



Chrome, Firefox, Opera, IE, others

The amount of information accessible through the tools is extensive

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Eliminate (some of) the Guesswork

This lecture uses Google Chrome's developer tools for examples and screenshot

(It's the one I'm most familiar with)

But all have the same functionality

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The DOM

Remember, the browser exists as a hierarchical series of objects

The Developer Tools give us a view of the structure of a given page

...and the styling that is applied to each element

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The DOM

https://csci1720.net/examples/dom/dom.html

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<pre>body { font-family: sans-serif; font-size: 1.2rem; position: absolute; top: 0; left: 0; margin: 0; } div {</pre>	Lorem ipsum dolor sit amet, gravida facilisi orci nulla. Erat dolor, sagittis blandit, maecenas quis mi suscipit, risus enim tincidunt erat. Eu justo, senectus ut mattis laoreet et. Nec ultricies ultrices iaculis non asperiores urna, nec ut dolor dignissim, sodales purus pretium eget, wisi integer molestie arcu platea, urna ut in ipsum laoreet. Aenean fusce donec, arcu elit, placerat arcu laoreet libero eu vitae.
<pre>width: 400px; height: 350px; border: 1px solid #444; margin-left: 25px; } .A { background: rgba(50,50,200,.5); } .B { background: rgba(200,50,50,.5); }</pre>	Back Alt+Left Arrow Forward Alt+Right Arrow Reload Ctrl+R Save as Ctrl+S Hulla Cast Translate to English erat. Eu View page source Ctrl+Shift+I eget, Wrist mrteger morester arcu pratea, urna ut in ipsum laoreet. Aenean fusce donec, arcu elit, placerat arcu laoreet libero eu vitae.
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EDIT PROPERTY VALUES IN PLACE (DOESN'T CHANGE THE SOURCE DOCUMENT

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BUT ... ONCE YOU HAVE THE ELEMENT DISPLAYING THE WAY YOU WANT IT TO, YOU CAN COPY THOSE SETTINGS IN TO THE SOURCE DOCUMENT

html	body	div.A					
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Filter							
elemen [.]	t.sty	le {					
pado	ling-t	:op: 1	.0px;	_			
pado	ling-r	ight:	10px;				
pado	ling-b	ottom	10p>	G			
pado	ling-l	left:	20px;				
}							



iv	{
	width: 400px;
	height: 350px;
	border: 1px solid #444
	margin-left: 25px;
	padding-top: 10px;
	padding-right: 10px;
	padding-bottom: 10px;
	padding-left: 20px:

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B

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.A {
 position: absolute;
 top: 0;
 left: 0;
 background: rgba(50,50,200,.5);
}

THE POSITION PROPERTY CAN BE A PAIN, BUT IS SOMETIMES NECESSARY

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Filter

.A {

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element.style {

top: 20px; left: 480px;

position: absolute;

elit, placerat arcu laoreet liberc Styles

BEING ABLE TO REAL-TIME THE VALUES TAKES A LOT OF THE STING OUT OF USING POSITION

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Mackground: > Image Instant Provide Additional Provided Addition

Second Provide Addition

DOM Breakpoints

:hov .cls +

temp.html:27

Event Listeners





















Image 2 Left

Image 3 Left

Toggle 'clea

Image 3 Right

© 2019 CSS Floats

Image 2 Right

Filter

element.stvle {

.col-md-6 {

@media (min-width: 768px)

ms-flex: 0 0 50%;

flex: ▶ 0 0 50%;

max-width: 50%;

:hov .cls +

_grid.scss:42

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<l-- container end -->

html body div div.row div.col-md-6

Styles Computed Event Listeners >>>

.col, .col-1, .col- <u>grid-framework.scss:9</u> 10, .col-11, .col-12, .col-2, .col-3, .col-

4, .col-5, .col-6, .col-7, .col-8, .col-9,

.col-auto, .col-lg, .col-lg-1, .col-lg-10, .col-lg-11, .col-lg-12, .col-lg-2, .col-lg

them, much like in

books and

magazines

'right'

East Tenn need to stop

Departme

The CSS float

Float keeps on

floating until it

the element it is applied to. If we

floating, we can

reaches the end of

property can have

one of three values: 'none,' 'left,' or



IF YOU NEED TO REFER TO THE ELEMENT FREQUENTLY, YOU CAN STORE IT AS A GLOBAL VARIABLE













Console

The console displays real-time output from the browser, when there is any

This includes load errors, such as a file that can't be located

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Console

We can also enter commands (typically JavaScript) directly into the console

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Console

The console is of great use

Especially when we're adding/debugging JavaScript/jQuery code

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Sources We had a quick look at the Sources tab a couple of minutes ago This tab lists all of the source files that the page uses













Network

In general, use the Network panel when you need to make sure that resources are being downloaded or uploaded as expected. The most common use cases for the Network panel are

Making sure that resources are actually being uploaded or downloaded at all

Inspecting the properties of an individual resource, such as its HTTP headers, content, size, and so on

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	Filter 🗌 Hide data URLs 📶 XHR JS CSS Img Media Font Doc WS Manifest Other									
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		_								
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	bootstrap.min.css	200	stylesheet	index.html	18.4 KB	104 ms				
	css?family=Source	200	stylesheet	index.html	899 B	126 ms				
	font-awesome.mi	200	stylesheet	index.html	6.6 KB	52 ms				
	toggle.css	200	stylesheet	index.html	1.2 KB	53 ms				
	palette2.css	200	stylesheet	index.html	737 B	52 ms				
	style.css	200	stylesheet	index.html	2.3 KB	100 ms				
	🔄 codeHighlight.js	200	script	index.html	3.3 KB	101 ms				
	Iotr-1.jpg	200	jpeg	index.html	52.9 KB	221 ms				
	Iotr-3.jpg	200	jpeg	index.html	29.8 KB	183 ms				
	Iotr-2.jpg	200	jpeg	index.html	34.1 KB	92 ms				
	jQuery3.4.1.js	200	script	index.html	30.3 KB	84 ms				
	🔄 popper.min.js	200	script	index.html	6.5 KB	42 ms				
	bootstrap.min.js	200	script	index.html	12.8 KB	36 ms		-		
	📃 img-float-example	200	script	index.html	671 B	45 ms		-		
	6xK3dSBYKcSV-LC	200	font	index.html	16.1 KB	101 ms		-		
oct Tonnocc	fontawesome-web	200	font	index.html	75.5 KB	44 ms	WATERE	ALL 💻		
ist renness	favicon.png	200	png	Other	1.9 KB	42 ms				0
epartment	index.html	200	document	Other	3.3 KB	122 ms				

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	6xK3dSBYKcSV-LCoeQqfX	200	font	index.html	16.1 KB	216 ms				
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	Iotr-3.jpg	200	jpeg	index.html	29.8 KB	174 ms				
	📃 index.html	200	docume	Other	3.3 KB	130 ms				
	css?family=Source+Sans+	200	stylesheet	index.html	899 B	121 ms				
	jQuery3.4.1.js	200	script	index.html	30.3 KB	94 ms				
	style.css	200	stylesheet	index.html	2.3 KB	93 ms				
	codeHighlight.js	200	script	index.html	3.3 KB	93 ms				
	Iotr-2.jpg	200	jpeg	index.html	34.1 KB	92 ms				
	bootstrap.min.css	200	stylesheet	index.html	18.4 KB	91 ms				
	img-float-example.js	200	script	index.html	671 B	53 ms				
	toggle.css	200	stylesheet	index.html	1.2 KB	49 ms				
	palette2.css	200	stylesheet	index.html	737 B	49 ms				
	font-awesome.min.css	200	stylesheet	index.html	6.6 KB	43 ms				
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	index.htr	nl	csci1210.com		Method Status	:443	130 ms	_	_				
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	🔄 palette2.	CSS	csci1210.com		csci1210.com		csci1210.com		Initiator	:443	84 ms		
	style.css		csci1210.com		Set Cookies	2:443	125 ms						
	🔄 codeHig	nlight.js	csci1210.com		Size	::443	163 ms						
	🔳 lotr-1.jpg	J	csci1210.com		csci1210.com		Priority	:443	282 ms				
	🔳 lotr-3.jpg	J	csci1210.com		Connection ID	:443	311 ms						
	jQuery3.4	4.1.js	csci1210.com		Sort By	:443	106 ms						
	popper.n	nin.js	cdnjs.cloudflare.co	m	Response Headers 🕨	:443	33 ms						
	bootstra	p.min.js	maxcdn.bootstrap	cd.	Waterfall 🕨 🕨	🗸 Sti	art Time						
East Tennessee State	img-floa	t-example.js	csci1210.com		157.230.228.6	Re	sponse Time d Time						
Dopartment of Comp	Iotr-2.jpg	J	csci1210.com		157.230.228.6	То	tal Duration						
Department of Comp	6xK3dSB	YKcSV-LCo	fonts.gstatic.com		172.217.164.9	La	tency						

Filter	🔲 Hide data UR	Ls All XHR JS CS	S Img M	ledia Font D	oc WS Man	ifest Other				
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Name	Domain	Remote Address	Time	Waterfall						
fontawesome-webf	cdnjs.cloudflare.com	104.17.65.4:443	34 ms							
📃 bootstrap.min.js	maxcdn.bootstrapcd	209.197.3.15:443	31 ms							
popper.min.js	cdnjs.cloudflare.com	104.17.65.4:443	33 ms							
bootstrap.min.css	maxcdn.bootstrapcd	209.197.3.15:443	34 ms							
toggle.css	csci1210.com	157.230.228.62:443	41 ms							
📃 img-float-example.js	csci1210.com	157.230.228.62:443	67 ms							
jQuery3.4.1.js	csci1210.com	157.230.228.62:443	106 ms							
font-awesome.min	cdnjs.cloudflare.com	104.17.65.4:443	71 ms							
Iotr-2.jpg	csci1210.com	157.230.228.62:443	114 ms							
palette2.css	csci1210.com	157.230.228.62:443	84 ms							
style.css	csci1210.com	157.230.228.62:443	125 ms							
📃 index.html	csci1210.com	157.230.228.62:443	130 ms							
codeHighlight.js	csci1210.com	157.230.228.62:443	163 ms							
css?family=Source	fonts.googleapis.com	216.58.195.74:443	199 ms							
Iotr-1.jpg	csci1210.com	157.230.228.62:443	282 ms							
6xK3dSBYKcSV-LCo	fonts.gstatic.com	172,217,164,99:443	231 ms							

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Filter	🔲 Hide data UR	Ls All XHR JS CS	S Img M	edia Font Doc WS Ma	nifest Other			
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Name	Domain	Remote Address	Time	Resource Scheduling			DURATION	
bootstrap.min.js	maxcdn.bootstrapcd	209.197.3.15:443	31 ms	Queueing			0.86 ms	
popper.min.js	cdnjs.cloudflare.com	104.17.65.4:443	33 ms	Connection Start			DURATION	
fontawesome-webt	cdnjs.cloudflare.com	104.17.65.4:443	34 ms	Stalled			0.10 ms	
toggle.css	csci1210.com	209.197.3.15:443	34 ms 41 ms	DNS Lookup	I.		7 μs	
img-float-example.js	csci1210.com	157.230.228.62:443	67 ms	Initial connection			222.66 ms	
font-awesome.min	cdnjs.cloudflare.com	104.17.65.4:443	71 ms	SSL			222.66 ms	
palette2.css	csci1210.com	157.230.228.62:443	84 ms	Request/Response			DURATION	
JQuery3.4.1.js	csci1210.com	157.230.228.62:443	106 ms	Request sent			0.13 ms	
style.css	csci1210.com	157.230.228.62:443	125 ms	Waiting (TTFB)		1	0.68 ms	
index.html	csci1210.com	157.230.228.62:443	130 ms	Content Download		- E	7.50 ms	
codeHighlight.js	csci1210.com	157.230.228.62:443	163 ms	Fundamenta e			222.42	
📃 css?family=Source	fonts.googleapis.com	216.58.195.74:443	199 ms	<u>explanation</u>			252.12 ms	
6xK3dSBYKcSV-LCo	fonts.gstatic.com	172.217.164.99:443	231 ms		224 ms		•—8 ms	7
Iotr-1.jpg	csci1210.com	157.230.228.62:443	282 ms					
Iotr-3.jpg	csci1210.com	157.230.228.62:443	311 ms					

	Timing breakdown phases explained								
	Here's more information about each of the phases you may see in the Timing tab:								
	Queueing. The browser queues requests when:								
	There are higher priority requests.								
	 There are already six TCP connections open for this origin, which is the limit. Applies to HTTP/1.0 and HTTP/1.1 only. 								
	The browser is briefly allocating space in the disk cache								
	• Stalled. The request could be stalled for any of the reasons described in Queueing.								
	• DNS Lookup. The browser is resolving the request's IP address.								
	• Proxy negotiation. The browser is negotiating the request with a proxy server.								
	Request sent. The request is being sent.								
	ServiceWorker Preparation. The browser is starting up the service worker.								
	Request to ServiceWorker. The request is being sent to the service worker.								
	• Waiting (TTFB). The browser is waiting for the first byte of a response. TTFB stands for Time To First Byte. This timing includes 1 round trip of latency and the time the server took to prepare the response.								
	Content Download. The browser is receiving the response.								
East Tenness	• Receiving Push. The browser is receiving data for this response via HTTP/2 Server Push.	CSCI 1720							
Department	Reading Push. The browser is reading the local data previously received.	Web Design							







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	DevTools - csci1210.com/example	les/float/index.html		- 🗆 X	
	E El Elemente Cons	ola Sourcas Natwork Parformanca	Mamon Application County Audite		
			* General		
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	Filter	Hide data URLs I XHR JS CSS Img	Request URL: https://csci1210.co	m/examples/float/index.html	
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			Ch. J. C. J. C. J. C. 199		
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	ivanie .	A Headers Preview Response Tim	Remote Address: 157 230 228 62.4	43	
	index.html	* General	Nemote Address. 1577250722010214	172	
	iotr-2.jpg	Request URL: https://csci1210.com/e	Referrer Policy: no-referrer-when-	downgrade	
	lotr-s.jpg	Request Method: GET			
	codeHighlight in	Status Code: 🗢 200 OK	Response Henders		
	imo-float-example is	Remote Address: 157.230.228.62:443	view source		
	bootstrap.min.is	Referrer Policy: no-referrer-when-dow	Accent-Ranges: bytes		
	popper.min.is	▼ Response Headers view source	Heepe Hangest by ces		
	jQuery3.4.1.js	Accept-Ranges: bytes	Connection: Keep-Alive	FAGLIILADENS	
	6xK3dSBYKcSV-LCoeQqfX1	Connection: Keep-Alive			
	fontawesome-webfont.wof	Content-Encoding: gzip	Content-Encoding: gzip		
	style.css	Content-Length: 3061	Contant Longth: 2061		
	palette2.css	Content-Type: text/html	content-Length. 5001		
	toggle.css	Date: Mon, 13 Jan 2020 21:00:00 GM	Content-Type: text/html		
	font-awesome.min.css	ETag: "2038-59923873535c0-gzip"			
	css?family=Source+Sans+P	Keep-Alive: timeout=5, max=100	Date: Mon, 13 Jan 2020 21:00:00	GMT	
	bootstrap.min.css	Last-Modified: Sat, 07 Dec 2019 21:0	FT #00000 50000000505 0	122004113	
		Server: Apache/2.4.29 (Ubuntu)	Elag: 2038-599238/3535c0-gzip		
		Vary: Accept-Encoding	Keep-Alive: timeout=5, max=100		
		* Request Headers view source	Last Madified: Cat. of Day 2010 of		
		Accept text/html,application/xhtml	Last-Woolfied: Sat, 07 Dec 2019 2	1:05:54 GMT	
		change;v=b3;q=0.9	Server: Anache/2.4.29 (Ubuntu)		
		Accept-Encoding: gzip, deflate, br			
		Accept-Language: en-US,en;q=0.9	Vary: Accept-Encoding		
		Cache-Control: no-cache	1.1.25 (11) (3		
		Connection: keep-alive			
		Host: csci1210.com			
		Pragma: no-cache			
Fast Tennessee Stat		Referer: https://csci1210.com/exampl	les/index.php		CI 1720
East rennessee sta		Sec-Fetch-Mode: navigate			CI 1/20
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Department of Con		Ungrade Integure Requests: 1			Design
	17 / 18 requests 295 KB / 291	opgrade-insecure-nequests. 1		×.	







		Audits Identify and fix common problems that affect your site's performance, accessibility, and user experience. Learn more	
	Device	MobileDesktop	
	✓ Audits	 Performance Progressive Web App Best practices Accessibility SEO 	
	🔅 Throttling	 Simulated Slow 4G, 4x CPU Slowdown Applied Slow 4G, 4x CPU Slowdown No throttling 	
East Tennessee State Univ Department of Computing		 Clear storage Run audits 	CSCI 1720 ntermediate Web Design



	🕞 💼 🛛 Elements Console Sources Netw	ork Performance Audits >>	: ×
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	https://csci1210.com/examples/float/index.html		: · · · · · · · · · · · · · · · · · · ·
	95 94 8 Performance Accessibility B Pra	SEO SEO Progressive Web App	
	Perfor	mance	
	First Contentful Paint 2.0 s	First Meaningful Paint	.0 s
	• Speed Index 2.0 s	First CPU Idle	.3 s
	• Time to Interactive 3.3 s	Max Potential First Input Delay 100	ms
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	View Trace		
	Values are estimated and may vary. The performance score is <u>based only on these metrics</u> .		
	A C L X A C L		
	Opportunities — These suggestions can help your page load faster. They don't <u>directly affe</u> Performance score.	z the	
	Opportunity	Estimated Savings	
	Eliminate render-blocking resources	2.58 s 🗸	
	Efficiently encode images	0.82 s ~	
	Serve images in next-gen formats	0.82 s 🗸	
	$\label{eq:Diagnostics} \textbf{Diagnostics} \begin{tabular}{lllllllllllllllllllllllllllllllllll$	don't <u>directly</u>	
	Ensure text remains visible during webfont load	~	
	▲ Serve static assets with an efficient cache policy — 9 resources found	~	
	Avoid chaining critical requests — 12 chains found	~	
	Keep request counts low and transfer sizes small — 17 requests • 445 KB		
	Passed audits (17)	~	
East Tennessee State Univ Department of Computing	rersity	: CSCI Intermediate Web De	1720 sign



	86		
	Best Practices		
	▲ Does not use HTTP/2 for all of its resources — 10 requests not served via HTTP/2	~	
	▲ Includes front-end JavaScript libraries with known security vulnerabilities — 1 vulnerability detection	cted 🗸	
	Passed audits (13)	~	
East Tennessee Sta Department of Cor	nte University mputing	Interm	CSCI 1724 ediate Web Design
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URL https://csci1210.com/examples/tload/index.html Fetch time Jan 18, 2020, 12:59 AM EST Device Emulated Nexus 5X Network throttling 562:5 ms HTTP RTT, 1,474.6 Kbps down, 675 Kbps up (DevTools) CPU throttling 4x slowdown (DevTools) User agent (host) Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/79.0.3945.130 Safari/537.36 User agent (network) Mozilla/5.0 (Linux; Android 6.0.1; Nexus 5 Build/MRA58N) AppleWebKit/537.36 (Chrome-Lighthouse CPU/Memory Power 894		Runtime Settings
Fetch time Jan 18, 2020, 12:59 AM EST Device Emulated Nexus 5X Network throttling 562.5 ms HTTP RTT, 1,474.6 Kbps down, 675 Kbps up (DevTools) CPU throttling 4x slowdown (DevTools) User agent (host) Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/79.0.3945.130 Safari/537.36 User agent (network) Mozilla/5.0 (Linux; Android 6.0.1; Nexus 5 Build/MRA58N) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/74.0.3694.0 Mobile Safari/537.36 Chrome-Lighthouse CPU/Memory Power 894	URL	https://csci1210.com/examples/float/index.html
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	CPU/Memory Power	894

Department of Computing





