filter

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

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										
			4-7	3.1-13	10-12.1	3.2-13.3		4										
6-10	12-102	2-101	8-102	13.1-15.4	15-85	13.4-15.4		4.1-4.3										
11	103	102	103	15.5	86	15.5	all	4.4-4.4.4	12-12.1	103	101	12.12	4-16.0	17.0	10.4	7.12	2.5	
		103-104	104-106	16.0-TP	87	16.0												

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

📄 Can be enabled in Safari as `LinkPrefetch` in the developer menu



OPTIMISED PREFETCH

<https://github.com/rowdyrabout/offline-first.nl/tree/08-optimised-prefetch>





```
// get all links on the page
const linkList = document.querySelectorAll("a");
if (linkList) {
  linkList.forEach((link) => {
    fetch(entry.target.href, { cache: "no-store" })
  });
}
```



data-*

The data-* global attributes form a class of attributes called custom data attributes, that allow proprietary information to be exchanged between the HTML and its DOM representation by scripts.




```
<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])");
if (linkList) {
  linkList.forEach((link) => {
    fetch(link.target.href, { cache: "no-store" })
  });
}
```



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.



```
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 }  
);
```




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



```
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";
```




WELCOME TO... JURASSIC PARK!

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Application | Network | Console | 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: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, 17:26:45

Status: ● #5 activated and is running [stop](#)

Push:

Sync:

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'.



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.



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



OPTIMISED OFFLINE

<https://github.com/rowdyrabouw/offline-first.nl/tree/09-optimised-offline>




```
<!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.ico" />
    <script defer src="assets/js/app.js"></script>
  </head>
  <body>
    <main>
      <h1>Jurassic Park is closed</h1>
      
      <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>
```





```
<!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.ico" />
    <script defer src="assets/js/offline.js"></script>
  </head>
  <body>
    <main>
      <h1>Jurassic Park is closed</h1>
      
      <h2>It seems you are currently offline ...</h2>
      <p><strong>We're sorry, this page hasn't been cached yet :-(</strong></p>
      <p>These pages are available offline:</p>
      <ul id="localStorageItems">
        <li><a href="/">Homepage</a></li>
      </ul>
    </main>
  </body>
</html>
```




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



```
const STATIC_CACHE = "static-v4";
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",
  "assets/js/offline.js",
];
```




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

```
  event.respondWith(  
    // look at all caches for a match on the key (= request)  
    ...  
  );  
});
```



```
let setDynamicVersionInLocalStorage = true;  
self.addEventListener("fetch", (event) => {  
  
    event.respondWith(  
        // look at all caches for a match on the key (= request)  
        ...  
    );  
});
```



```
let setDynamicVersionInLocalStorage = true;

self.addEventListener("fetch", (event) => {
  if (setDynamicVersionInLocalStorage) {
    event.waitUntil(
      (async () => {
        // get the client
        const client = await clients.get(event.clientId);
        // send a message to the client
        client.postMessage({
          action: "setDynamicVersionInLocalStorage",
          dynamic: DYNAMIC_CACHE,
        });
        setDynamicVersionInLocalStorage = false;
      })()
    );
  }
  event.respondWith(
    // look at all caches for a match on the key (= request)
    ...
  );
});
```



```
// listen for messages from the Service Worker
navigator.serviceWorker.addEventListener("message", (event) => {
  if (event.data.action === "setDynamicVersionInLocalStorage") {
    console.log(
      `%c[app.js] Dynamic Cache version ${event.data.dynamic} set`,
      "color: #00ABD2"
    );
    localStorage.setItem("DYNAMIC_CACHE", event.data.dynamic);
  }
});
```




```
const retrieveCachedUrls = () => {
  const dynamicCacheVersion = localStorage.getItem("DYNAMIC_CACHE");
  const urls = [];
  caches.open(dynamicCacheVersion).then((cache) => {
    cache
      .keys()
      .then((keys) => {
        // retrieve all items from dynamic cache
        return Promise.all(
          keys.map((key) => {
            // only return pages, but ignore offline page
            if (key.url.endsWith(".html") && !key.url.includes("offline")) {
              urls.push(key.url);
              return key.url;
            }
          })
        );
      })
      .then(() => {
        cacheList(urls);
      });
  });
};
```



```
const cacheList = (urls) => {
  urls.forEach((url) => {
    // create a list item with link to cached page
    const listItem = document.createElement("li");
    const anchor = document.createElement("a");
    listItem.appendChild(anchor);
    // match the url with localStorage to retrieve text
    const text = localStorage[url] || url;
    const link = document.createTextNode(text);
    anchor.appendChild(link);
    anchor.href = url;
    // add link to offline page
    const element = document.getElementById("localStorageItems");
    element.appendChild(listItem);
  });
};

retrieveCachedUrls();
```



JURASSIC PARK



WELCOME TO... JURASSIC PARK!

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Application

- Manifest
- Service Workers
- Storage

Storage

- Local Storage
 - http://localhost:1993
- Session Storage
- IndexedDB
- Web SQL
- Cookies
- Trust Tokens
- Interest Groups

Cache

- Cache Storage
 - dynamic-v1 - http://localhost:1993
 - static-v3 - 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, 17:29:48

Status ● #6 activated and is running [stop](#)

Push

Sync

Periodic Sync

Update Cycle

Version	Update Activity	Timeline
#6	Install	
#6	Wait	■
#6	Activate	▬

Console

top Filter Default levels No Issues

```
[app.js] Observing links without data-skip-prefetch attribute app.js:60
[script.js] Service Worker registered app.js:6
```





DANKE SCHÖN!

<https://rowdy.codes/neos>

