

JURASSIC JAVASCRIPT PARK

Rodando offline até na Ilha Nublar!

OI, EU SOU O EDU

@eduardojmatos

eduardomatos.me



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**PORQUE AINDA
FALAMOS SOBRE
OFFLINE EM
2016?**

Municípios cobertos com tecnologia 3G no Brasil

Operadora	2008	2009	2010	2011	2012	2013	2014	Out/15	Nov/15
Vivo ¹	314	579	1.206	2.516	3.100	3.134	3.287	3.422	3.524
Claro ¹	284	388	416	745	1.152	1.374	1.768	2.158	2.262
Tim ¹	40	57	210	488	593	1.000	1.336	1.646	1.741
Oi*	99	168	211	250	529	951	1.104	1.197	1.197
Algar*	16	29	31	32	32	32	35	35	35
Sercomtel*	-	2	2	2	2	2	2	2	2
Nextel*	-	-	-	-	-	91	410	410	410
Total	448	711	1.287	2.625	3.293	3.554	3.903	4.268	4.398
% do Total de municípios	8,1%	12,8%	23,1%	47,2%	59,2%	63,8%	70,1%	76,6%	79,0%

Fonte: 1 Operadoras * Site das Operadoras.

Nota: Coleta de dados efetuada de 06/Abr a 10/Abr. Os dados nos sites das operadoras podem variar conforme a política de atualização das mesmas.

ISP LEADERBOARD - APRIL 2016

RANK	ISP	SPEED Mbps		PREVIOUS Mbps	RANK CHANGE	TYPE
						Fiber Cable DSL Satellite Wireless
1	Live TIM	3.19		3.25		
2	Net Virtua	3.11		3.13		
3	GVT	2.95		2.98		
4	Algar	2.33		2.34		  
5	Oi Velox	1.99		2.00		 
6	Vivo	1.96		1.95		  



CSV DOWNLOAD  **JPG** DOWNLOAD 

<http://ispsspeedindex.netflix.com/country/brazil/>

MÉDIA DE CONEXÃO MÓVEL



20,4MB



8,8MB



2,5MB



**COMO ISSO DEVERIA
IMPACTAR NOSSO
DESENVOLVIMENTO?**

UX

Sensação de rapidez

Não deve ser frustrante

Deve ser honesta sobre conectividade

Não deve perder informações

TÁ, E COMO FAZ?

APPLICATION CACHE

CACHE DE ARQUIVOS NO BROWSER

```
<html manifest="manifest.appcache">
```

CACHE MANIFEST

CACHE :

```
http://jurassicpark.com/images/dino1.jpg  
http://jurassicpark.com/images/dino2.jpg  
http://jurassicpark.com/images/dino3.jpg
```

NETWORK :

```
https://facebook.com/sdk.js
```

FALLBACK :

```
index.html offline.html
```

caniuse applicationcache

Offline web applications ✓ 90.63% ⚡ 0.03% [Unofficial / Note]

Now deprecated method of defining web page files to be cached using a cache manifest file, allowing them to work offline on subsequent visits to the page. #HTML5

IE ✗ 5.5+ ✓ 10+

Edge ✓

Firefox ✗ 2+ ⚡ 3+ ✓ 3.5+

Chrome ✓

Safari ✗ 3.1+ ✓ 4+

Opera ✗ 9+ ✓ 10.6+

ⓘ This technology is being deprecated in favor of [Service Workers](<http://caniuse.com/#feat=serviceworkers>)

PROBLEMAS

O AppCache só atualiza o conteúdo do manifesto se ele mesmo for atualizado

Os arquivos sempre virão do ApplicationCache mesmo se você estiver online

...

**Recomendo fortemente a leitura:
<http://sergiolopes.org/palestra-appcache-html5-offline/>**



HÁ ESPERANÇA

This repository Search Pull requests Issues Gist

gr2m / appcache-nanny Watch 6 Unstar 160 Fork 11

Code Issues 1 Pull requests 2 Wiki Pulse Graphs

Auto Updates for Offline First Applications

65 commits 2 branches 10 releases 4 contributors

Branch: master New pull request New file Find file SSH git@github.com:gr2m/appcache-nanny Download ZIP

gr2m docs(README): fix insensitive wording ... 2 Latest commit 2949b08 on Sep 2

bin	fix: adjust `selenium-standalone` usage to new API	6 months ago
bower_components	[fix] remove jQuery / Zepto dependency	2 years ago
demo	test(demo): fixed invalid CSS	6 months ago
test	test: pinning testing with Firefox to Version 34	10 months ago
.gitignore	chore: added node_modules to .gitignore	11 months ago
.jshintrc	chore: jshint rules adjustments	11 months ago
.travis.yml	chore(travis): moving GitHub & Travis credentials to travis settings	6 months ago



MAS AINDA NÃO É O IDEAL...

O Application Cache é ok para cachear assets

Mas precisamos de algo mais evoluído para controlar
de forma programática, sem modo texto



MDN > Web technology for developers > Web APIs > Service Worker API

Service Worker API

by 9 contributors:

[▲ HIDE SIDEBAR](#)**SEE ALSO**[Service Worker API](#)**▼ Service Worker guides**[Using Service Workers](#)**▼ Interfaces**[Cache](#)[CacheStorage](#)[Client](#)[Clients](#)[ExtendableEvent](#)**⚠ This is an experimental technology**

Because this technology's specification has not stabilized, check the [compatibility table](#) for the proper prefixes to use in various browsers. Also note that the syntax and behavior of an experimental technology is subject to change in future versions of browsers as the spec changes.

Service workers essentially act as proxy servers that sit between web applications, and the browser and network (when available.) They are intended to (amongst other things) enable the creation of effective offline experiences, intercepting network requests and taking appropriate action based on whether the network is available and updated assets reside on the server. They will also allow access to push notifications and background sync APIs.

IN THIS ARTICLE[Service worker concepts and usage](#)[Registration](#)[Download, install and activate](#)[Other use case ideas](#)[Interfaces](#)[Specifications](#)[Browser compatibility](#)[See also](#)

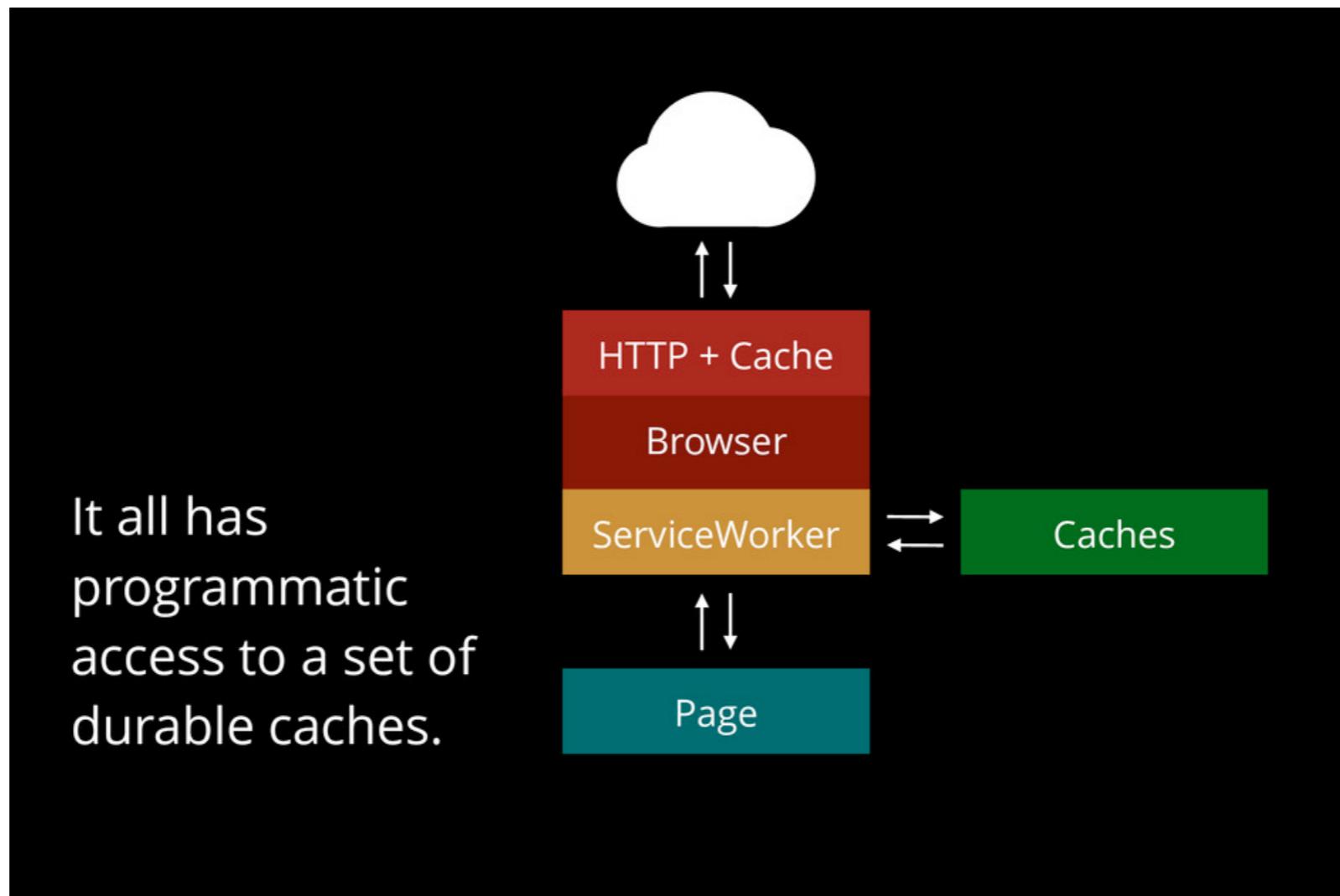
A large blue whale is the central figure, swimming upwards towards the surface where sunlight filters down through the water. A smaller shark is visible to the right, swimming in the same direction. The background is a deep blue.

Service Workers

AppCache

SERVICE WORKERS

O FUTURO DO CACHE NO BROWSER



```
if ('serviceWorker' in navigator) {
  navigator.serviceWorker.register(
    '/js/sw.js',
    { scope: '/' }
  ).then(function(reg) {
    if (reg.installing) {
      console.log('Service worker installing');
    } else if (reg.waiting) {
      console.log('Service worker installed');
    } else if (reg.active) {
      console.log('Service worker active');
    }
  }).catch(function(error) {
    // registration failed
    console.log('Registration failed with ' + error);
  });
};
```

```
// /js/sw.js
this.addEventListener('install', function(event) {
  event.waitUntil(
    caches.open('v1').then(function(cache) {
      return cache.addAll([
        '/index.html',
        '/js/app.js',
        '/css/styles.css',
        '/images/gallery/jurassic_park.jpg'
      ]);
    })
  );
}) ;
```

```
this.addEventListener('fetch', function(event) {  
  var response;  
  event.respondWith(caches.match(event.request).catch(function() {  
    return fetch(event.request);  
  }) .then(function(r) {  
    response = r;  
    caches.open('v1') .then(function(cache) {  
      cache.put(event.request, response);  
    });  
    return response.clone();  
  }) .catch(function() {  
    return caches.match('/images/gallery/jurassic_park.jpg');  
  }));  
});
```

GET	200	stylesheet	<u>(index):10</u>	(from ServiceWorker)	34 ms
GET	200	script	<u>(index):23</u>	(from ServiceWorker)	34 ms
GET	200	script	<u>(index):24</u>	(from ServiceWorker)	33 ms



MAS VAMOS FALAR SOBRE DADOS

Como faço pra armazenar informações
além de assets?

FORMAS DE SE ARMAZENAR DADOS

- **cookies**
- **localStorage**
- **WebSQL**
- **IndexedDB**

COOKIE

**Forma mais primitiva de armazenar
informação no browser**



```
document.cookie = "dino=T-Rex";  
document.cookie = "dino=T-Rex;expires=Fri,  
31 Dec 9999 23:59:59 GMT";
```

caniuse cookie

Web Storage - name/value pairs ✓ 92.78% ⚡ 0.04% [W3C Recommendation]

Method of storing data locally like cookies, but for larger amounts of data (sessionStorage and localStorage, used to fall under HTML5). #JSAPI

IE ✗ 5.5+ ✓ 8+

Edge ✓

Firefox ⚡ 2+ ✓ 3.5+

Chrome ✓

Safari ✗ 3.1+ ✓ 4+

Opera ✗ 9+ ✓ 10.5+

<https://github.com/js-cookie/js-cookie>

This repository Search Pull requests Issues Gist

js-cookie / js-cookie Watch 96 Star 1,568 Fork 239

Code Issues 4 Pull requests 1 Wiki Pulse Graphs

A simple, lightweight JavaScript API for handling browser cookies

459 commits 2 branches 15 releases 26 contributors

Branch: master New pull request New file Find file SSH git@github.com:js-cookie/js-c ... Download ZIP

FagnerMartinsBrack Merge pull request #71 from js-cookie/write-converter ... Latest commit 0fe470c on Nov 8

src	Add an API to pass an Object Literal for the write converter	2 months ago
test	Add an API to pass an Object Literal for the write converter	2 months ago
.gitignore	Also ignore logs of the form log.1 etc. (created by Sauce Labs)	2 years ago
.jshintrc	Move JSHint config to jshintrc files	a year ago
.jshintrc	Fix test globals and ci failure	8 months ago
.tm_properties	Now using tabs for indentation. following iQuery core style guideline...	4 years ago

```
Cookies.set("dino", "Velociraptor", { expires: 7 });  
  
Cookies.get("dino");  
// returns "dino"  
  
Cookies.remove("dino");
```

PRÓS

Simples de implementar

Browsers suportam
amplamente

Ótimo para informações
curtas

CONTRAS

Sem uma biblioteca o
controle fica complicado

Problemas de segurança
(Cookie stealing e XSS,
CSFR, etc.)

Límite de 4093 bytes

LOCALSTORAGE

**Forma mais moderninha de
armazenamento**



```
localStorage.setItem("dino", "Aragosaurus");  
  
localStorage.getItem("dino");  
// returns "Aragosaurus"  
  
localStorage.dino = "Aragosaurus";
```

caniuse localStorage

Web Storage - name/value pairs ✓ 92.78% ⚡ 0.04% [W3C Recommendation]

Method of storing data locally like cookies, but for larger amounts of data (sessionStorage and localStorage, used to fall under HTML5). #JSAPI

IE ✗ 5.5+ ✓ 8+

Edge ✓

Firefox ⚡ 2+ ✓ 3.5+

Chrome ✓

Safari ✗ 3.1+ ✓ 4+

Opera ✗ 9+ ✓ 10.5+

<https://github.com/addyosmani/basket.js>

This repository Search Pull requests Issues Gist

Watch 131 Star 2,434 Fork 195

Code Issues 29 Pull requests 5 Wiki Pulse Graphs

A script and resource loader for caching & loading files with localStorage <http://addyosmani.github.com/basket.js>

270 commits 1 branch 7 releases 24 contributors

Branch: [gh-pages](#) New pull request New file Find file SSH git@github.com:addyosmani/bas ↗ ↘ Download ZIP

addyosmani Merge pull request #157 from ReadmeCritic/gh-pages ... Latest commit d3d3480 21 days ago

File	Description	Time
_includes	add CDN-Link to gh-page	a year ago
_layouts	fix site	2 years ago
asset	Losslessly minify the logo	3 years ago
dist	Bump to 0.5.2. Rebuild releases.	10 months ago
lib	For loop optimization	a year ago

<https://github.com/addyosmani/basket.js/releases> sources fixing github ribbon, updating index, readme 3 years ago

```
basket.require(  
  { url: "jquery.js" } ,  
  { url: "underscore.js" } ,  
  { url: "backbone.js" }  
) ;
```

```
basket.require({ url: "jquery.min.js", key: "jquery" }) ;  
var req = basket.get("jquery") ;
```

<https://github.com/marcuswestin/store.js>

This repository Search Pull requests Issues Gist

marcuswestin / store.js Watch 186 Star 4,001 Fork 530

Code Issues 22 Pull requests 8 Wiki Pulse Graphs

localStorage wrapper for all browsers without using cookies or flash. Uses localStorage, globalStorage, and userData behavior under the hood

252 commits 3 branches 23 releases 21 contributors

Branch: master New pull request New file Find file SSH git@github.com:marcuswestin/s... Download ZIP

marcuswestin Update readme, fix #114 Latest commit b115845 on Feb 13

.gitignore	Use uglifyjs to minify store.min.js and store+json.min.js, and add a ...	4 years ago
Changelog	Changelog	10 months ago
LICENSE	Update copyright year. Is this really necessary?	2 years ago
Makefile	Add a make command for me to remember to publish everything to npm. G...	2 years ago
README.md	Update readme, fix #114	10 months ago
bower.json	v1.3.17	a year ago

```
store.set("dino", "Datousaurus");  
  
store.get("dino");  
// returns "Datousaurus"  
  
store.remove("dino");  
  
store.clear();  
  
store.set("dino", {  
    name: "Datousaurus",  
    diet: "herbivorous"  
});
```



PRÓS

CONTRAS

Fácil implementação

Limite de 5M por domínio

Amplo suporte

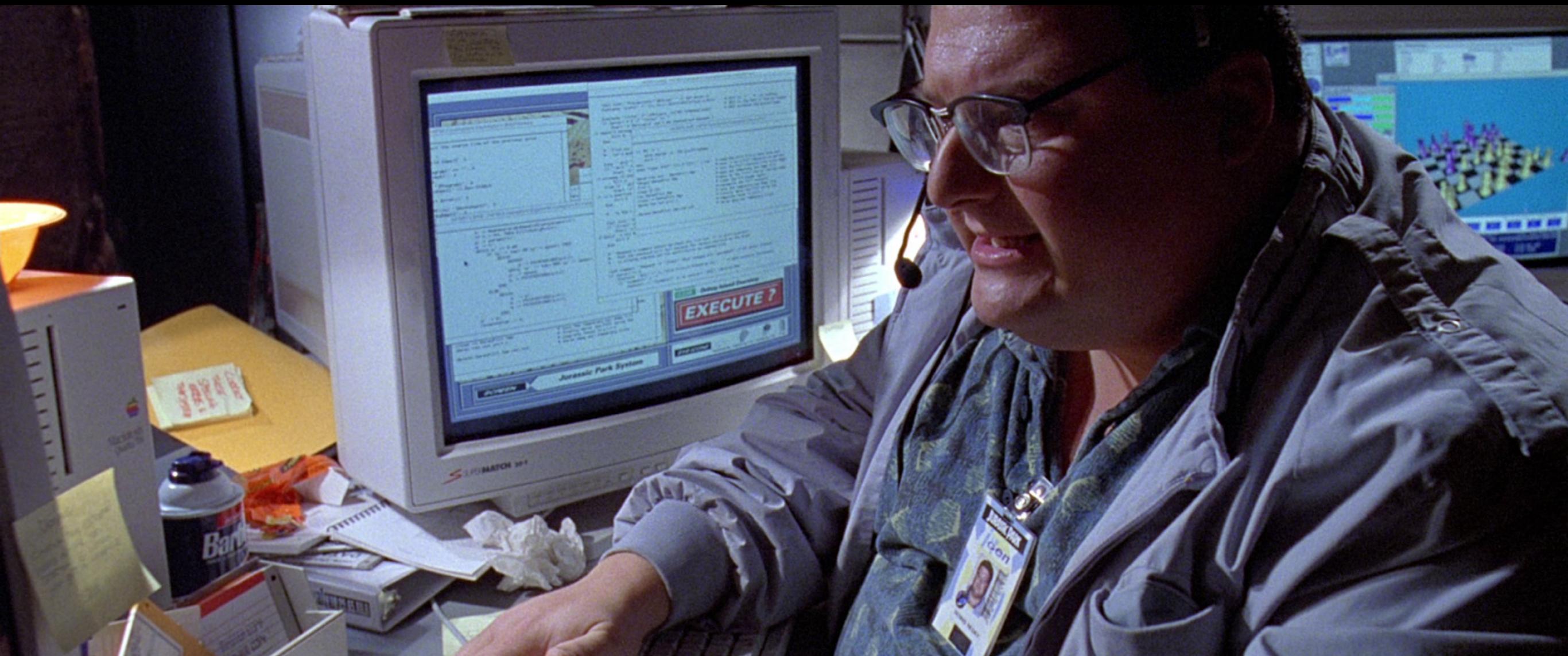
É síncrono

Melhor segurança

Os dados ficam lá
eternamente, mesmo não
visitando mais o site

WEBSQL

SQL no seu browser



```
// name, version, description, size (bytes)
var db = openDatabase("dinos", "1", "todo list example db",
2 * 1024 * 1024);

// executeSql
// (SQL string, arguments, success, error)
db.transaction(
    function (tx) {
        tx.executeSql(
            "CREATE TABLE IF NOT EXISTS dinos (id INTEGER
PRIMARY KEY AUTOINCREMENT, name TEXT)",
            [],
            function (tx, results) {
                console.log("ok!");
            },
            function (err) {
                console.log("error!", err);
            }
        );
    }
);

```

```
db.transaction(
  function (tx) {
    tx.executeSql( "SELECT * FROM dinos WHERE id > ?",
      ["1"],
      function (tx, results) {
        var row = "";
        for (var i=0; i<results.rows.length; i++) {
          console.log("Dino name:", results.rows.item(i).name);
        }
      },
      function (err) {
        console.log("query problems...", err);
      }
    );
  },
  function (err) {
    console.log("transaction problems...", err);
  }
);
```

```
db.transaction(
  function (tx) {
    tx.executeSql( "INSERT INTO dinos(name) VALUES (?)",
      ["Megalosaurus"],
      function ( tx, results ) {
        console.log("ok! inserted!");
      },
      function (err) {
        console.log("not inserted :(");
      }
    );
  },
  function (err) {
    console.log("inserting problems...", err);
  },
  function () {
    console.log("transaction completed!");
  }
);
```



caniuse Websql

Web SQL Database ✓ 72.48% [Unofficial / Note]

Method of storing data client-side, allows Sqlite database queries for access and manipulation #JSAPI

IE ✗

Edge ✗

Firefox ✗

Chrome ✓

Safari ✓

Opera ✗ 9+ ✓ 10.5+

- ① The Web SQL Database specification is no longer being maintained and support may be dropped in future versions.

IE ✗
Edge ✗
Firefox ✗
Chrome ✓
Safari ✓
Opera ✗ 9+ ✓ 10.5+
iOS Safari ✓
Opera Mini ✗
Android Browser ✓
Blackberry Browser ✓
Opera Mobile ✗ 10+ ✓ 11+
Chrome for Android ✓
Firefox for Android ✗
IE Mobile ✗
UC Browser for Android ✓

PRÓS

Banco de dados no browser

Performance razoável

CONTRAS

Sintaxe SQL pode assustar quem não está acostumado

Deprecated. Apenas alguns browsers ainda dão suporte.

Não é full SQL supported.

Crash com muitos dados (10,000 rows já apresenta certa lentidão)

INDEXEDDB

like a localStorage, but coolest



```
var request = window.indexedDB.open("DinoDatabase", 1);

request.onerror = function (event) {
    console.log("Error", event.target.errorCode);
};

request.onupgradeneeded = function (event) {
    db = event.target.result;

    if ( db.objectStoreNames.contains("dinos") ) {
        db.deleteObjectStore("dinos");
    }
}

var store = db.createObjectStore("dinos", {
    autoIncrement: true
});
};
```

```
request.onsuccess = function (event) {
  db = event.target.result;

  var trans = db.transaction(["dinos"], "readwrite");
  var transRequest = trans.objectStore("dinos");

  transRequest.onsuccess = function (event) {
    var result = transRequest.result || event.result;

    if (!result) return;
    console.log("dino", result.key, result.value.text);

    cursor.continue();
  }

  var dinoName = "Velociraptor";
  var storeRequest = transRequest.put(dinoName);

  storeRequest.onsuccess = function (event) {
    console.log(event.target.result)
  }

  storeRequest.onerror = function (event) {
    console.log(event)
  }
};
```

caniuse Indexeddb --mobile

IndexedDB ✓ 61.63% ⚡ 18.68% [W3C Recommendation]

Method of storing data client-side, allows indexed database queries. #JSAPI

IE ✗ 5.5+ ⚡ 10+¹

Edge ⚡ 1

Firefox ✗ 2+ ⚡ 4+^P ✓ 10+^P ✓ 16+

Chrome ✗ 4+ ⚡ 11+^P ✓ 23+^P ✓ 24+

Safari ✗ 3.1+ ⚡ 7.1+²

Opera ✗ 9+ ✓ 15+

iOS Safari ✗ 3.2+ ⚡ 8+²

Opera Mini ✗

Android Browser ✗ 2.1+ ✓ 4.4+

Blackberry Browser ✗ 7+ ✓ 10

Opera Mobile ✗ 10+ ✓ 33

Chrome for Android ✓

Firefox for Android ✓

IE Mobile ⚡ 1

UC Browser for Android ✗



PRÓS

CONTRAS

Mais evoluído que
localStorage

Pode trabalhar com uma
quantidade maior de
dados

Pode trabalhar em
Workers

Tem índices

Suporte em browsers
modernos

Se o usuário fechar o
browser no meio de uma
transaction, o dado se

Mais complexo que as
outras formas de
armazenamento

**FUNCIONA NO MEU
FRAMEWORK DO ❤?**

LOCALSTORAGE

<https://github.com/jeromegn/Backbone.localStorage>

<https://github.com/grevory/angular-local-storage>

<https://github.com/STRML/react-localstorage>

<https://github.com/locks/ember-localstorage-adapter>

WEBSQL

<https://github.com/BJTerry/backbone.websqloffline>

<https://github.com/paulocaldeira17/angular-websql>

<https://github.com/inDream/ember-model-websql-adapter>

INDEXEDDB

<https://github.com/vincentmac/backbone-idb>

<https://github.com/bramski/angular-indexedDB>

<https://github.com/kurko/ember-indexeddb-adapter>

OK, MAS TUDO
ISSO AINDA
PARECE MUITO
COMPLICADO...

MOZILLA.LOCALFORAGE

<https://github.com/mozilla/localForage>

This repository Search Pull requests Issues Gist

mozilla / localForage Watch 191 Unstar 5,116 Fork 333

Code Issues 75 Pull requests 5 Wiki Pulse Graphs

Offline storage, improved. Wraps IndexedDB, WebSQL, or localStorage using a simple but powerful API.
<https://mozilla.github.io/localForage>

810 commits 7 branches 38 releases 59 contributors

Branch: master New pull request New file Find file SSH git@github.com:mozilla/localF Download ZIP

tofumatt	Change icon to SVG	Latest commit 8a6b3f0 3 days ago
dist	chore: add dist files for babel non loose mode	7 days ago
examples	fix(examples): fix requirejs example	7 months ago
site	chore: add dist files for babel non loose mode	7 days ago
src	feat(src): change the sources to be babel non-loose compatible	7 days ago
test	use expect for compare tested values for Blob support tests	24 days ago
.babelrc	chore: add module wide babel & browserify configs to fix 3rd party bu...	5 months ago

```
// In localStorage, we would do:  
var obj = { value: "Dinofauro" };  
localStorage.setItem("dino", JSON.stringify(obj));  
console.log(obj.value);  
  
// With localForage, we use callbacks:  
localforage.setItem("dino", obj, function (err, result) {  
  console.log(result.value);  
});
```

```
localforage.getItem("dino", function(err, value) {  
  if (err) {  
    console.error("Oops...");  
  } else {  
    console.log("Dino:", value);  
  }  
});
```



The Database that Syncs!

PouchDB is an open-source JavaScript database inspired by [Apache CouchDB](#) that is designed to run well within the browser.

PouchDB was created to help web developers build applications that work as well offline as they do online.

It enables applications to store data locally while offline, then synchronize it with CouchDB and compatible servers when the application is back online, keeping the user's data in sync no matter where they next login.

[Learn more](#)

```
var db = new PouchDB('dbname');

db.put({
  _id: 'dave@gmail.com',
  name: 'David',
  age: 68
});

db.changes().on('change', function() {
  console.log('Ch-Ch-Changes');
});

db.replicate.to('http://example.com/mydb');
```



Cross Browser

Works in Firefox, Chrome, Opera, Safari, IE and Node.js



Lightweight

PouchDB is just a script tag and 46KB (gzipped) away in the browser, or

```
$ npm install pouchdb
```

 away in Node.

Easy to Learn

Requires some programming knowledge, however PouchDB is a piece of cake to learn.



Open Source

Everything is developed out in the open on Github, contributors always welcome!

```
var db = new PouchDB("dinoDB");

db.put({
  _id: 1,
  name: "Dinofauro Fefiz"
}) ;

db.changes().on("change", function () {
  console.log("Alterou alfuma foisa");
}) ;

db.replicate.to("http://dinofauro.com/dinoDB") ;
```



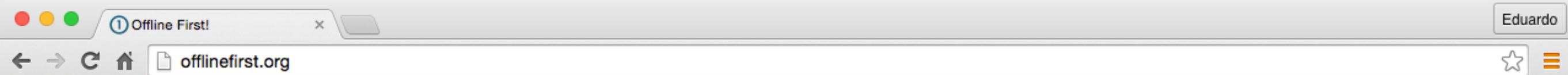
OI FESSOAL

**AGORA SIM! PODEMOS RODAR
NOSSA APLICAÇÃO ATÉ NA
ILHA NUBLAR!!!**



NÃO É SÓ POR DIVERSÃO

É QUESTÃO DE UX!!!



We live in a disconnected & battery powered world, but our technology and best practices are a leftover from the always connected & steadily powered past.

Offline capability is a key characteristic of modern Progressive Web Applications. Offline first thinking must learn from and further what we've seen work with Responsive and Mobile First thinking.

Read [the introduction](#) and the [follow up on A List Apart](#). Visit or organise [a local event](#), join the [Offline First Chat](#).

We want to spark a discussion around:

SEJA SENSATO!

Em alguns casos o cenário offline nem pode existir, como em serviços de chat, transmissão de áudio e vídeo, e etc.

O esforço vale a pena somente quando o cenário pede esse tipo de arquitetura



OBRIGADO ;)



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<http://eduardomatos.me>