

Free Tools!

Using Developer Tools and Javascript
For Pentesting Webapps

Brian "BB" King - @BBhackKing



Modern Webapp Pentesting

How to Test Webapps In the 2020's

Brian "BB" King - @BBhackKing



"Web 2.0" is 20 Years Old

The term "**Web 2.0**" was coined by [Darcy DiNucci](#), an [information architecture](#) consultant, in her January 1999 article "Fragmented Future":^[6]

The Web we know now, which loads into a [browser window](#) in essentially static screenfuls, is only an embryo of the Web to come. The first glimmerings of Web 2.0 are beginning to appear, and we are just starting to see how that embryo might develop. The Web will be understood not as screenfuls of text and graphics but as a transport mechanism, the ether through which interactivity happens. It will [...] appear on your computer screen, [...] on your TV set [...] your car dashboard [...] your cell phone [...] hand-held game machines [...] maybe even your microwave oven.

https://en.wikipedia.org/wiki/Web_2.0



2011 "50 Websites that Make the Web Great"



ScienceDaily
Your source for the latest research news

WESTIN
HOTELS & RESORTS

News Articles Videos Images Books

Health & Medicine Mind & Brain Plants & Animals Earth & Climate Space & Time Matter & Energy

Today's Top Science News
Monday, August 8, 2011

Why Plant 'Clones' Aren't Identical
A new study of plants that are reproduced by cloning has shown that cloned plants are not identical. Scientists have known for some time that 'twin' (vegetative) organisms are not always identical. Now researchers believe they have found out why... [Full story](#)

Roll over headlines to view top news summaries:
Cell-Based Alternative to Animal Testing?
Nanoscale Secret to Stronger Alloys
Why Plant 'Clones' Aren't Identical
True-Killing Fungus and Plant Climate Change
Diet and Genetics Define Adult Jaw Shape
Females Can Limit Male's Attractive Features
NASA's Juno spacecraft launches to Jupiter
Light Shined On South Pole Dinosaurs
Big Human Brains for Din-North
Next Generation of Computer Chips?
[more top science stories](#)

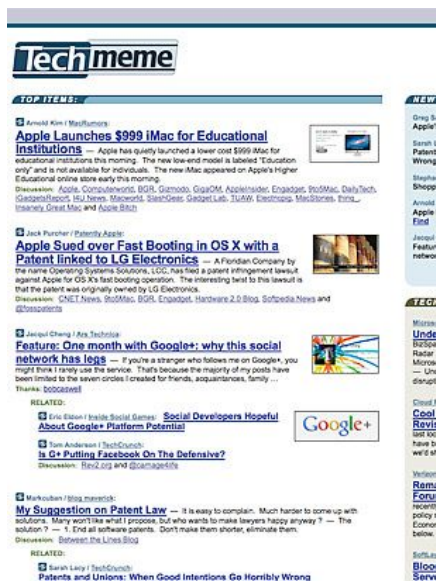
Latest News: Quick Links
Want to see all of ScienceDaily's current headlines and summaries?
► All summaries and headlines
► View more top news stories
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► Read our RSS newsfeeds
► Sign up for email newsletters

Top Medical News
How to Eliminate Motion Sickness on Tilted Tides
Scientists have found that motion sickness on tilted tides can be essentially eliminated by adjusting the timing of when the ears lift as they enter and leave the curves. They found that when the ears lift just at the beginning of the curves... [Full story](#)

Top Technology News
Researchers Uncover New Catalyst Site
A new study details for the first time a new type of catalytic site where oxidation catalysis occurs, shedding new light on the inner workings of the... [Full story](#)

Top Environment News
Researchers Discover Natural Food Preservation That Kills Food-Borne Bacteria
Researchers have discovered and reviewed a patent for a naturally occurring antibiotic - a peptide produced by a harmless bacteria - that could be added to food to kill harmful bacteria like salmonella, E. coli and... [Full story](#)

Designing Diamond Circuits for Extreme Environments
Soft Sponges Settle in Somewhat Surprising Structure
Physicists Show That Potential Anti-Malaria Compounds Possess Resistance-Proof Drug Rank Fights
Large Variations in Arctic Sea Ice Polar Ice Much Less Stable Than Previously Thought, Study Finds
First Opal-Like Crystals Discovered in Meteorites
Cells Die So Defensive Organs



Techmeme

TOP ITEMS:

Apple Launches \$999 iMac for Educational Institutions
Apple has quietly launched a lower cost iMac for educational institutions this morning. The new low-end model is labeled "Education only" and is not available for individuals. The new iMac appeared on Apple Higher Educational online store early this morning.
Reviewed: Apple, Computations, BGR, Gizmodo, GigaOM, AppleInsider, Engadget, iProMac, DailyTech, GadgetInsider, iGizmos, MacRumors, SlashGear, GadgetLab, iDaily, Engadget, MacRumors, iGizmo, iMac, iMac and Apple Blog

Apple Sued over Fast Booting in OS X with a Patent linked to LG Electronics
A Portland company by the name Operating Systems Solutions, LLC, has filed a patent infringement lawsuit against Apple for OS X's fast booting operation. The interesting twist to this lawsuit is that the patent was originally owned by LG Electronics.
Reviewed: CNET News, iProMac, BGR, Engadget, Hardware 2.0 Blog, Softpedia News and @thescripts

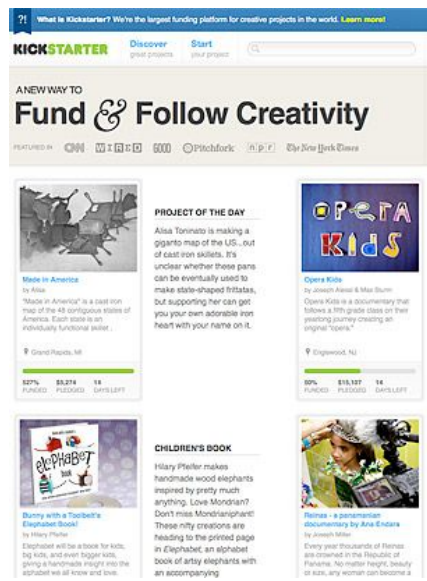
Jack Pancher / Patents Analyst
Apple Sued over Fast Booting in OS X with a Patent linked to LG Electronics
A Portland company by the name Operating Systems Solutions, LLC, has filed a patent infringement lawsuit against Apple for OS X's fast booting operation. The interesting twist to this lawsuit is that the patent was originally owned by LG Electronics.
Reviewed: CNET News, iProMac, BGR, Engadget, Hardware 2.0 Blog, Softpedia News and @thescripts

Intel's New iMac
Intel's new iMac is a sleek, modern design that is perfect for the home or office. It features a powerful Intel Core i5 processor, 8GB of RAM, and a 27-inch LED-backlit display. The iMac is available in a variety of colors, including white, black, and silver.

Google+ Social Developers Hopeful
Google+ Social Developers Hopeful
Google+ Social Developers Hopeful
Google+ Social Developers Hopeful

Microsoft Under the Radar
Microsoft Under the Radar
Microsoft Under the Radar
Microsoft Under the Radar

Google+ Social Developers Hopeful
Google+ Social Developers Hopeful
Google+ Social Developers Hopeful
Google+ Social Developers Hopeful



KICKSTARTER
Discover great projects. Start your project.

NEW WAY TO Fund & Follow Creativity

PROJECT OF THE DAY
Alisa Tonnaris is making a giant map of the US... out of east iron skeletons. It's unclear whether these plans can be eventually used to make state-shaped figurines, but supporting her can get you your own adorable iron heart with your name on it.

Opera Kids
Opera Kids is a documentary that follows a 19th-grade class on their journey creating an original opera.

CHILDREN'S BOOK
Henry Miller makes hand-drawn wood elephants inspired by pretty much anything. Love Monarchs? Don't miss Monarchs! These tiny creatures are heading to the printed page in Elephant's alphabet book of artful elephants with an accompanying



HEALTHGRADES
HELPING AMERICANS TO THEIR BEST HEALTH

Doctors Name and/or Specialty | New York, NY

Home | Physicians | Dentists | Hospitals

Welcome to HealthGrades
The leading independent health care ratings organization. Reports and ratings to guide you to better care providers.

How do your local health care providers rate?
• Five star doctors and hospitals identified
• Instant reports
• Disproportionate actions included

Find a Doctor
Find a Hospital
Find a Dentist

I recently had to undergo knee surgery. HealthGrades helped me choose a doctor that I felt could help me make a decision. He noticed I had a more serious problem than the other older more experienced doctor neglected to investigate. - Kathryn E., La Jolla, CA

Latest HealthGrades Study
HealthGrades Announces Top Hospitals for Osteoarthritis and Gynecologic Surgery

HealthGrades for Business
Hospitals rely on HealthGrades ratings and consulting services to make health care decisions. Based on the quality of care.

HealthGrades Network
Better Medicine provides you with essential information. Check out these popular sections:
• Conditions
• Symptoms
• Drug and Treatments
• Healthy Living
• Nutrition Checklist
• View All Sections

HealthGrades in the News
Forbes, Woman's Day, Orf Health, TIME

About Us | Press Room | Contact Us | Advertise | Better Medicine | Sitemap | Success on Demand

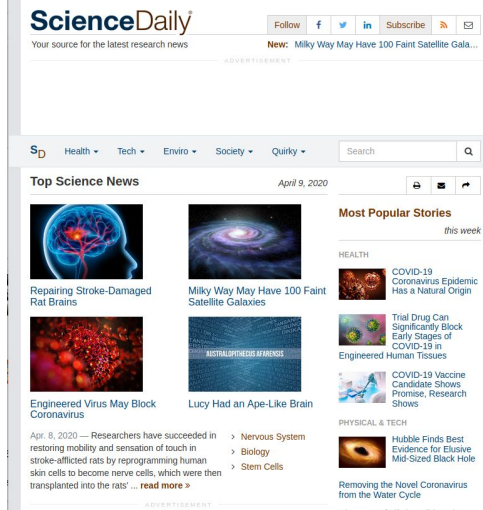
Science Daily

Techmeme

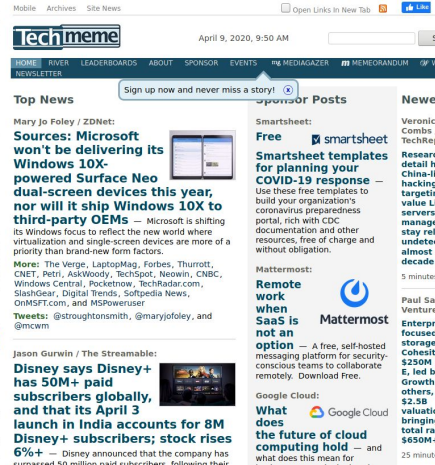
Kickstarter

Health Grades

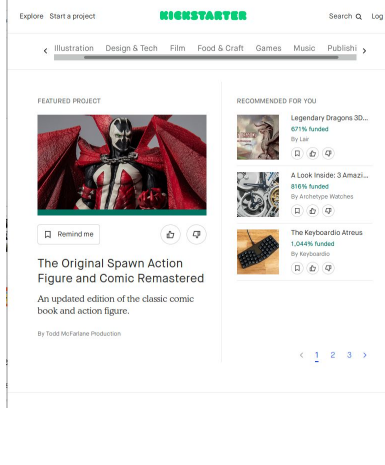
Same Webapps in 2020



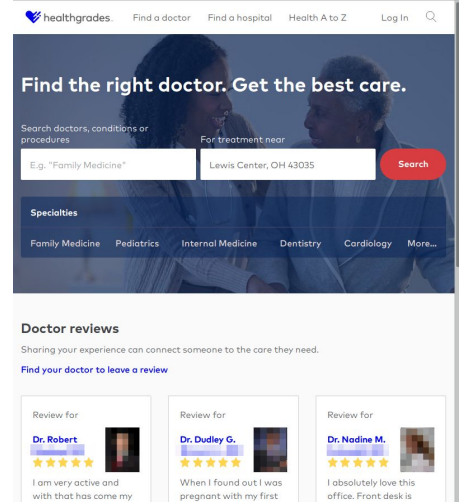
Science Daily
Responsive!
And Pictures!



Techmeme
Columns Are Fine!



Kickstarter
More Pictures!



Health Grades
Psychology!

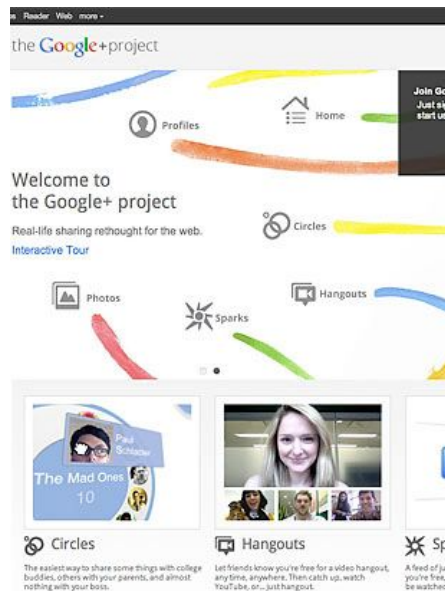


<http://content.time.com/time/specials/packages/0,28757,2087815,00.html>

Webapps in 2011



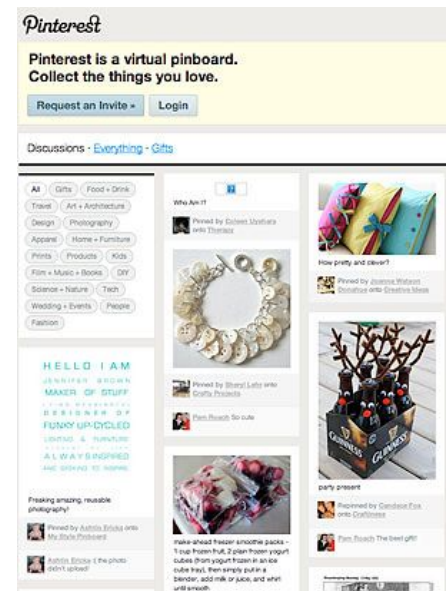
Map My Run



Google+ launches!



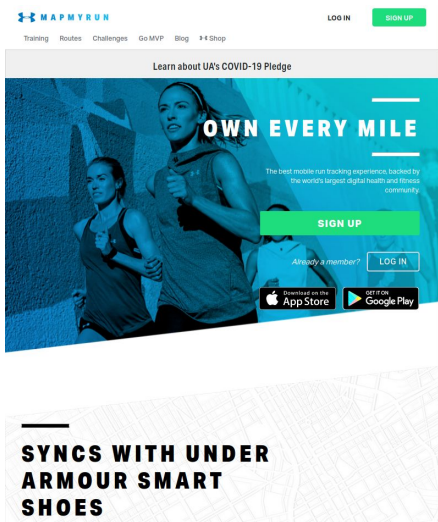
Klout



Pinterest



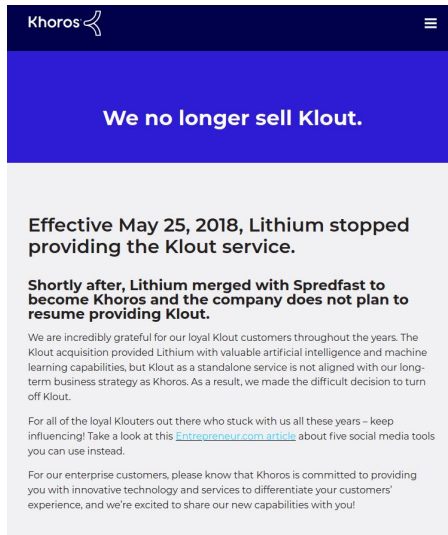
Webapps in 2011



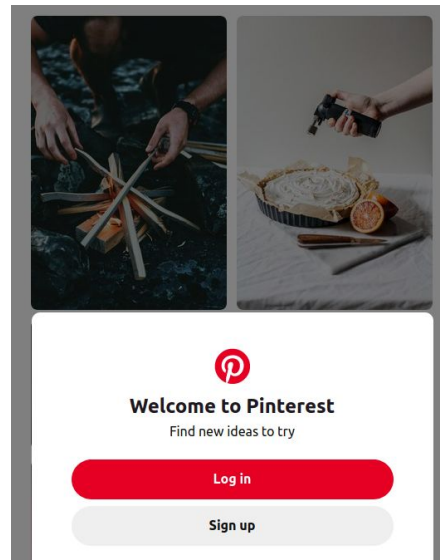
Map My Run
Sync With Yer Shoes!



Google+
sadtrombone.wav



Klout
sadtrombone.wav



Pinterest
sadtrom... wait.



BLACK HILLS INFORMATION SECURITY



Black Hills Information Security specializes in security solutions that work and are cost effective. Our team has provided on-point solutions to financial institutions, government agencies, health care providers, and Top Secret/SCI programs. We understand that security is an ongoing process and strive to foster and support those processes in your organization.

SERVICES

- Security Assessments
- Architecture Reviews
- Penetration Tests
- Security Team Training
- Certification and Accreditation Preparation
- Threat Analysis
- Incident Response
- Technical Writing Review

Up Coming Events...

BHIS in 2011, in case you were wondering...



Webapps in 2011

Newspapers

"E-Commerce"

Proto-Social

Largely single-domain.

Analytics? That's ga.js, right?

HTML 5 was a draft, for *three more years*

CORS was a draft, for *three more years*

Java applets, Flash, Silverlight, ActiveX, XHR

<https://en.wikipedia.org/wiki/HTML5#Timeline>

https://en.wikipedia.org/wiki/Cross-origin_resource_sharing#History

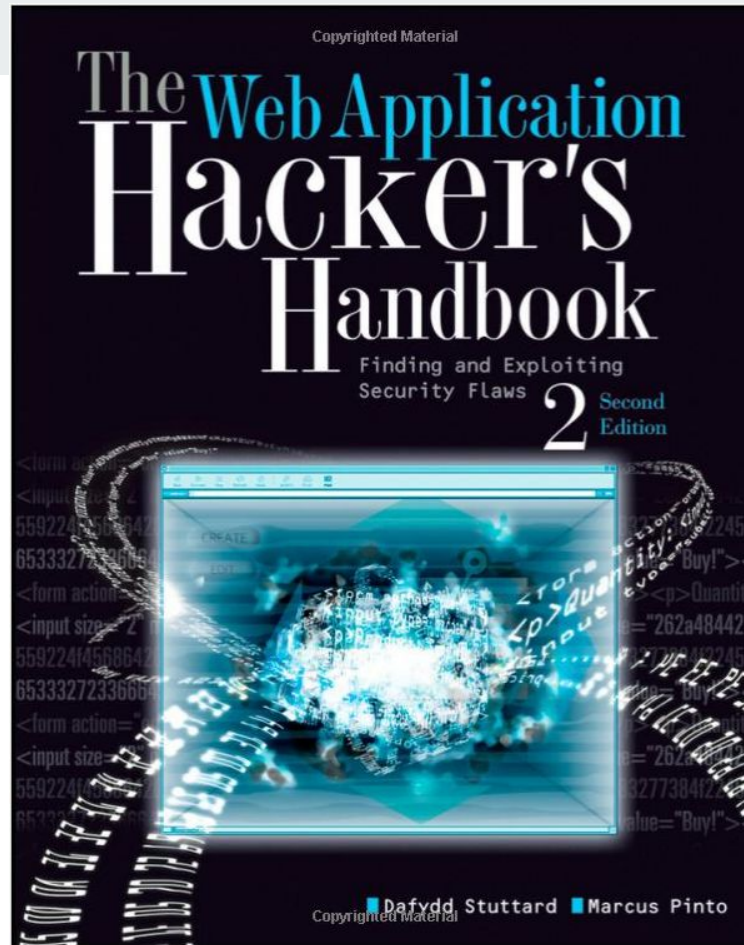


WHY ARE WE TALKING



ABOUT 2011?

Also 2011...



...this is still
the best book
I know of...



<https://portswigger.net/web-security/web-application-hackers-handbook>

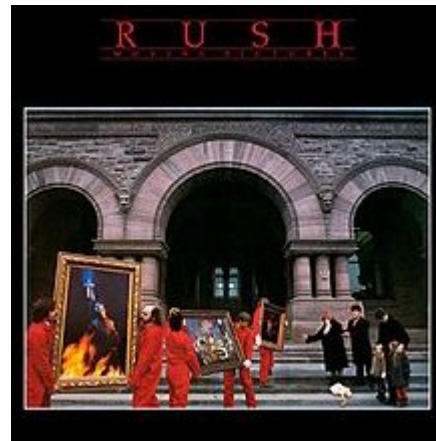
Testing Requires Understanding

If you don't know how it works...

You're not gonna break it in interesting ways.

You gotta keep up.

"Changes aren't permanent, but change is."

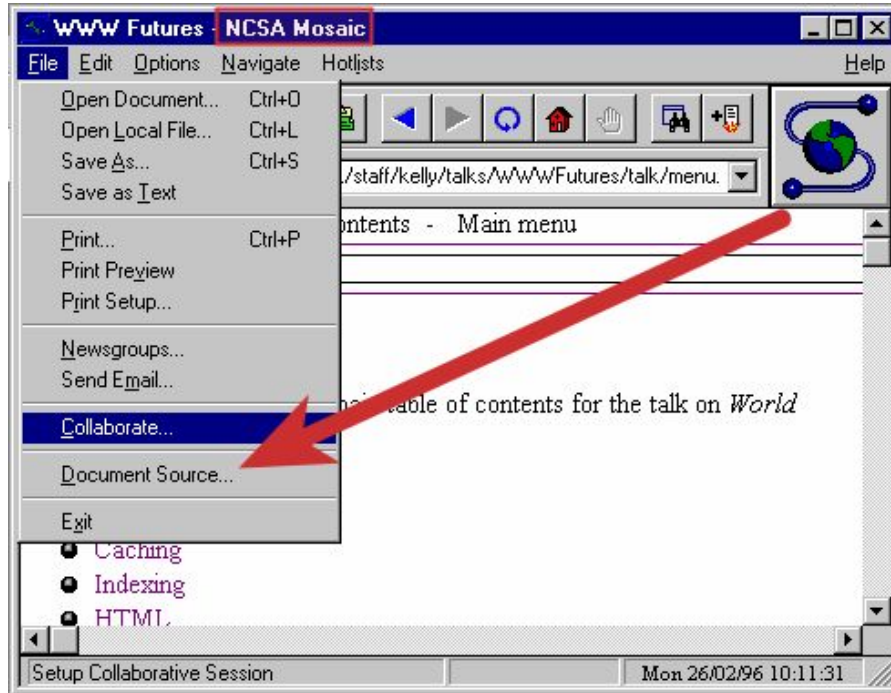


-- Rush, *Tom Sawyer*, 1981



Keeping Up
is just *Learning*

How'd They Do *That*?



1. View Source (1993 - Mosaic)

...still here, but less useful

2. Greasemonkey (2005)

...still here...

3. Firebug (2006)

...paved the way...

4. Developer Tools



How Does *This Website* Work?

Idea: Share Images.

How complicated can that be?

How do you learn how "they" did it?

Try "View Source" on imgur.com for fun.



What Can You Do With Developer Tools?

- Understand how a page is built.
 - See what hosts it's talking to, what content it's bringing in.
 - Extract useful information.
 - Change the app's behavior.
 - Different browsers have similar tools.
-
- Firefox docs: <https://developer.mozilla.org/en-US/docs/Tools>
 - Chrome docs: <https://developers.google.com/web/tools/chrome-devtools/>
 - Chrome Dev tools for ... actual developers...
 - <https://bit.ly/wickedweapons> (Greg Malcolm's "Raiding the Armory" talk and tools)



How Now?

- F12 ... Ctrl-Shift-i ... Cmd-Opt-i
- Console: what's going on.
- Inspector: how it's put together.
- DOM: top-down view.
- Storage: little databases...
- Network: where's it all coming from.
- Debugger: do that again, but slower.



Inspector Console Debugger Network Style Editor Performance Memory Storage

Search HTML Filter Styles .hov .cls +

Layout Computed Changes Fonts

Filter Styles Browser St...

```

::marker
<a href="/International/">
Internationalization</a>
</li>
<li></li>
<li></li>
</ul>
<h3 class="category tMargin">
</h3>
<ul class="theme">
</ul>
<h3 class="category tMargin">
</h3>
<ul class="theme">
</ul>
<h3 class="category tMargin">
</h3>
<ul class="theme">
</ul>
</div>
<div class="w3c_mainCol">
  <div id="w3c_crums">
    <div class="line">
      <div class="unit size2on3">
        <div class="main-content">
          <h2 class="offline">News
          </h2>
          <div id="w3c_slideshow">
            <div id="w3c_most-recently" class="intro hierarchy vevent_list">
              <div class="event w3c_topstory expand_block">
                <div class="headline">

```

element { inline }

.w3c_mainCol { advanced:71 }

```

overflow: hidden;
background-color: #fff;
padding-left: 3%;
padding-bottom: 3%;
padding-top: 1.1%;

```

.w3c_mainCol, #w3c_footer-inner, #w3c_crums_frame { }

```

border-left: 0;

```

body, div, dl, dt, dd, ul, ol, li, h1, h2, h3, h4, h5, h6, pre, code, form, fieldset, legend, input, textarea, p, blockquote, th, td, address { }

```

margin: 0;
padding: 0;
padding-top: 0px;
padding-bottom: 0px;
padding-left: 0px;

```

Inherited from div#w3c_container

#w3c_container { advanced:4 }

```

font-size: 108%;
line-height: 1.41667;

```

Inherited from body#www-w3-org

body { advanced:1 }

background-color: rgb(255, 255, 255)

border-left-color: rgb(51, 51, 51)

border-left-style: none

border-left-width: 0px

color: rgb(51, 51, 51)

font-family: "Helvetica Neue", Helvetica, Arial, Verdana, Geneva, sans-serif

font-size: 14.1667px

line-height: 20.0667px

margin-bottom: 0px

margin-left: 0px

margin-right: 0px

margin-top: 0px

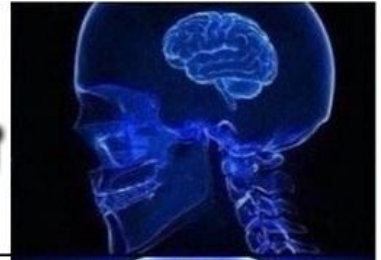
overflow: hidden

overflow-x: hidden

overflow-y: hidden

Display area is
always limited so...

**RIGHT-CLICK,
INSPECT ELEMENT**



**DEVELOPER
TOOLS,
SIDE DOCK**



**DEVELOPER
TOOLS,
BOTTOM DOCK**

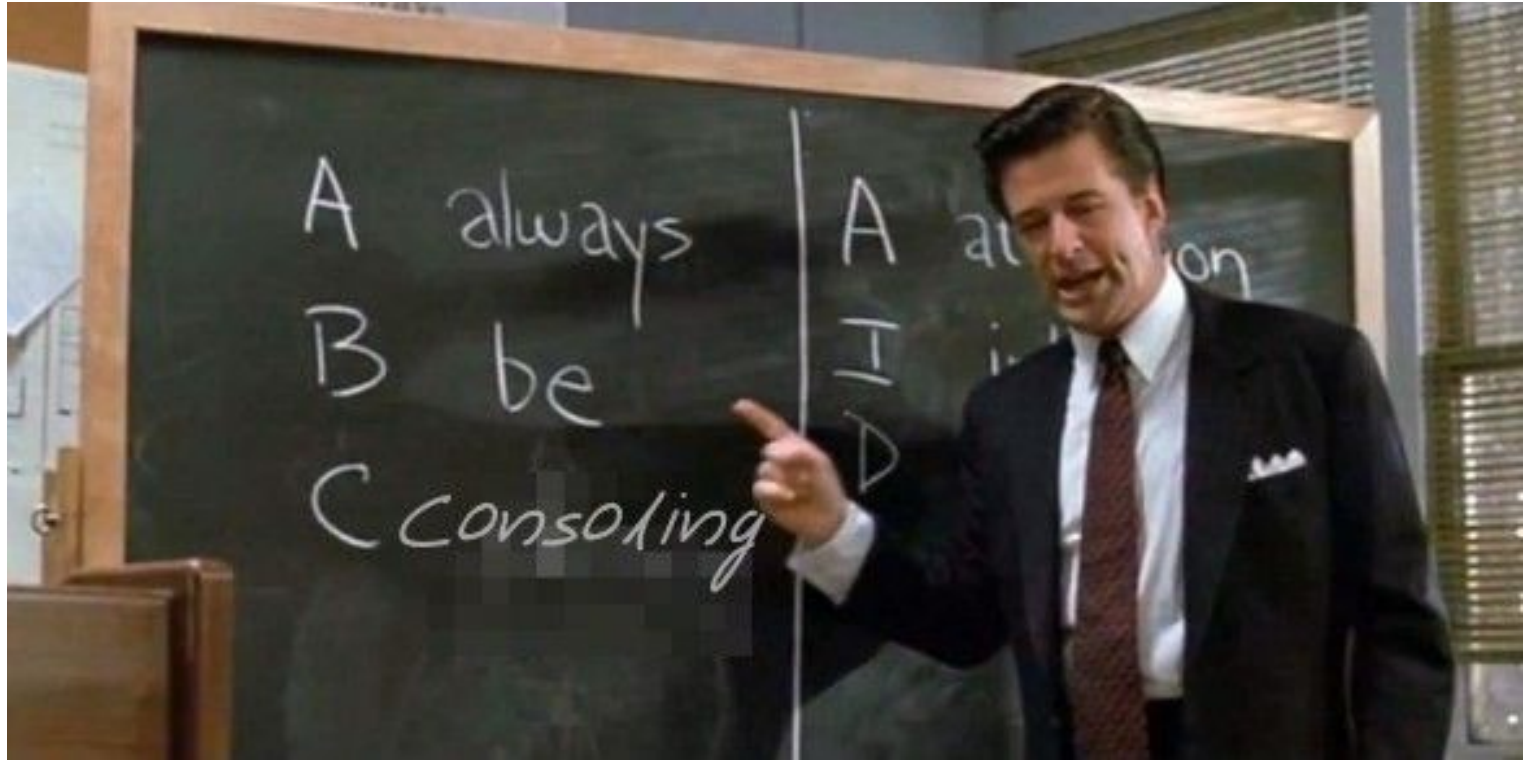


**SEPARATE
WINDOW.**



To the Tools!
Console &
Separate Window

Keep the Console Visible!



Console

- Its own pane, yes
- But put it everywhere:
 - ...tap Esc on any pane
 - ...except the console pane...



Console

- HTTP Requests (and responses)
 - Summary and detail
 - References for status codes & headers
 - HTTP version
- Calls to console.log();
- `!! \o/ !!`
- Browser errors & warnings

Console
~~**VERB:**~~
THAT'S
WHAT'S
HAPPENING

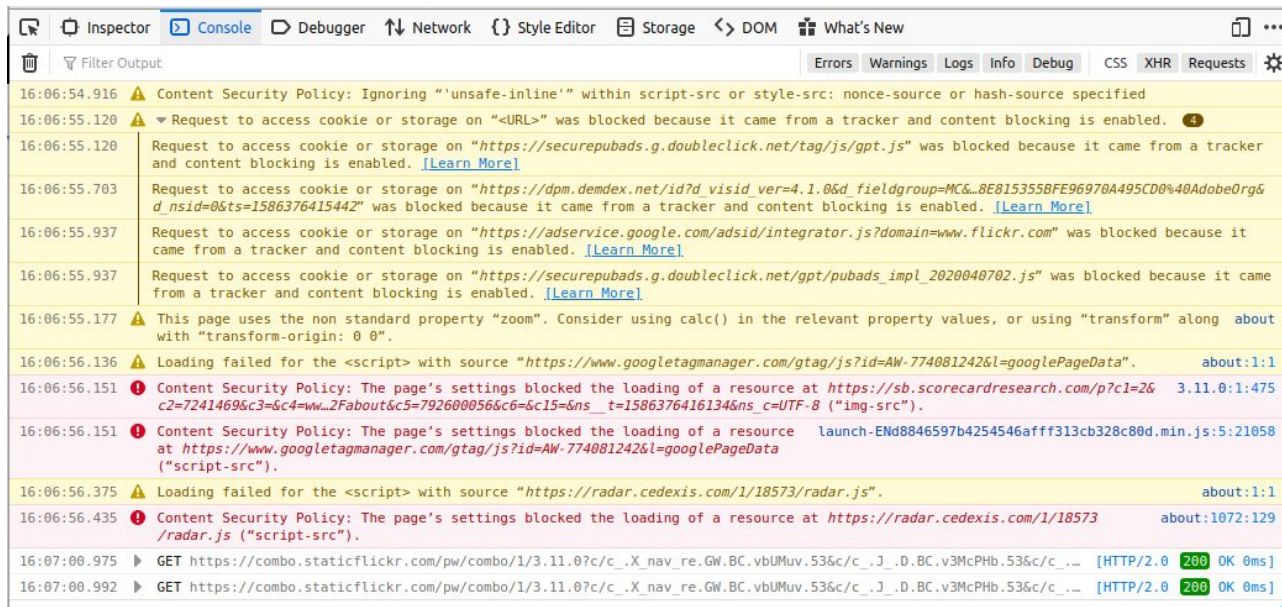


© AEG



What Kinds of Warnings?

- CSP
- Privacy Blocks
- Mixed Content
- TLS Errors
- Deprecation
- "Learn More" !



The screenshot shows a web browser's developer console with the 'Console' tab selected. The console displays a list of messages, including warnings and errors. The messages are as follows:

- 16:06:54.916 ⚠ Content Security Policy: Ignoring "'unsafe-inline'" within script-src or style-src: nonce-source or hash-source specified
- 16:06:55.120 ⚠ ▼ Request to access cookie or storage on "<URL>" was blocked because it came from a tracker and content blocking is enabled. (4)
- 16:06:55.120 Request to access cookie or storage on "https://securepubads.g.doubleclick.net/tag/js/gpt.js" was blocked because it came from a tracker and content blocking is enabled. [\[Learn More\]](#)
- 16:06:55.703 Request to access cookie or storage on "https://dpm.demdex.net/id7d_visid_ver=4.1.0&d_fieldgroup=MC&...8E815355BFE96970A495CD0%40AdobeOrg&d_nsId=0&ts=1586376415442" was blocked because it came from a tracker and content blocking is enabled. [\[Learn More\]](#)
- 16:06:55.937 Request to access cookie or storage on "https://adservice.google.com/adsid/integrator.js?domain=www.flickr.com" was blocked because it came from a tracker and content blocking is enabled. [\[Learn More\]](#)
- 16:06:55.937 Request to access cookie or storage on "https://securepubads.g.doubleclick.net/gpt/pubads_impl_2020040702.js" was blocked because it came from a tracker and content blocking is enabled. [\[Learn More\]](#)
- 16:06:55.177 ⚠ This page uses the non standard property "zoom". Consider using calc() in the relevant property values, or using "transform" along with "transform-origin: 0 0".
- 16:06:56.136 ⚠ Loading failed for the <script> with source "https://www.googletagmanager.com/gtag/js?id=AW-774081242&l=googlePageData". about:1:1
- 16:06:56.151 ❌ Content Security Policy: The page's settings blocked the loading of a resource at https://sb.scorecardresearch.com/p?c1=2&c2=7241469&c3=6c4=ww...2Fabout&c5=792600056&c6=6c15=&ns_t=1586376416134&ns_c=UTF-8 ("img-src"). 3.11.0:1:475
- 16:06:56.151 ❌ Content Security Policy: The page's settings blocked the loading of a resource at https://www.googletagmanager.com/gtag/js?id=AW-774081242&l=googlePageData ("script-src"). launch-End8846597b4254546afff313cb328c80d.min.js:5:21058
- 16:06:56.375 ⚠ Loading failed for the <script> with source "https://radar.cedexis.com/1/18573/radar.js". about:1:1
- 16:06:56.435 ❌ Content Security Policy: The page's settings blocked the loading of a resource at https://radar.cedexis.com/1/18573/radar.js ("script-src"). about:1072:129
- 16:07:00.975 ▶ GET https://combo.staticflickr.com/pw/combo/1/3.11.0?c/_X_nav_re,GW.BC.vbUMuv.53&c/_J_.D.BC.v3McPHb.53&c/_... [HTTP/2.0 200 OK 0ms]
- 16:07:00.992 ▶ GET https://combo.staticflickr.com/pw/combo/1/3.11.0?c/_X_nav_re,GW.BC.vbUMuv.53&c/_J_.D.BC.v3McPHb.53&c/_... [HTTP/2.0 200 OK 0ms]



Network

- Every request & response
 - ...kind of like the console on first look
- Still has links to header documentation
- Adds filters by content-type
- Adds freeform text filter box
- Adds "Edit and Resend" box!



Network Tab: List

Inspector Console Debugger Network Style Editor Storage DOM							
Filter URLs					🔍	🚫	<input type="checkbox"/> Persist Logs <input type="checkbox"/> Disable Cache
All HTML CSS JS XHR Fonts Images Media WS Other							
Sta...	M...	Domain	File	Ca...	Type	Transferred	Size
200	GET	🔒 developer.mozilla.org	file.7ac510b78865.svg	img	svg	cached	339 B
200	GET	🔒 developer.mozilla.org	clock.661d537f6023.svg	img	svg	cached	409 B
200	GET	🔒 developer.mozilla.org	web-docs-sprite.22a6a085cf14.svg	img	svg	cached	10.09 KB
200	GET	🔒 developer.mozilla.org	favicon144.e7e21ca263ca.png	img	png	cached	1.30 KB
200	GET	🔒 developer.mozilla.org	favicon32.7f3da72dcea1.png	img	png	cached	441 B
200	GET	🔒 🌐 www.google-an...	collect?v=1&_v=j81&aip=1&a=1751...	img	gif	598 B	35 B



Network Tab: Details

The screenshot shows the Chrome DevTools Network Tab with the 'Details' panel expanded for a request to `https://developer.mozilla.org/static/file-icons/file.7ac510b78865.svg`. The 'Request Headers' section is expanded, showing various headers. Green checkmarks are placed next to several headers, and a red box highlights the 'Request Headers' section. A red arrow points from the 'Network' tab in the top bar to the 'Request Headers' section. A red box also highlights the 'Request URL' field.

Request Headers:

- access-control-allow-origin: *
- age: 3215736
- cache-control: max-age=315360000, public, immutable
- content-length: 339
- content-type: image/svg+xml
- date: Mon, 02 Mar 2020 09:43:40 GMT
- etag: "5e58abd0-153"
- last-modified: Thu, 27 Feb 2020 21:57:36 GMT
- server: meinheld/1.0.1
- strict-transport-security: max-age=63072000
- via: 1.1 ded5b42496343c4e3c24e49416...d.cloudfront.net (CloudFront)
- x-amz-cf-id: AeBgfrXk2uxA2JqhDElse7wjk5jGbF02-0dK-2UYhYgE65Ive6ZLYA==
- x-amz-cf-pop: ORD53-C1
- x-cache: Hit from cloudfront
- x-content-type-options: nosniff
- X-Firefox-Spdy: h2
- x-xss-protection: 1; mode=block

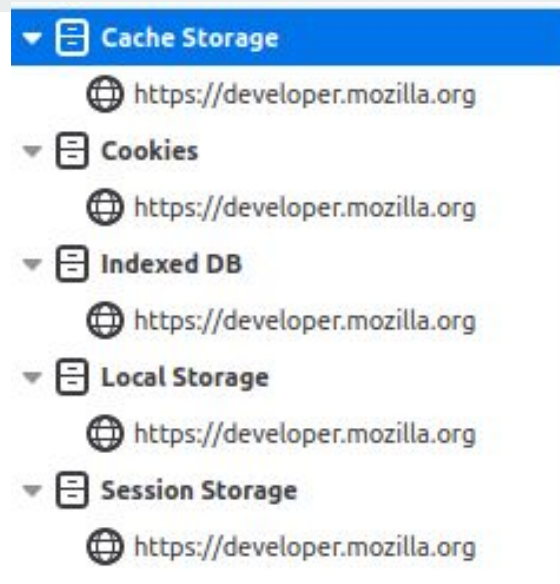
Request Headers (0 B)



To The Tools!
Network

Storage

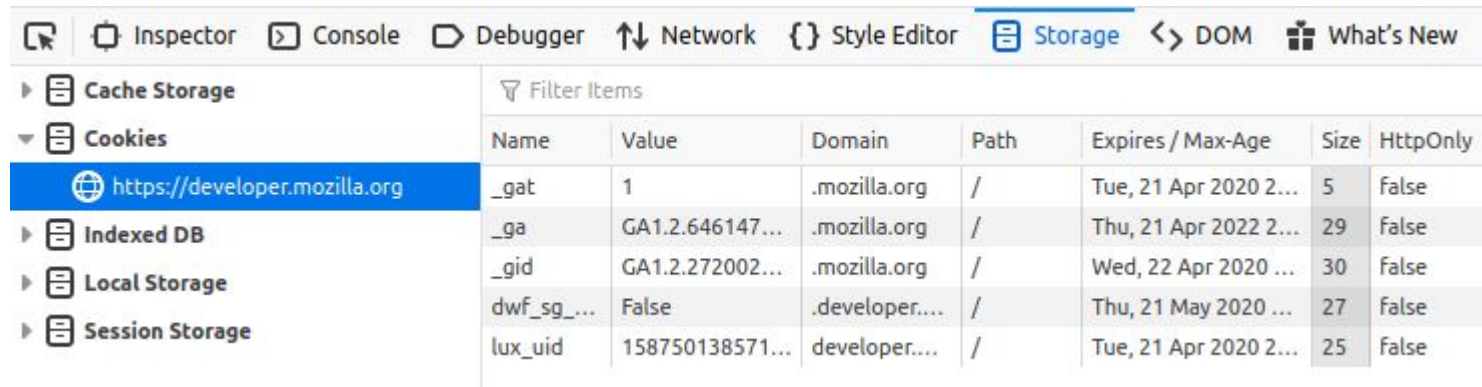
- Cache
 - ...not the disk cache: the Cache *interface* from the Web APIs
 - usually empty
- Cookies (add, view, edit, delete)
 - 4k per cookie, 20 or so per origin
- Indexed DB
 - At least 10MB and no more than 2GB (or 10% of hard disk).
 - Database. Structured data. (also usually empty)
- Local Storage (view and edit)
 - 5MB per origin. Persistent.
- Session Storage
 - 5MB per origin. Purged when browser closes (as with "session cookies")
- This stuff won't show up in your proxy!
 - Well, the cookies ~~will~~ might.



Storage: Cookies

Add, Edit, Delete.

No browser extension needed.



The screenshot shows the Chrome DevTools Storage panel. The left sidebar lists storage types: Cache Storage, Cookies (selected), Indexed DB, Local Storage, and Session Storage. The main area displays a table of cookies for the URL https://developer.mozilla.org. The table has columns for Name, Value, Domain, Path, Expires / Max-Age, Size, and HttpOnly. There are five cookies listed: _gat, _ga, _gid, dwf_sg_..., and lux_uid.

Name	Value	Domain	Path	Expires / Max-Age	Size	HttpOnly
_gat	1	.mozilla.org	/	Tue, 21 Apr 2020 2...	5	false
_ga	GA1.2.646147...	.mozilla.org	/	Thu, 21 Apr 2022 2...	29	false
_gid	GA1.2.272002...	.mozilla.org	/	Wed, 22 Apr 2020 ...	30	false
dwf_sg_...	False	.developer....	/	Thu, 21 May 2020 ...	27	false
lux_uid	158750138571...	developer....	/	Tue, 21 Apr 2020 2...	25	false



To The Tools!
Storage

Inspector (and the Console)

- Like "View Source" (Ctrl-U) but better
- Same as right-click, inspect element
 - shows current state, not just "as-received" from server
 - live view (mouseover to get highlights)
 - live view (can edit: edits show in rendered view)
 - This is a great source for practical jokes, by the way.



Inspector & Console For Useful Things

Reveal text in "password" fields.

Execute functions...

See: <https://cryptojs.gitbook.io/docs/>

AES Encryption

Plain text encryption

```
var CryptoJS = require("crypto-js");

// Encrypt
var ciphertext = CryptoJS.AES.encrypt('my message', 'secret key 123').toString();

// Decrypt
var bytes = CryptoJS.AES.decrypt(ciphertext, 'secret key 123');
var originalText = bytes.toString(CryptoJS.enc.Utf8);

console.log(originalText); // 'my message'
```

<https://www.npmjs.com/package/crypto-js>



To The Tools!
Inspector

How to Get Fired By Using Inspector



Debugger (and the Console)

- Can set breakpoints in scripts
- Check variable values
- Reveal function arguments
- Find logic in JS-set cookies



Debugger Example

yoyo



Customizing The Tools

- F1 (Settings)
 - Enable/disable panes
 - Dark. mode.
 - Screenshot Button!



Console Tricks - What's Available?

What can I ask the console about?

Ask the console!

`console.log(top);`

`console.log(top === window)`

`top === document`

`window === document`

```
>> document
< HTMLDocument https://www.flickr.com/about
  URL: "https://www.flickr.com/about"
  _yuid: "yui_3_11_0_3_1586379241404_3"
  ▶ activeElement: <body class="zeus en-us new-footer ne...a-linux-gecko-74 liquid">
  ▶ alinkColor: ""
  ▶ all: HTMLAllCollection { 0: html.styleguide.yui3-js-enabled, 1: div#yui3-css-
  ▶ anchors: HTMLCollection { 0: a, length: 1, ... }
  ▶ applets: HTMLCollection { length: 0 }
  ▶ baseURI: "https://www.flickr.com/about"
  ▶ bgColor: ""
  ▶ body: <body class="zeus en-us new-footer ne...a-linux-gecko-74 liquid">
  ▶ characterSet: "UTF-8"
  ▶ charset: "UTF-8"
  ▶ childElementCount: 1
  ▶ childNodes: NodeList [ <!DOCTYPE html>, html.styleguide.yui3-js-enabled ]
  ▶ children: HTMLCollection { 0: html.styleguide.yui3-js-enabled, length: 1 }
  ▶ compatMode: "CSS1Compat"
  ▶ contentType: "text/html"
  ▶ cookie: "xb=666101; vp=1322%2C1189%2C1%2C12; s_cc=true; __ssid=6b77c94b838c6261d
  ▶ ...
```



Console Tricks

Get every anchor link on a page.

```
var links = document.getElementsByTagName("A");
```

```
const links = document.links;
```

```
document.links; // ...actually...
```

Get every image on a page.

```
document.images;
```



Console Tricks - Modify Links

Add an "admin=true" to all the links.

That could work, right?

```
for(link of document.links) {  
    link.href = link.href + "&admin=true";  
    link.style = "border: 5px solid blue";  
}
```



Console Tricks - Collect Identifiers

Get the URL of Every Image

```
const pic_urls = [];  
for(pic of document.images){  
  pic_urls.push(pic.src);  
}  
console.log(pic_urls);
```

```
>> const pic_urls = [];  
    for(pic of document.images){  
      pic_urls.push(pic.src);  
    }  
    console.log(pic_urls);  
← undefined  
  
▼ (94) [...]  
  0: "https://combo.staticflickr.com/pw/images/tour/en-us/create-accou  
  1: "https://farm3.staticflickr.com/2853/buddyicons/60065287@N00_r.jp  
  2: "https://farm1.staticflickr.com/932/buddyicons/36521981547@N01_r.  
  3: "https://farm8.staticflickr.com/7317/buddyicons/15721381@N00_r.jp  
  4: "https://farm9.staticflickr.com/8463/buddyicons/20244787@N07_r.jp  
  5: "https://farm1.staticflickr.com/892/buddyicons/11797544@N05_r.jpg  
  6: "https://farm6.staticflickr.com/5037/buddyicons/78522870@N07_r.jp  
  7: "https://farm1.staticflickr.com/873/buddyicons/91720879@N02_r.jpg  
  8: "https://farm8.staticflickr.com/7386/buddyicons/63652802@N02_r.jp  
  9: "https://farm4.staticflickr.com/3718/buddyicons/26794697@N03_r.jp  
10: "https://farm55.staticflickr.com/165525/buddyicons/166423071@N00_r
```

(or, filter the "Network" tab by "Images")



Free Tools.