

JavaScript Debugging

tl;dr

- If JavaScript runs in the browser it must be debugged in the browser
- All browsers have their own debugging tools
- Fortunately they all behave pretty much the same way and all have ...
 - DOM inspection
 - CSS debugging
 - JavaScript debugging
 - Network analysis

JavaScript runs in the browser so it must be debugged in the browser

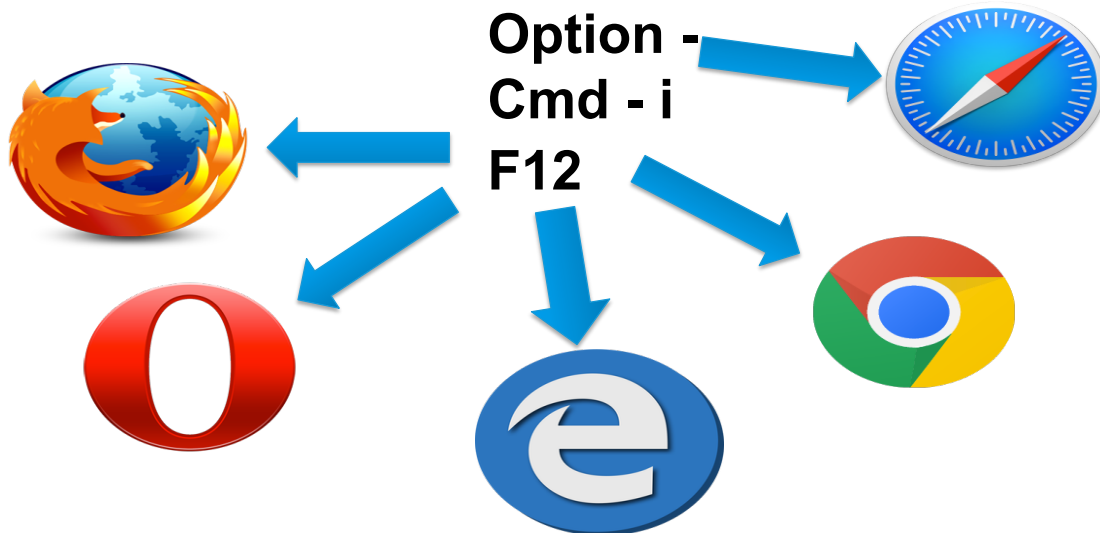


Firebug was the trailblazer for debuggers

It's the original Firefox add-on
Needed to be installed
But now merged with built-in Firefox tools

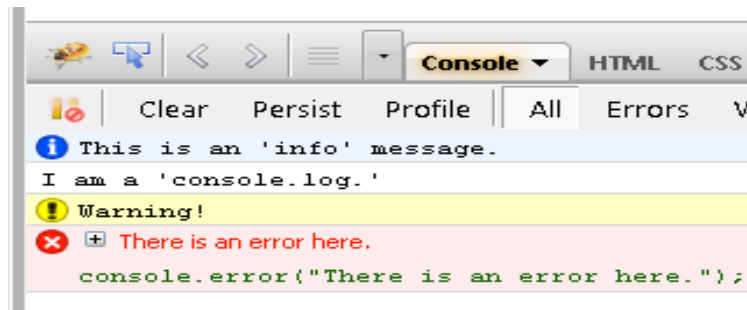
But all browsers have debuggers baked in

- No need for installs and extra packages



We can send messages to the console

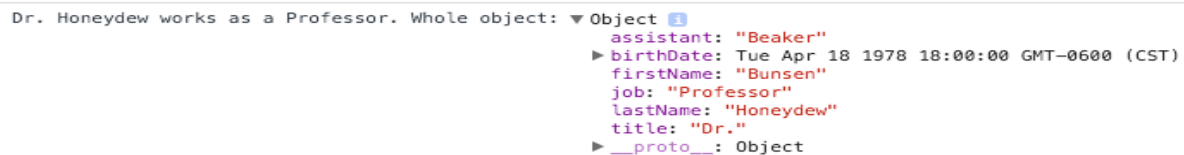
```
console.info("This is an 'info' message.");  
console.log("I am a 'console.log.'");  
console.warn("Warning!");  
console.error("There is an error here.")
```



```
console.log(
  "%s %s works as a %s. Whole object: %o",
  person.title, person.lastName,
  person.job, person);
```

- %s - string
- %f - floating point number
- %d or %i - integer
- %o - Expandable DOM object
- %O - Expandable JavaScript object

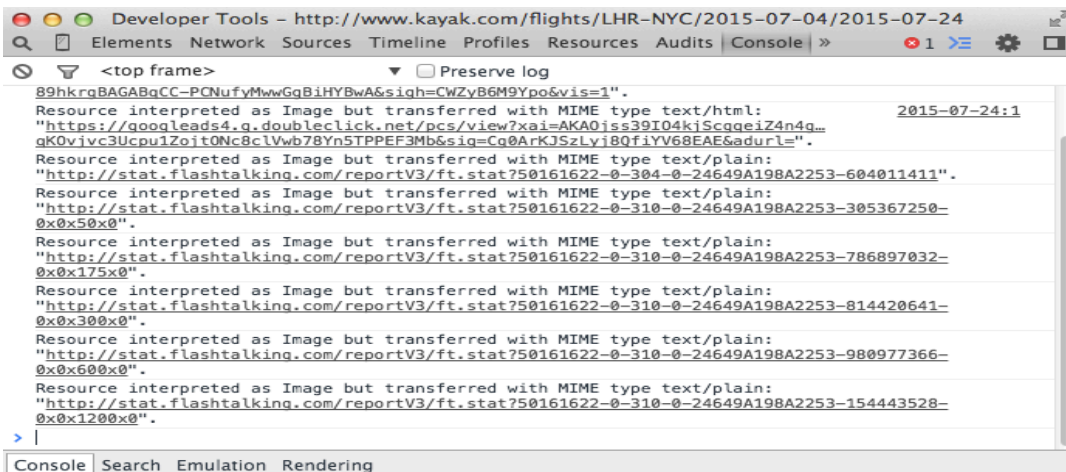
console.log can
format



```
Dr. Honeydew works as a Professor. Whole object: Object
  assistant: "Beaker"
  birthDate: Tue Apr 18 1978 18:00:00 GMT-0600 (CST)
  firstName: "Bunsen"
  job: "Professor"
  lastName: "Honeydew"
  title: "Dr."
  __proto__: Object
```

All Browsers Tools Work Pretty Much Alike

- Let's see how Chrome works differently. This'll give us clues as to how the others work



Application shows memory storage

Like cookies. local & session storage

Developer Tools - <https://www.kayak.com/flights/NYC-LHR/2017-07-04/2017-07-24>

Elements Console Sources Network Timeline Profiles Application Security >> 1 7

Application

- Manifest
- Service Workers
- Clear storage

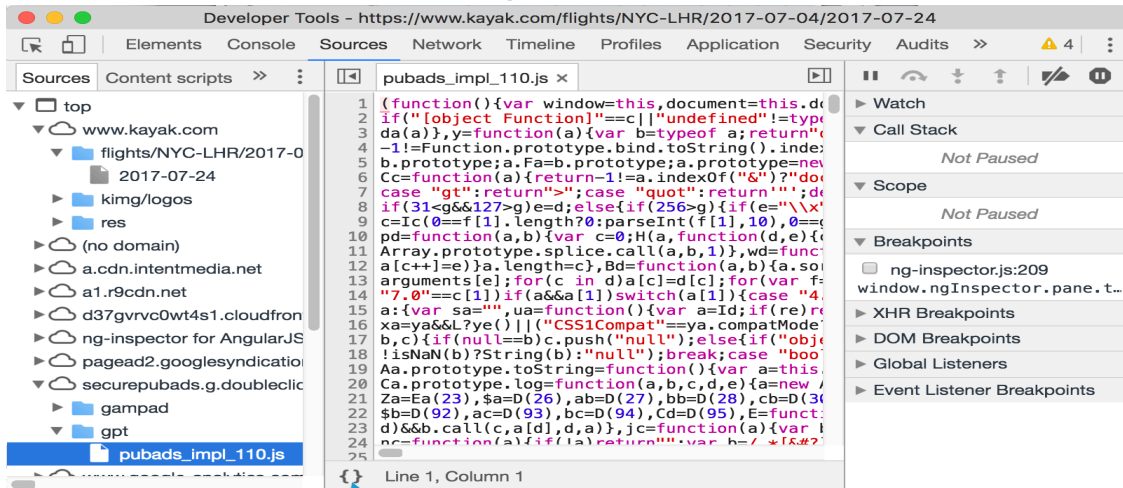
Storage

- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies
- <https://www.kayak.com>**
- <https://5142311.fls.do>
- <https://cdn.krxd.net>
- <https://stags.bluekai.com>
- <https://ad.atdmt.com>
- <https://tpc.googlesync>
- <https://r.254a.com>

Name	Value	Domain	Pa...	Expires / M..	Size	HT...	Sec...	Sa...
Apache	L7qJlg-AAABWTx7...	www.kayak...	/	2019-09-2...	34	✓		
DSID	ADyXuksEYUWtTE...	.doubleclick...	/	2017-03-1...	123	✓		
IDE	AHWqTukBMrekL...	.doubleclick...	/	2018-11-1...	61	✓		
IM_eu_freq_cap	Y	.kayak.com	/	2017-02-2...	15			
NSC_q4-lbqj	ffffff094f9a14455...	www.kayak...	/	2017-02-2...	55	✓		
NSC_q4-tqbslmf	ffffff094f2a2f455...	www.kayak...	/	2017-02-2...	58	✓		
__gads	ID=f02950bf59010...	.kayak.com	/	2018-12-2...	75			
_ga	GA1.2.106792449...	.kayak.com	/	2019-02-2...	30			
_gat	1	.kayak.com	/	2017-02-2...	5			
cluster	4	www.kayak...	/	2017-02-2...	8	✓		
id	22aedbc3ae0a000...	.doubleclick...	/	2018-11-1...	69			
im_puid	0654a143-02c3-4...	.kayak.com	/	2018-03-2...	43			
im_xu_poll_open	1	www.kayak...	/	2017-02-2...	16			
kayak	P9qRMikR0b0W2...	www.kayak...	/	2019-12-2...	25	✓		
kykprf	347	www.kayak...	/	Session	9	✓		
p1.med.bsc	l\$onO0PKhaCL	www.kayak...	/	Session	22	✓		
p1.med.sc	12	www.kayak...	/	2017-05-2...	11			
p1.med.searched	true	www.kayak...	/	2017-05-2...	19			
p1.med.sid	H-4tnJq65Y6iucG...	www.kayak...	/	Session	75	✓		
p1.med.token	U_98Vdmv68Eo1a...	www.kayak...	/	2017-08-2...	34	✓	✓	

Debugging JavaScript

Find all JavaScript source under Sources



Click "pretty print" to de-minify the code.

Set breakpoints by clicking a line number

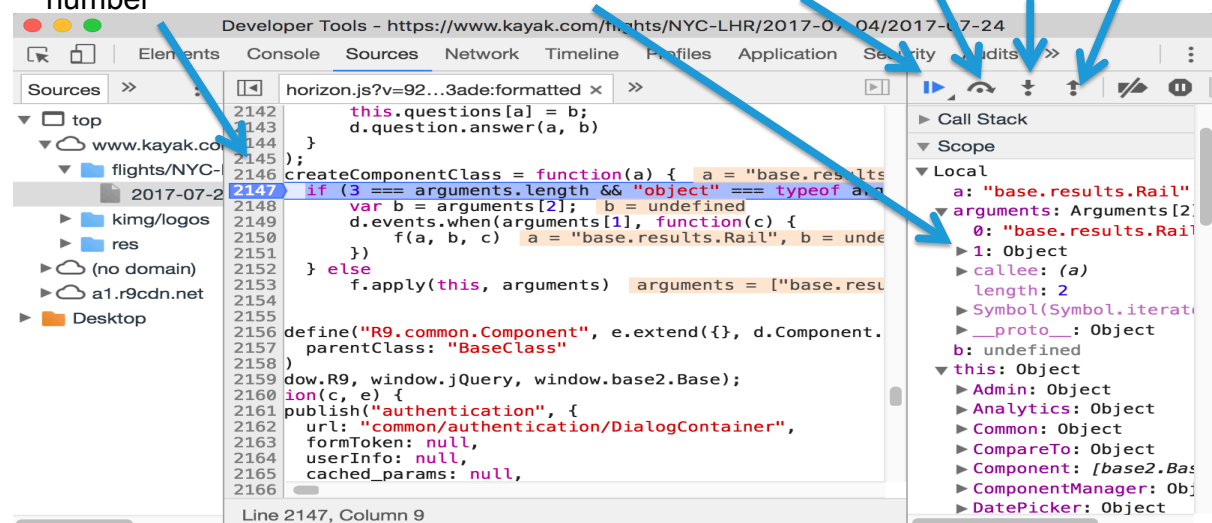
Read or edit variables

Continue

Step over

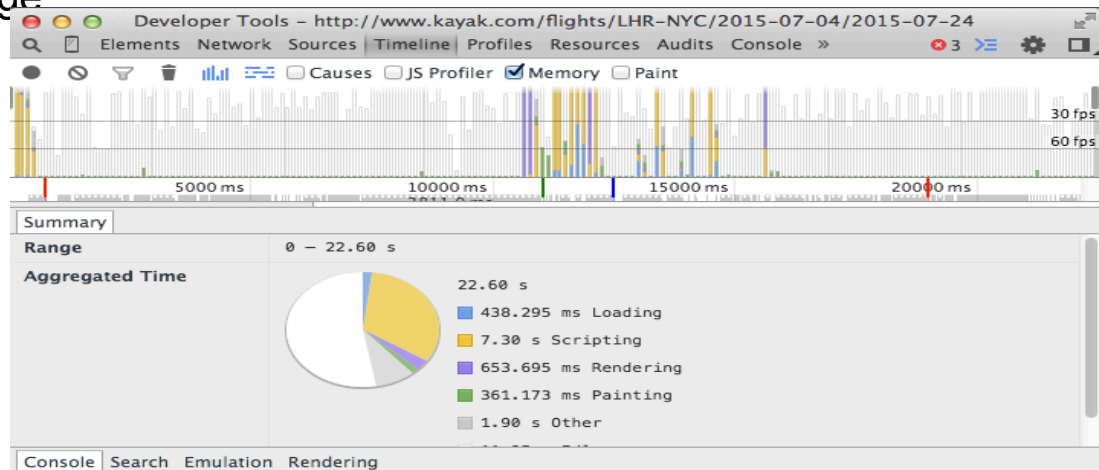
Step into

Step out



Timeline and Profiles are for performance

They allow watching the speed and memory usage of your page



Examine traffic on the Network tab

Shows each resource requested, its HTTP method, result, type, and speed

The screenshot shows the Chrome Developer Tools interface with the 'Network' tab selected. The table below lists the resources requested, including their names, HTTP methods, status codes, types, initiators, sizes, and timing information.

Name	Met...	Status	Type	Initiator	Size	Timelin...
lidar.js	GET	200	text/javascript	320_0_c3Q9aHRt...	21...	2...
320_0_c3Q9aHRtbcZhYT0xMjk5NTc3L...	GET	200	text/javascript	Other	5.5...	8...
imp.js?bt=1430498756836&aeh=1&w=...	GET	200	application/ja...	Other	5.9...	1...
en.js	GET	200	application/x...	imp.js?bt=14304...	861 B	7...
beacon.js?c1=8&c2=6820648&c3=1&c...	GET	200	application/x...	imp.js?bt=14304...	994 B	6...
rfacNew.js	GET	200	application/x...	imp.js?bt=14304...	22...	1...
dfa7banner_flash_html_inpage_renderin...	GET	200	text/javascript	320_0_c3Q9aHRt...	(fro...	0...
modernizr_2.8.3_ec185bb44fe5e6bf74...	GET	304	text/javascript	320_0_c3Q9aHRt...	0 B	5...
lidar.js	GET	304	text/javascript	320_0_c3Q9aHRt...	0 B	3...
beacon.js?c1=8&c2=6820648&c3=1&c...	GET	200	application/x...	imp.js?bt=14304...	(fro...	0...
en.js	GET	200	application/x...	imp.js?bt=14304...	(fro...	0...
beacon.js	GET	200	application/x...	2015-07-24:23	1.4...	5...

At the bottom of the Network tab, the summary shows: 48 / 145 requests | 717 KB / 1.3 MB transferred | Finish: 9.37 s | DOMContentLoaded: 2.45 s | Load: 7.15 s. The 'Console' tab is also visible at the bottom.

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