

Chrome DevTools: what's what



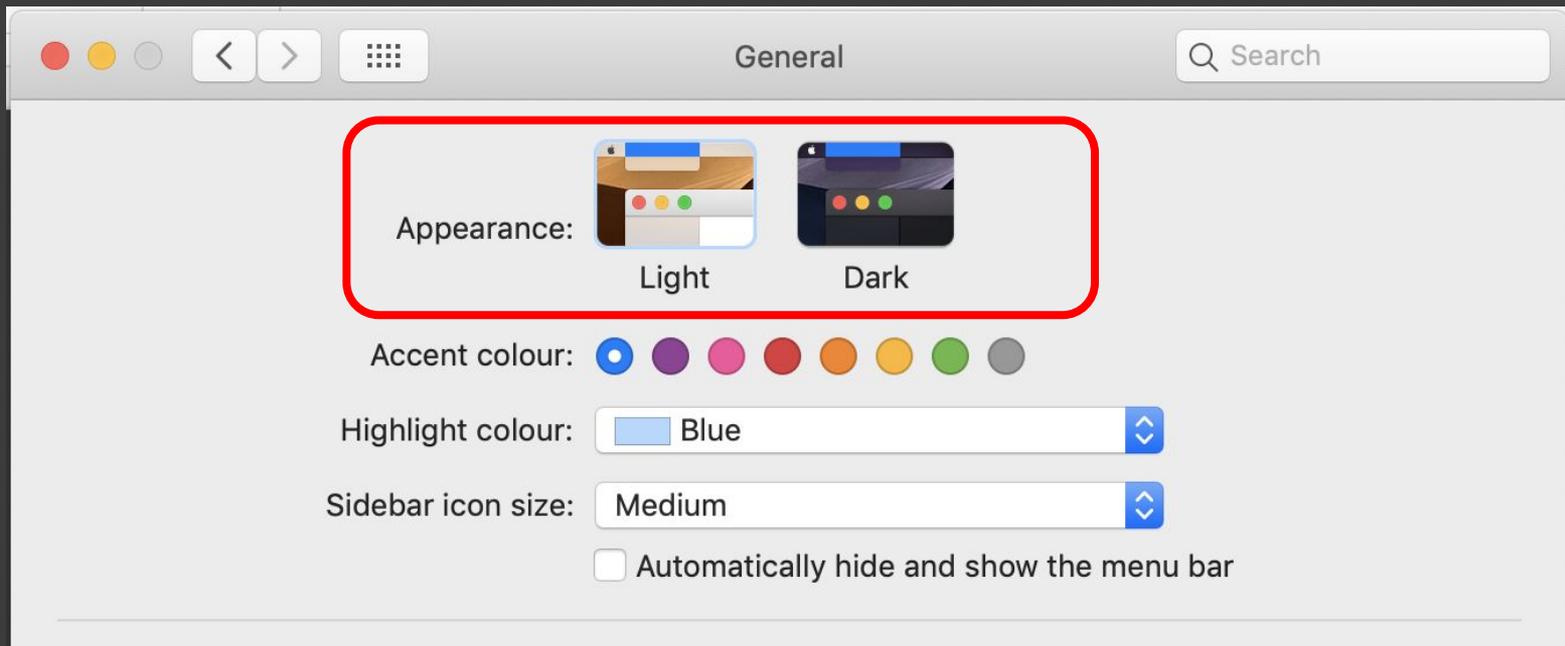
[@ChromeDevTools](#)

[@nimODota](#)

life of a feature

life of a (small) feature

color scheme emulation



Emulate CSS media type

Forces media type for testing print and screen styles

No emulation ▼

Emulate CSS media feature prefers-color-scheme

Forces CSS prefers-color-scheme media feature

✓ No emulation

prefers-color-scheme: light

prefers-color-scheme: dark

prefers-reduced-motion

Forces CSS prefers-reduced-motion media feature

No emulation ▼

architecture

```
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta http-equiv="Content-Security-Policy" content="...">
  <meta name="referrer" content="no-referrer">
  <script src="Runtime.js"></script>
  <script src="devtools_app.js"></script>
</head>
<body class="undocked" id="-blink-dev-tools"></body>
</html>
```

~300k LoC JS
~18k LoC CSS

```
{
  // ....
  "dependencies": [
    "components",
    "data_grid",
    "object_ui",
    "sdk",
    "formatter"
  ],
  "scripts": [],
  "modules": [
    "console.js", "console-legacy.js",
    "ConsoleContextSelector.js", "ConsoleFilter.js",
    "ConsolePinPane.js", "ConsoleSidebar.js",
    "ConsoleViewport.js", "ConsoleViewMessage.js", "ConsolePrompt.js",
    "ConsoleView.js", "ConsolePanel.js"
  ],
  "resources": [
    "consoleContextSelector.css",
    "consolePinPane.css",
    "consolePrompt.css",
    "consoleSidebar.css",
    "consoleView.css"
  ]
}
```

DevTools Frontend



Chrome



DevTools Frontend



Browser

Network, ...



DevTools Frontend



Browser

Network, ...



Renderer

CSS, Elements, ...



DevTools Frontend



Browser

Network, ...



Renderer

CSS, Elements, ...



V8

JS Debugger, Profiling, ...



DevTools Frontend



Browser
Network, ...



Renderer
CSS, Elements, ...



V8
JS Debugger, Profiling, ...



DevTools Frontend

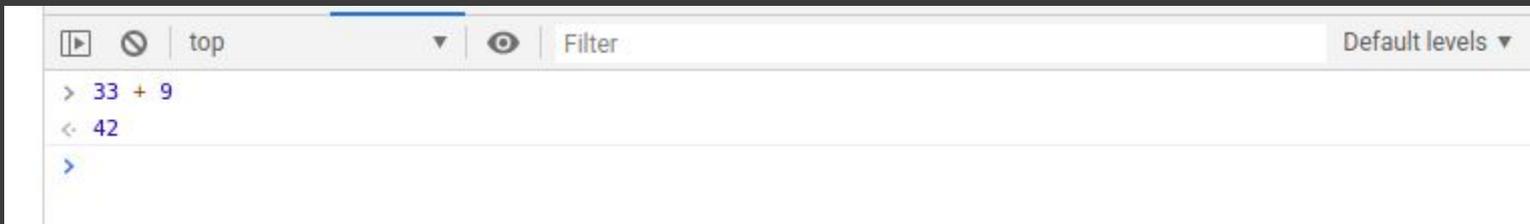


top Filter Default levels

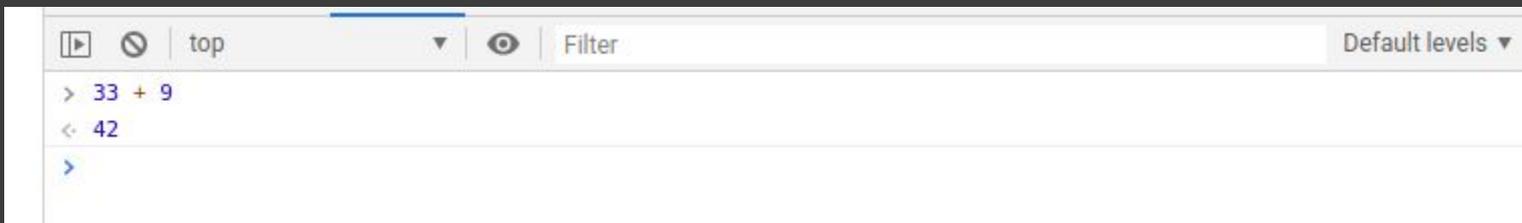
> 33 + 9

< 42

>



```
Runtime.evaluate({  
  expression: '33 + 9',  
  objectGroup: 'console',  
  contextId: 15,  
  // ...  
});
```



```
Runtime.evaluate({  
  expression: '33 + 9',  
  objectGroup: 'console',  
  contextId: 15,  
  // ...  
});  
  
{  
  result: {  
    type: 'number',  
    value: 42,  
    description: '42',  
  }  
}
```

Browser
Network, ...



Renderer
CSS, Elements, ...



V8
JS Debugger, Profiling, ...



DevTools Frontend





Browser

Network, ...



Renderer

CSS, Elements, ...



V8

JS Debugger, Profiling, ...



Browser
Network, ...



Renderer
CSS, Elements, ...



V8
JS Debugger, Profiling, ...



Puppeteer



what about our feature?

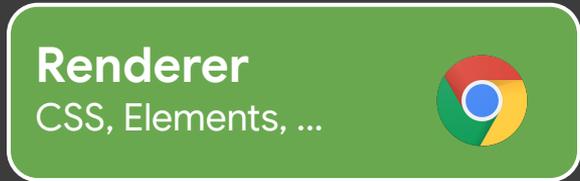


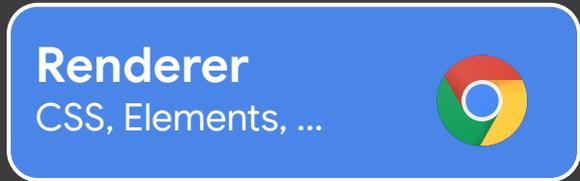
design doc

design doc

*goo.gl/devtools-dark-mode

@nimODota





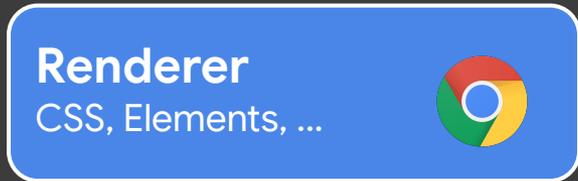
```
# Emulates the given media for CSS media queries.  
command setEmulatedMedia  
  parameters  
    # Media type to emulate.  
    string media
```

```
type MediaFeature extends object
  properties
    string name
    string value
```

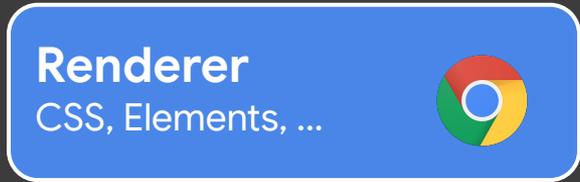
```
# Emulates the given media for CSS media queries.
command setEmulatedMedia
  parameters
    # Media type to emulate.
    string media
```

```
type MediaFeature extends object
  properties
    string name
    string value

# Emulates the given media for CSS media queries.
command setEmulatedMedia
  parameters
    # Media type to emulate.
    optional string media
    # Media features to emulate.
    optional array of MediaFeature features
```



```
Emulation.setEmulatedMedia({  
  features: [{  
    name: 'prefers-color-scheme',  
    value: 'dark',  
  }],  
});
```

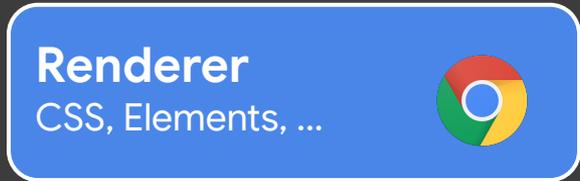


```
updateCssMedia() {
```

```
}
```

```
_updateCssMedia() {  
  const media = this._mediaConfiguration.get('type');  
  const features = [  
    {  
      name: 'prefers-color-scheme',  
      value: this._mediaConfiguration.get('prefers-color-scheme'),  
    },  
    // Other emulated features ...  
  ];  
  
}
```

```
_updateCssMedia() {  
  const media = this._mediaConfiguration.get('type');  
  const features = [  
    {  
      name: 'prefers-color-scheme',  
      value: this._mediaConfiguration.get('prefers-color-scheme'),  
    },  
    // Other emulated features ...  
  ];  
  this._emulationAgent.setEmulatedMedia(media, features);  
}
```



Demo

Browser window showing a webpage with the text "Hi there!" and "I'm your cool new webpage. Made with [Glitch!](#)". The browser address bar shows "dark-mode-lightning-talk.gitich.me".

The browser's developer tools are open, showing the **Elements** panel with the following CSS code:

```
element.style {  
}  
  
body {  
  font-family: "Benton Sans", "Helvetica Neue",  
              helvetica, arial, sans-serif;  
  margin: 2em;  
}
```

The **Styles** panel shows the following styles for the selected element:

- margin: 32px
- border: 1px solid black
- padding: 750px 78.438px

The **Rendering** panel is open, showing the following settings:

- Emulate CSS media type: No emulation
- Emulate CSS media feature prefers-color-scheme: prefers-color-scheme: light
- Emulate CSS media feature prefers-reduced-motion: No emulation

V8 JavaScript engine x +

v8.dev

DevTools - devtools://devtools/bundled/devtools_app.html?remoteBase=https://chrome...

Elements Console Sources Network Performance >> 2

EmulationModel.js x

```

184   this._touchConfiguration.configuration === configuration.configuration
185   return;
186 }
187
188   this._touchConfiguration = configuration;
189   this._emulationAgent.setTouchEmulationEnabled(configuration.enabled, 1);
190   this._emulationAgent.setEmitTouchEventForMouse(configuration.enabled, con
191 }
192
193   _updateCssMedia() {
194     // See the note above, where this._mediaConfiguration is defined.
195     const type = this._mediaConfiguration.get('type');
196     const features = [
197       {
198         name: 'prefers-color-scheme',
199         value: this._mediaConfiguration.get('prefers-color-scheme'),
200       },
201     ],
202   }

```

Line 195, Column 23 Coverage: n/a

Scope Watch

Function	File
_updateCssMedia	EmulationModel.js:195
(anonymous)	EmulationModel.js:49
dispatchEventToListeners	Object.js:128
set	Settings.js:362
selectChanged	SettingsUI.js:101

Local

- features: undefined
- this: EmulationModel
- type: undefined

Module

Global Window

Debugger Elements Console Sources Network Performance >> 1

html.js.dark body

Styles Event Listeners DOM Breakpoints Properties Accessibility

Filter :hov .cls +

element.style {

```

}
#header, body {
padding: 0 1em;
}
body {
max-width: 860px;
margin: 0 auto;

```

margin -

border -

padding -

16 798 x 1955 16

Console What's New Rendering x

Emulate CSS media type
Forces media type for testing print and screen styles

No emulation

Emulate CSS media feature prefers-color-scheme
Forces CSS prefers-color-scheme media feature

prefers-color-scheme: light

Emulate CSS media feature prefers-reduced-motion
Forces CSS prefers-reduced-motion media feature

No emulation

Emulate CSS media type

Forces media type for testing print and screen styles

No emulation ▾

Emulate CSS media feature prefers-color-scheme

Forces CSS prefers-color-scheme media feature

✓ No emulation

prefers-color-scheme: light

prefers-color-scheme: dark

prefers-reduced-motion

Forces CSS prefers-reduced-motion media feature

*actually implemented by @mathias

Renderer
CSS, Elements, ...



Puppeteer



Puppeteer

```
/**
 * @param {?Array<MediaFeature>} features
 */
async emulateMediaFeatures(features) {
  if (Array.isArray(features)) {
    features.every(mediaFeature => {
      const name = mediaFeature.name;
      assert(/^prefers-(?:color-scheme|reduced-motion)$/ .test(name),
        'Unsupported media feature: ' + name);
      return true;
    });
  }
  await this._client.send(
    'Emulation.setEmulatedMedia', {features});
}
```

```
await page.emulateMediaFeatures([{  
  name: 'prefers-color-scheme',  
  value: 'dark',  
}]);
```

```
const puppeteer = require('puppeteer');

(async () => {
  const browser = await puppeteer.launch();
  const page = await browser.newPage();
  await page.goto('https://v8.dev/blog/10-years');

  // Create screenshots of your web app in Light Mode and Dark Mode.
  // Tip: check out `npx dark-mode-screenshot` for more options!

  await page.emulateMediaFeatures([{
    name: 'prefers-color-scheme', value: 'light' }]);
  await page.screenshot({ path: 'light.png', fullPage: true });

  await page.emulateMediaFeatures([{
    name: 'prefers-color-scheme', value: 'dark' }]);
  await page.screenshot({ path: 'dark.png', fullPage: true });

  await browser.close();
})();
```

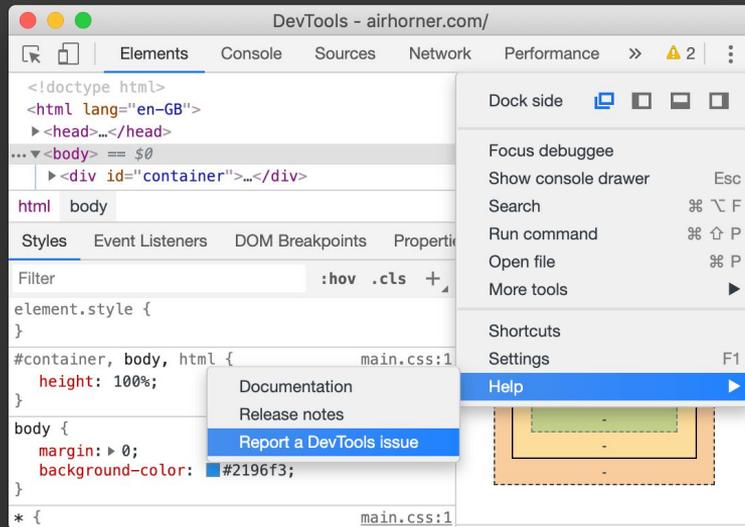
Contribute?

Source

chromium.googlesource.com/devtools/devtools-frontend

@ChromeDevTools

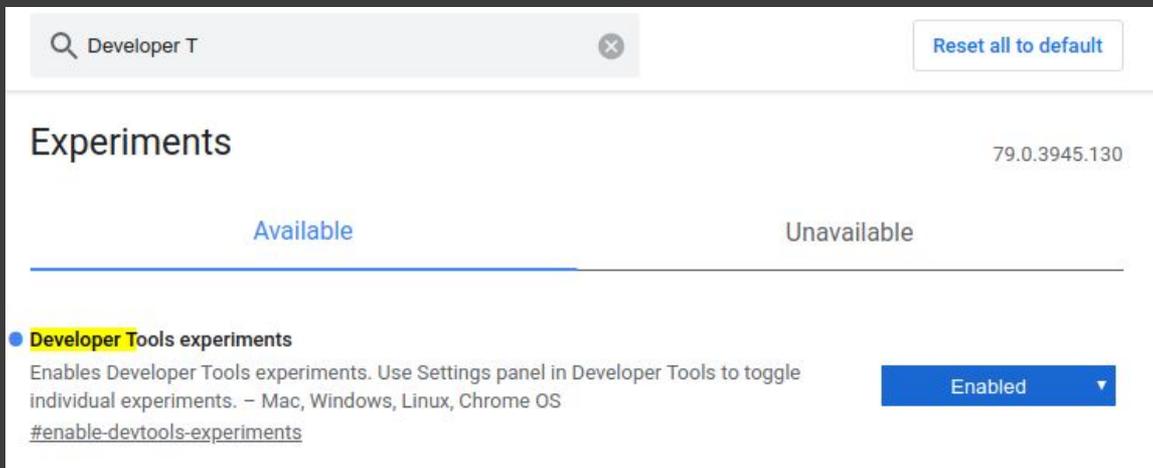
crbug.com/new



what's new?

How to turn on experimental features in DevTools

Visit `chrome:flags` or `about:flags`



The screenshot shows the Chrome DevTools Experiments page. At the top, there is a search bar containing 'Developer T' and a 'Reset all to default' button. Below the search bar, the page title is 'Experiments' with the version number '79.0.3945.130'. A progress bar indicates the status of experiments, with 'Available' on the left and 'Unavailable' on the right. The 'Developer Tools experiments' flag is highlighted in yellow and is currently set to 'Enabled'. The description for this flag reads: 'Enables Developer Tools experiments. Use Settings panel in Developer Tools to toggle individual experiments. – Mac, Windows, Linux, Chrome OS'. A link to '#enable-devtools-experiments' is provided below the description.

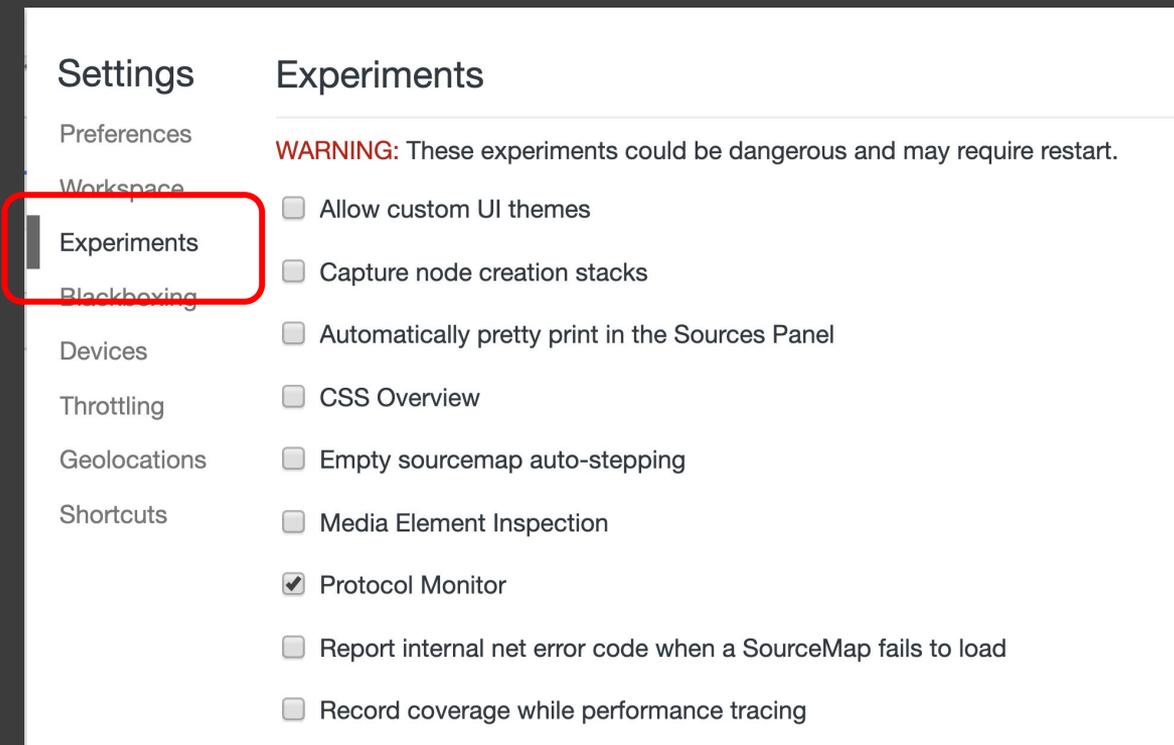
Developer T Reset all to default

Experiments 79.0.3945.130

Available Unavailable

- Developer Tools experiments**
Enables Developer Tools experiments. Use Settings panel in Developer Tools to toggle individual experiments. – Mac, Windows, Linux, Chrome OS
[#enable-devtools-experiments](#) Enabled

How to turn on experimental features in DevTools



The screenshot shows the DevTools Settings interface. On the left, a sidebar lists various settings categories: Preferences, Workspace, Experiments (highlighted with a red box), Blackboxing, Devices, Throttling, Geolocations, and Shortcuts. The main content area is titled 'Experiments' and contains a warning message: 'WARNING: These experiments could be dangerous and may require restart.' Below the warning, there is a list of experimental features, each with a checkbox:

- Allow custom UI themes
- Capture node creation stacks
- Automatically pretty print in the Sources Panel
- CSS Overview
- Empty sourcemap auto-stepping
- Media Element Inspection
- Protocol Monitor
- Report internal net error code when a SourceMap fails to load
- Record coverage while performance tracing

timezone emulation

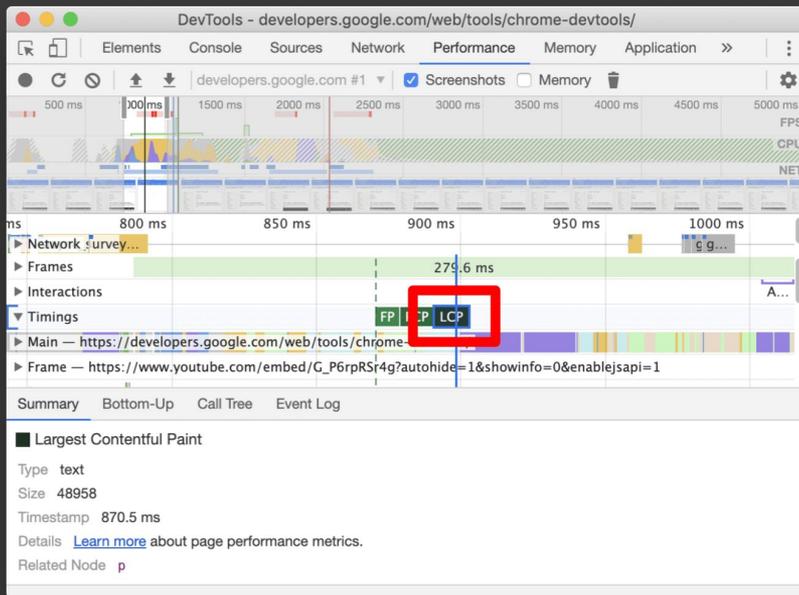
demo

The image shows a Chrome browser window with a 'Schedule timezone' page. The page has a header with 'Schedule', 'About', 'Settings', and 'FAQs'. Below the header are two buttons: 'Vinh time (UTC+8)' and 'Hue time (UTC+7)'. The main content area shows a calendar for 'NOV 11' at '8:50 pm' with an 'Info' link. Below the calendar are two article cards: 'Keynote' and 'Protecting users on a thriving web'. The developer console is open on the right, showing a 'Sensors' tab with a 'Message' event. The event data includes 'Destination: Moscow', 'Latitude: 36.70833', 'Longitude: 37.5173', and 'Timezone-ID: Europe/Moscow'. The 'Geolocation' tab is also visible, showing 'Geolocation: Off' and 'Device-based' as the source.

Largest Contentful Paint

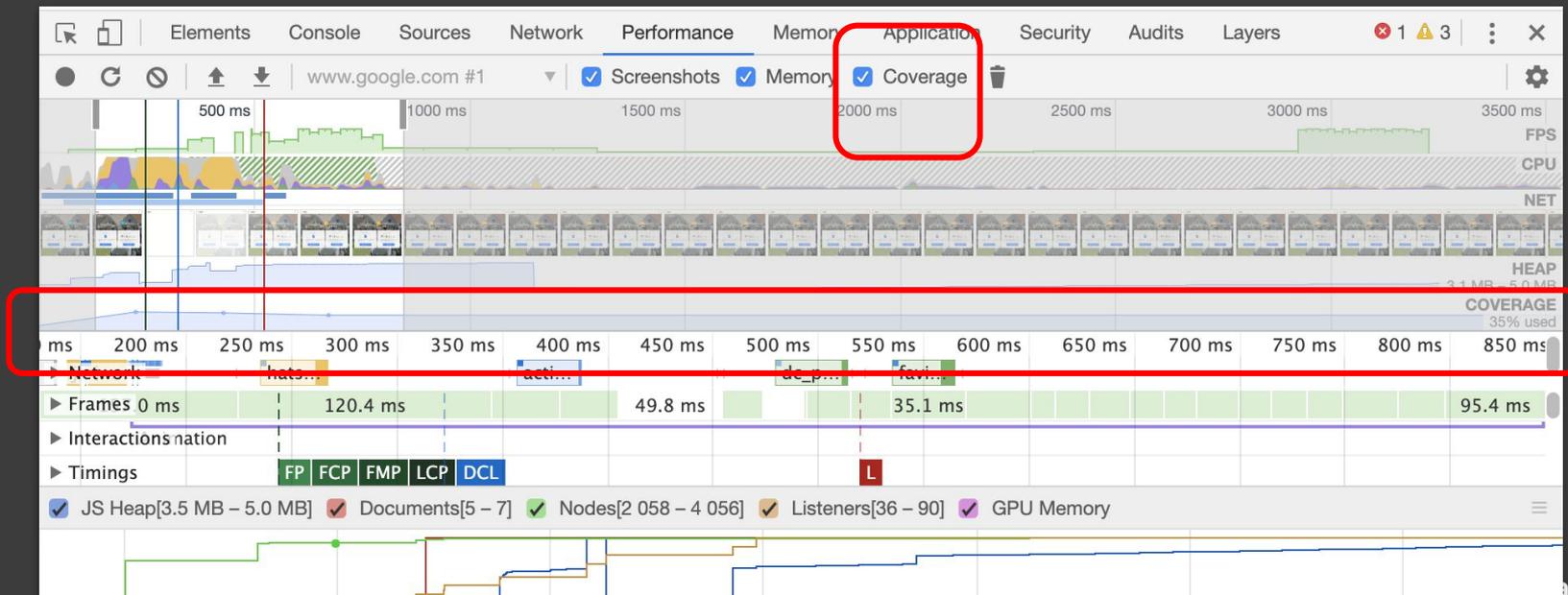
web.dev/metrics

web.dev/lcp



Code coverage on the Performance panel

Ship the right amount of code at the right time.



Code coverage improvements

Coverage summary is displayed directly on the Source panel.

Coverage can be exported as JSON

The screenshot shows the Chrome DevTools Source panel with a JavaScript file open. The code is as follows:

```
1 try {
2   var f, h = function() {
3     !aaa && baa && (aaa = baa());
4     return aaa
5   }, aa = function(a) {
6     for (var b = a.length; 0 <= --b; )
7       a[b] = 0
8   }, caa = function(a, b, c, d, e) {
9     this.KV = a;
10    this.O4 = b;
11    this.N4 = c;
12    this.E4 = d;
13    this.X8 = e;
14    this.qR = a && a.length
15  }, daa = function(a, b) {
16    this.eP = a;
17    this.Kt = 0;
18    this.Gp = b
19  }, ba = function(a, b) {
20    a.Kfa.be() = b.f.355;
21  }
```

The coverage summary at the bottom right of the source editor shows: Coverage: 47.0 %

The table below the source editor shows the following data:

URL	Type	Total Bytes	Unused Bytes	Usage Visualization
https://hangouts.google.com/_/.../m=b,bst,c,ca,cnv,md,r	JS (pe...	2 197 324	1 164 101	53.0 %
/m=Av2a7c,CTcde,J03Die,MMhUM,MigGy,NVcOs,PZHdZ	JS (pe...	1 009 245	742 560	73.6 %
https://www.gstatic.com/_/voice/_js/k=voi.../m=preload	JS (pe...	1 704 345	739 222	43.4 %
/m=B00Vac,DUNnfe,PKSrie,VtSfic,ZdOxDb,ZsSbP,atv,nX	JS (pe...	870 122	734 792	84.4 %

20.5 MB of 29.0 MB (71%) used so far. 8.5 MB unused.



top



Filter

Default levels ▼

```
> let doc = widow.document
```

```
✖ ▶ Uncaught ReferenceError: widow is not defined  
   at <anonymous>:1:11
```

```
> |
```



top



Filter

Default levels ▾

```
> let doc = widow.document
```

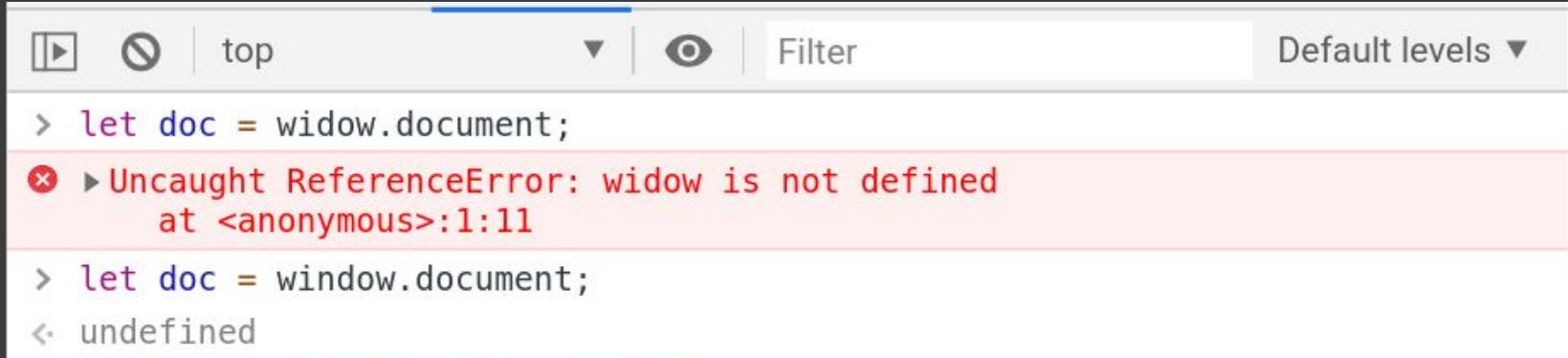
```
✘ ▶ Uncaught ReferenceError: widow is not defined  
    at <anonymous>:1:11
```

```
> let doc = window.document
```

```
✘ ▶ Uncaught SyntaxError: Identifier 'doc' has already been declared  
    at <anonymous>:1:1
```

```
>
```

let and class - redeclaration



The screenshot shows a browser's developer console with the following content:

```
> let doc = widow.document;  
✖ ▶ Uncaught ReferenceError: widow is not defined  
   at <anonymous>:1:11  
  
> let doc = window.document;  
< undefined
```

The error message is highlighted in red. The console interface includes a top bar with a play button, a refresh button, a dropdown menu showing 'top', a search icon, a 'Filter' input field, and a 'Default levels' dropdown.

top-level `await` improvements

```
> await fetch("https://agent.sh/");  
< ▶ Response {type: "basic", url: "https://agent.sh/", redirected: false, status: 200, ok: true, ...}  
>
```

Experimental: CSS Overview

The screenshot shows the 'CSS Overview' tool in a browser's developer console. The left sidebar contains a navigation menu with 'Overview summary' selected. The main area displays a table of CSS statistics and a 'Colors' section with a grid of color swatches.

Elements	External stylesheets	Inline style elements	Style rules
5,159	1	7	12,033
Media queries	Type selectors	ID selectors	Class selectors
23	25	21	9,747
Universal selectors	Attribute selectors	Non-simple selectors	
1	5	246	

Colors

Background colors:17

#FFFFFF	#FFFFFFE0	#FFFFFF4D	#FFFFFFE6	#F2F5F5CC	#F1F3F43D	#F9EDBE	#DDDDDD
#BBBBBB	#35AC19	#E37400	#16A765	#4D90F0	#A142F4	#D93025	#C5221F

Vertical alignment applied to element which is neither inline nor table-cell × >>

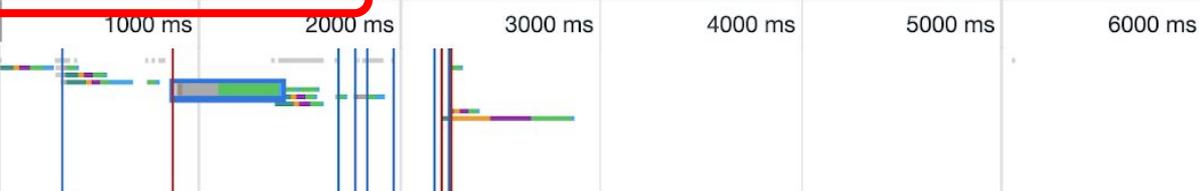
what's to come?

Elements Console Sources Network >> 4 3

Filter Hide data URLs

All XHR JS CSS Img Media Font Doc WS Manifest Other

Has blocked cookies



Name Headers Preview Response Cookies >>

iframe?widget_n...
 widget.json?wid...
 widget.json?wid...
 iframe?widget_n...
 new.gif?url=100...
 new.gif?url=100...

Request Cookies show filtered out request cookies
No request cookies were sent.

Response Cookies

Name	Value	D.	P.	E.	S.	H.	S.	S.	P.
_ti_to_se...	Zk5FNGFaR1R...	t...	/	S..	3...	✓	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M..

This set-cookie didn't specify a "SameSite" attribute and was defaulted to "SameSite=Lax" and broke the same rules specified in the SameSiteLax value.

Application

- Manifest
- Service Workers
- Clear storage

Storage

- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies
 - https://agent.sh
 - https://ti.to**
 - https://js.stripe.com
 - https://m.stripe.network

Cache

- Cache Storage
- Application Cache

Background Services

- Background Fetch

Application

Filter Only blocked

Name	Value	Domain	P.	E.	S.	H.	S.	S.	P.
__strip...	860acc2...	.ti.to	/	2..	4..				M..
_ti_to_s...	Sk02TF...	ti.to	/	S..	3..	✓			M..
_ti_to_s...	blMyYm...	ti.to	/	S..	2..	✓		i	M..

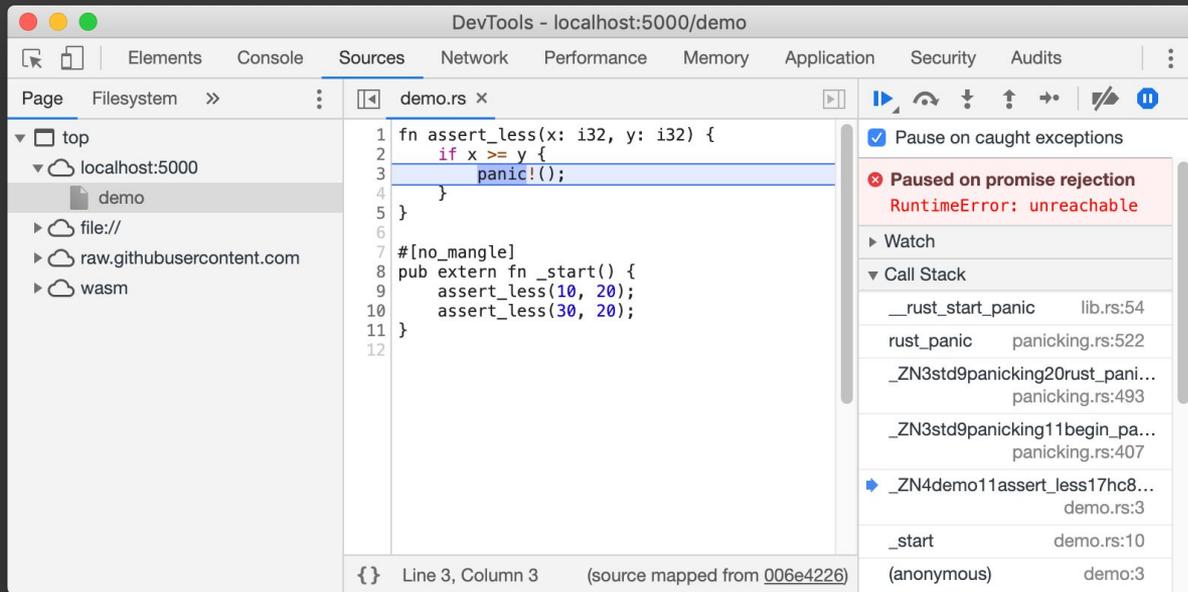
Select a cookie to preview its value

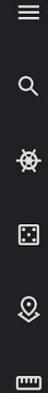
WebAssembly



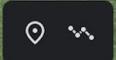
Improved WebAssembly debugging

Improve end-to-end debugging





Spielboden Dornbirn K... X
Färbergasse 15
6850 Dornbirn
47.42°N, 9.74°E



Feature requests? Found a bug?

@ChromeDevTools

crbug.com/new

