

Guia do



Developer Tools

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Desenvolver

- Visualizar e editar o HTML, CSS e JavaScript
- Gerenciar os dados locais (Cookies, Local Storage)
- Simular dispositivos mobile

Debugar

- Smartphone com Android
- JavaScript snippets
- Código minificado
- Breakpoints
- Console

Analisar

- Performance
- Tempo de carregamento
- Uso de CPU
- Uso de memória

Painéis

Elements

Visualização e alteração do layout da página e manipulação do DOM (Document Object Model) em tempo real.

The screenshot displays the browser's developer tools interface. The top panel shows the DOM tree with the following structure:

```
<script async src="//www.google-analytics.com/analytics.js"></script>
  ><script type="text/javascript" id="__bs_script__"></script>
  ><script async src="/browser-sync/browser-sync-client.1.9.2.js"></script>
  ><header class="app-bar promote-layer">...</header>
  ><nav class="navdrawer-container promote-layer">
    ><h4>Menu</h4>
    ><ul>
      ><li>...</li>
    </ul>
  </nav>
```

The selected element is `h4` with the class `navdrawer-container.promote-layer`. The Styles panel shows the following CSS rules:

```
.navdrawer-container h4 {
  background-color: white;
  color: #336706;
}

.navdrawer-container h4, .navdrawer-container ul
li a {
  height: 60px;
  padding: 17px 20px;
  line-height: 1.4;
}

.medium, h4 {
  font-size: 16px;
  line-height: 1.625em;
  padding-top: 1.625em;
  padding-bottom: 0;
}

h1, h2, h3, h4, h5, p {
  margin: 0;
}

*, ::before, ::after {
  box-sizing: border-box;
}

h4 {
  display: block;
  -webkit-margin-before: 1.33em;
```

The Box Model diagram on the right shows a blue box representing the content area with dimensions 210 x 26. The padding is 17px on the top and bottom, and 20px on the left and right. The border is 17px thick. The margin is 20px on the top and bottom, and 20px on the left and right.

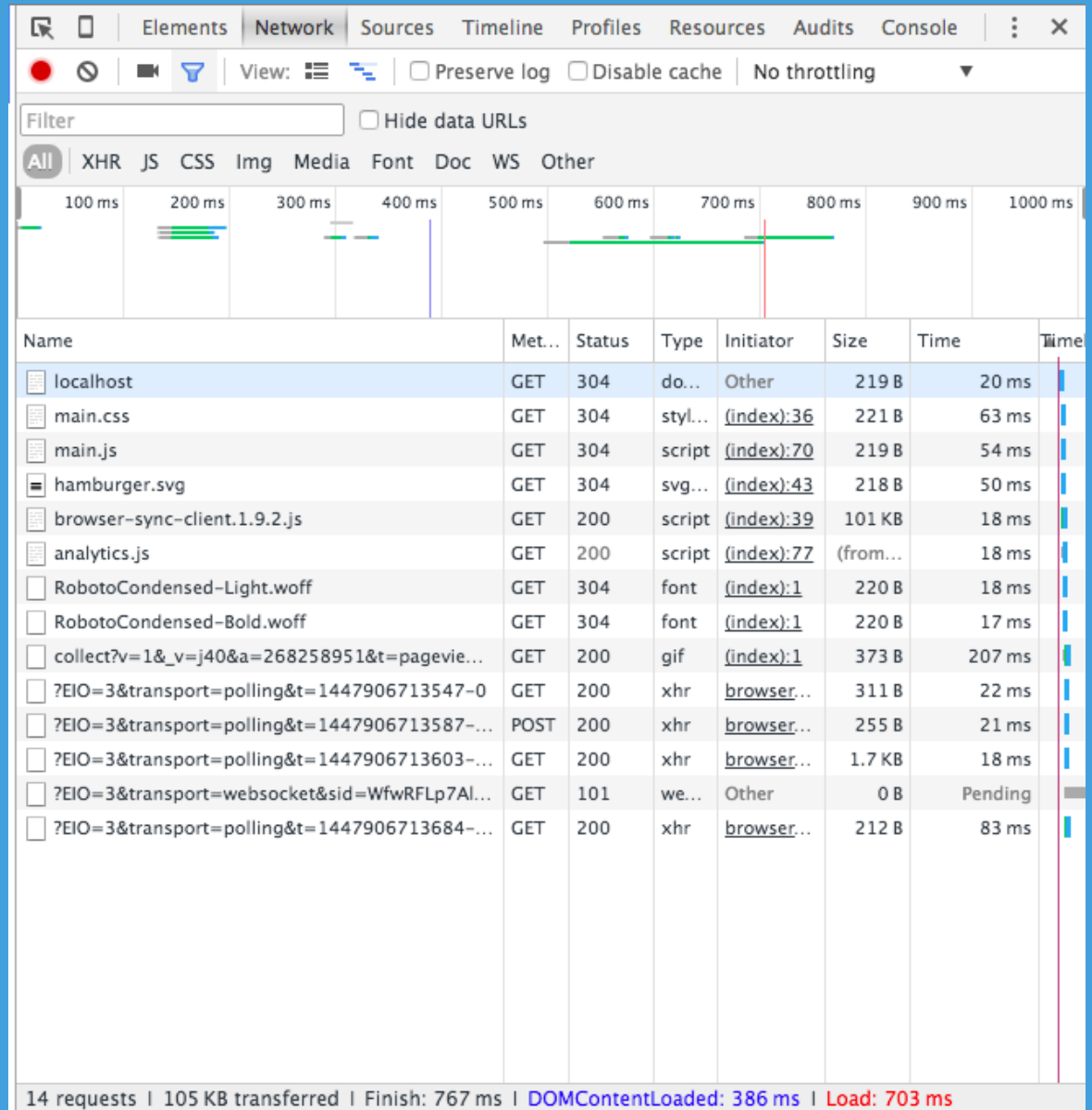
The Filter section shows the following CSS rules:

```
-webkit-app-region: no-drag;
-webkit-appearance: none;
-webkit-background-composite: source-over;
-webkit-border-horizontal-spacing: 0px;
-webkit-border-vertical-spacing: 0px;
-webkit-box-align: stretch;
-webkit-box-decoration-break: slice;
-webkit-box-direction: normal;
-webkit-box-flex: 0;
-webkit-box-flex-group: 1;
-webkit-box-lines: single;
-webkit-box-ordinal-group: 1;
-webkit-box-orient: horizontal;
```

Network

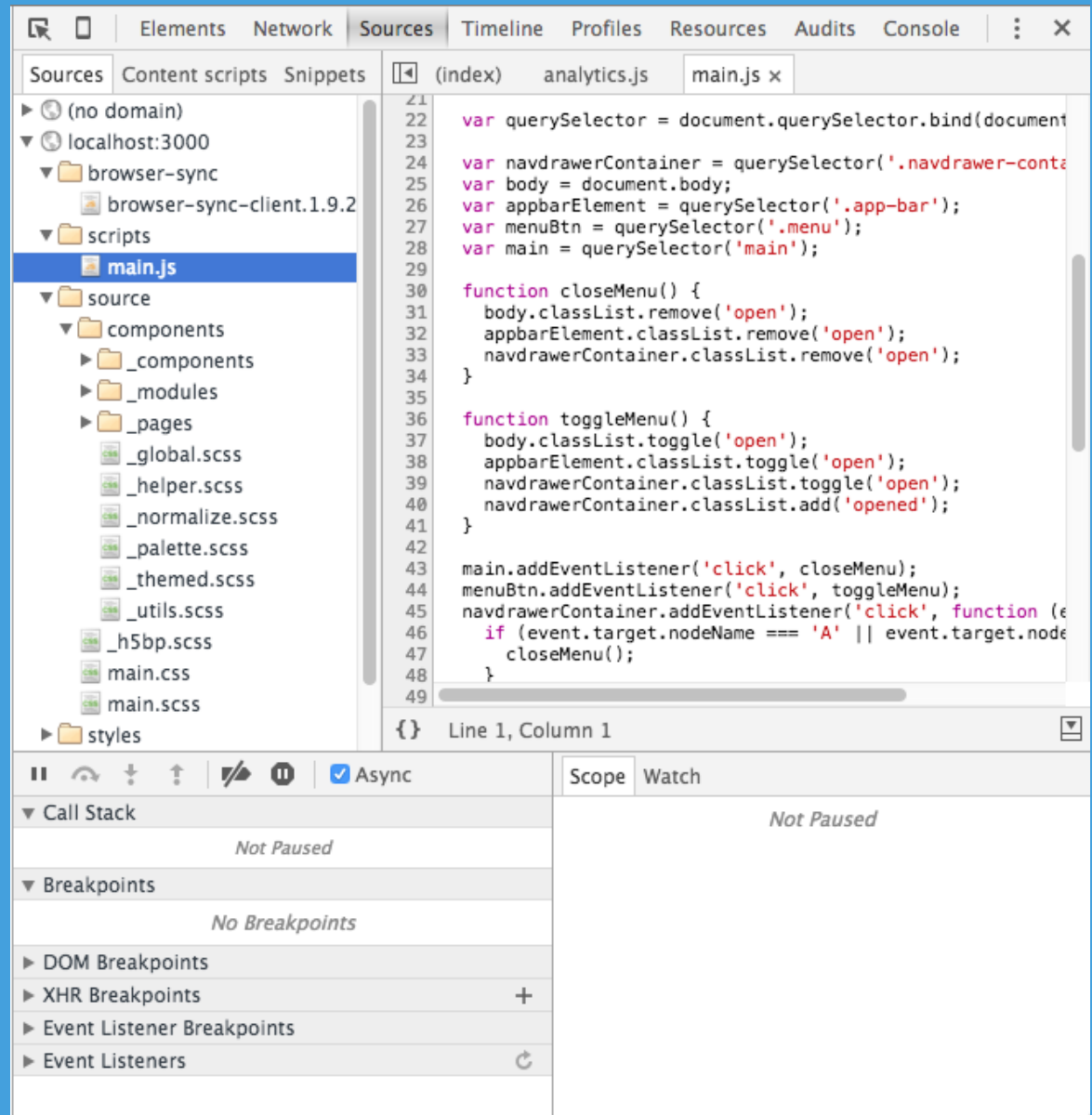
Análise de todas as requisições feitas pela página:

- tempo
- tamanho
- headers
- cookies
- parâmetros



Sources

Visualizar e alterar os arquivos (HTML, CSS, JS) da página. Possui também um debugger.



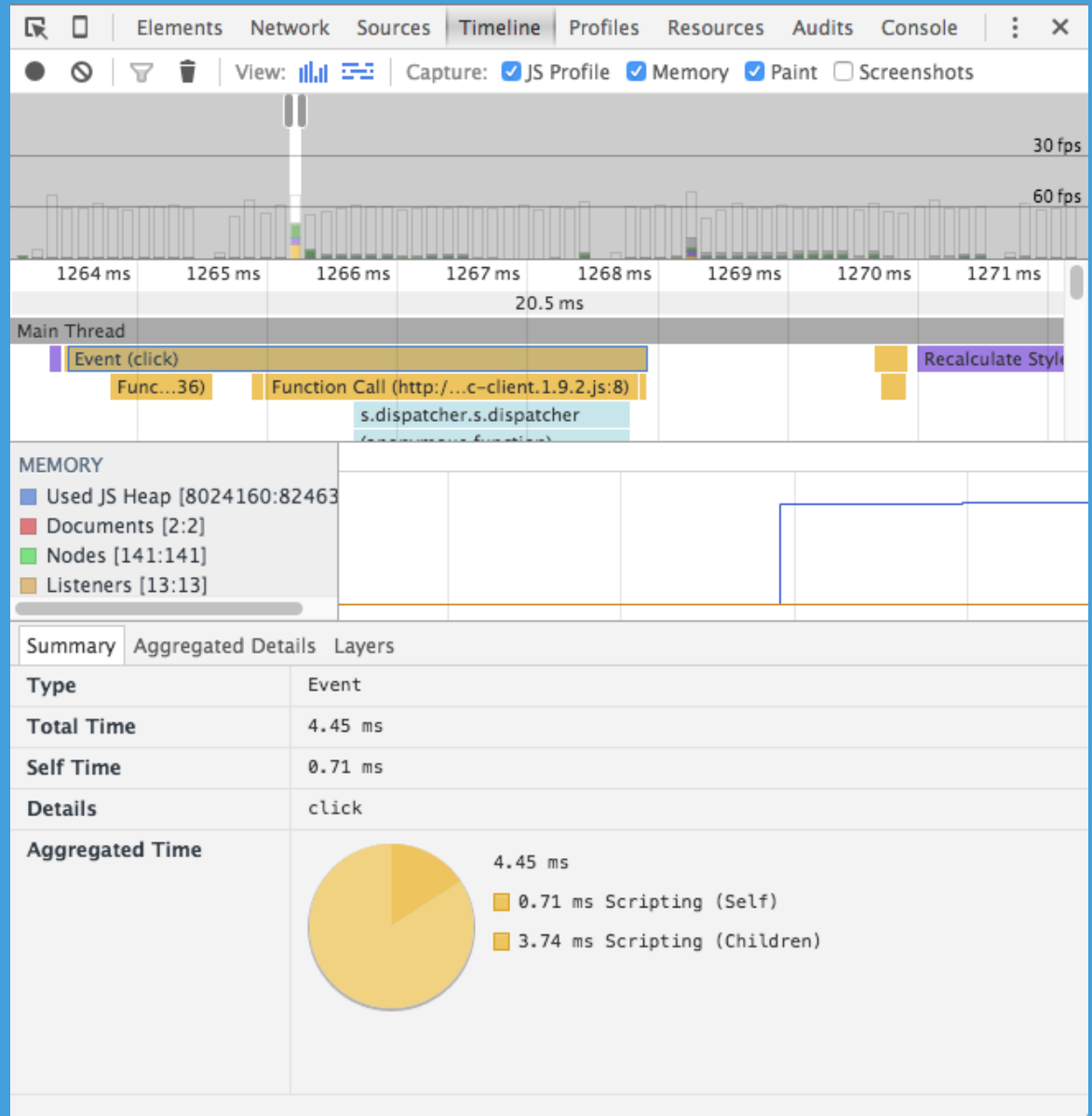
The screenshot displays the Chrome DevTools Sources panel. On the left, a file tree shows the project structure under 'localhost:3000', including folders like 'browser-sync', 'scripts', and 'source', and files like 'main.js', 'main.css', and 'main.scss'. The main editor shows the content of 'main.js', which includes variables for DOM elements and functions for menu control. The code is as follows:

```
21
22 var querySelector = document.querySelector.bind(document)
23
24 var navdrawerContainer = document.querySelector('.navdrawer-conta
25 var body = document.body;
26 var appBarElement = document.querySelector('.app-bar');
27 var menuBtn = document.querySelector('.menu');
28 var main = document.querySelector('main');
29
30 function closeMenu() {
31   body.classList.remove('open');
32   appBarElement.classList.remove('open');
33   navdrawerContainer.classList.remove('open');
34 }
35
36 function toggleMenu() {
37   body.classList.toggle('open');
38   appBarElement.classList.toggle('open');
39   navdrawerContainer.classList.toggle('open');
40   navdrawerContainer.classList.add('opened');
41 }
42
43 main.addEventListener('click', closeMenu);
44 menuBtn.addEventListener('click', toggleMenu);
45 navdrawerContainer.addEventListener('click', function (e
46   if (event.target.nodeName === 'A' || event.target.nod
47     closeMenu();
48 }
49
```

At the bottom, the debugger interface is visible, showing the 'Call Stack' (Not Paused), 'Breakpoints' (No Breakpoints), and 'Event Listeners' sections.

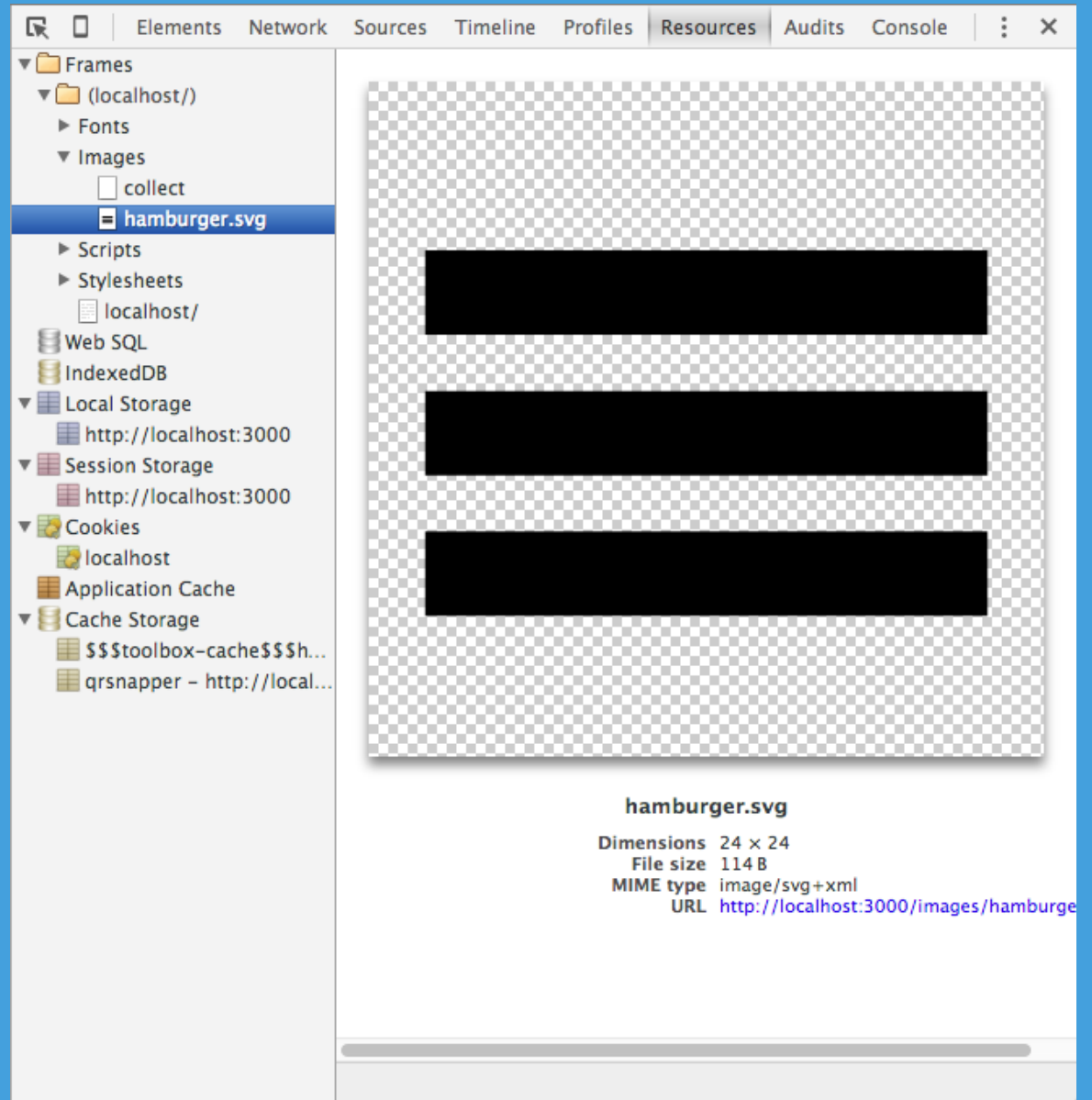
Timeline

Exibe as operações que o navegador executou durante um determinado período de tempo. Pode ser útil para melhorar o desempenho da página.



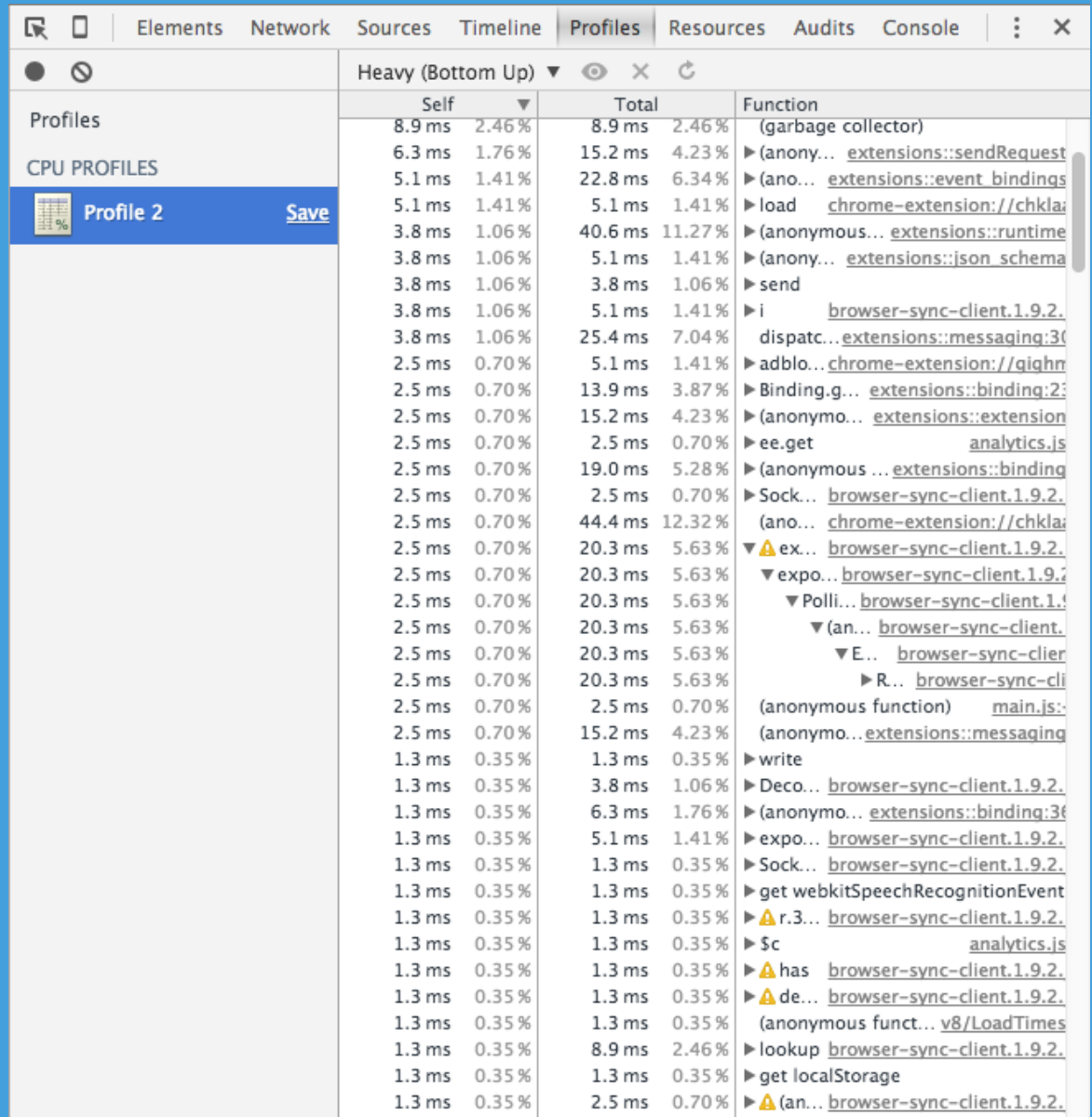
Resources

Permite a visualização de todos os arquivos utilizados pela página e o gerenciamento dos dados locais (Cookies, Local Storage, IndexedDB).



Profiles

Similar ao painel Timeline, porém com mais detalhes, como uso de memória e CPU.

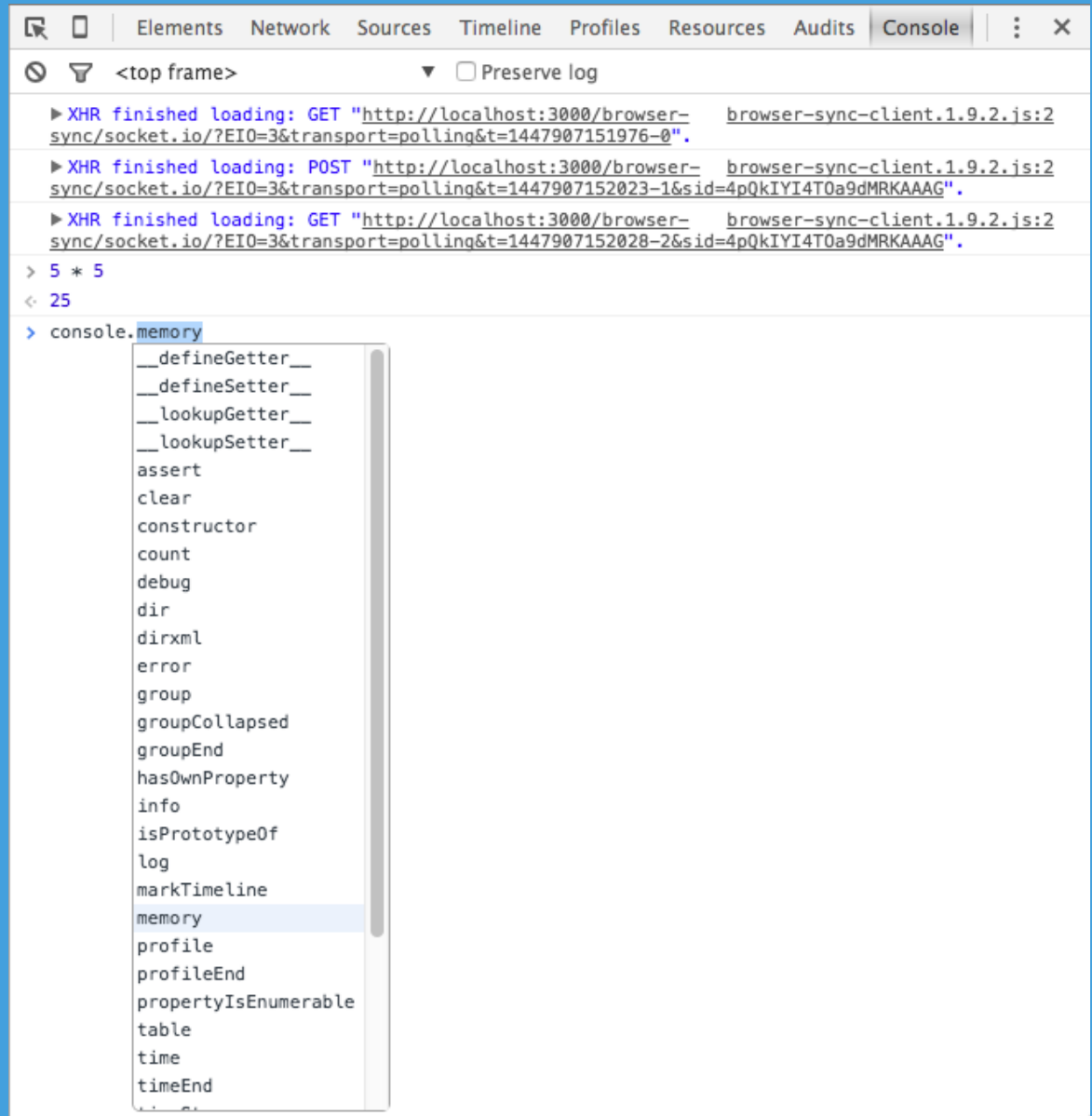


The screenshot shows the Chrome DevTools Profiles panel. The left sidebar shows 'Profiles' with 'CPU PROFILES' and 'Profile 2' selected. The main area displays a table of CPU profiles for 'Heavy (Bottom Up)'. The table has columns for 'Self' (ms and %) and 'Total' (ms and %), and a 'Function' column. The functions listed include '(garbage collector)', 'extensions::sendRequest', 'extensions::event_bindings', 'chrome-extension://chkla...', 'extensions::runtime', 'extensions::json_schema', 'browser-sync-client.1.9.2.', 'extensions::messaging:30', 'chrome-extension://gighr', 'extensions::binding:2', 'extensions::extension', 'analytics.js', 'extensions::binding', 'browser-sync-client.1.9.2.', 'chrome-extension://chkla', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'main.js:', 'extensions::messaging', 'write', 'browser-sync-client.1.9.2.', 'extensions::binding:30', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'webkitSpeechRecognitionEvent', 'browser-sync-client.1.9.2.', 'analytics.js', 'browser-sync-client.1.9.2.', 'browser-sync-client.1.9.2.', 'v8/LoadTimes', 'browser-sync-client.1.9.2.', 'get localStorage', and 'browser-sync-client.1.9.2.'.

	Self	Total	Function
	8.9 ms 2.46%	8.9 ms 2.46%	(garbage collector)
	6.3 ms 1.76%	15.2 ms 4.23%	▶(anony... extensions::sendRequest
	5.1 ms 1.41%	22.8 ms 6.34%	▶(ano... extensions::event_bindings
	5.1 ms 1.41%	5.1 ms 1.41%	▶load chrome-extension://chkla
	3.8 ms 1.06%	40.6 ms 11.27%	▶(anonymous... extensions::runtime
	3.8 ms 1.06%	5.1 ms 1.41%	▶(anony... extensions::json_schema
	3.8 ms 1.06%	3.8 ms 1.06%	▶send
	3.8 ms 1.06%	5.1 ms 1.41%	▶i browser-sync-client.1.9.2.
	3.8 ms 1.06%	25.4 ms 7.04%	dispatc... extensions::messaging:30
	2.5 ms 0.70%	5.1 ms 1.41%	▶adblo... chrome-extension://gighr
	2.5 ms 0.70%	13.9 ms 3.87%	▶Binding.g... extensions::binding:2
	2.5 ms 0.70%	15.2 ms 4.23%	▶(anonymo... extensions::extension
	2.5 ms 0.70%	2.5 ms 0.70%	▶ee.get analytics.js
	2.5 ms 0.70%	19.0 ms 5.28%	▶(anonymous ... extensions::binding
	2.5 ms 0.70%	2.5 ms 0.70%	▶Sock... browser-sync-client.1.9.2.
	2.5 ms 0.70%	44.4 ms 12.32%	(ano... chrome-extension://chkla
	2.5 ms 0.70%	20.3 ms 5.63%	▼ ex... browser-sync-client.1.9.2.
	2.5 ms 0.70%	20.3 ms 5.63%	▼ expo... browser-sync-client.1.9.2.
	2.5 ms 0.70%	20.3 ms 5.63%	▼ Polli... browser-sync-client.1.9.2.
	2.5 ms 0.70%	20.3 ms 5.63%	▼ (an... browser-sync-client.1.9.2.
	2.5 ms 0.70%	20.3 ms 5.63%	▼ E... browser-sync-client.1.9.2.
	2.5 ms 0.70%	20.3 ms 5.63%	▶ R... browser-sync-client.1.9.2.
	2.5 ms 0.70%	2.5 ms 0.70%	(anonymous function) main.js:
	2.5 ms 0.70%	15.2 ms 4.23%	(anonymo... extensions::messaging
	1.3 ms 0.35%	1.3 ms 0.35%	▶write
	1.3 ms 0.35%	3.8 ms 1.06%	▶Deco... browser-sync-client.1.9.2.
	1.3 ms 0.35%	6.3 ms 1.76%	▶(anonymo... extensions::binding:30
	1.3 ms 0.35%	5.1 ms 1.41%	▶expo... browser-sync-client.1.9.2.
	1.3 ms 0.35%	1.3 ms 0.35%	▶Sock... browser-sync-client.1.9.2.
	1.3 ms 0.35%	1.3 ms 0.35%	▶get webkitSpeechRecognitionEvent
	1.3 ms 0.35%	1.3 ms 0.35%	▶ r.3... browser-sync-client.1.9.2.
	1.3 ms 0.35%	1.3 ms 0.35%	▶ \$c analytics.js
	1.3 ms 0.35%	1.3 ms 0.35%	▶ has browser-sync-client.1.9.2.
	1.3 ms 0.35%	1.3 ms 0.35%	▶ de... browser-sync-client.1.9.2.
	1.3 ms 0.35%	1.3 ms 0.35%	(anonymous funct... v8/LoadTimes
	1.3 ms 0.35%	8.9 ms 2.46%	▶lookup browser-sync-client.1.9.2.
	1.3 ms 0.35%	1.3 ms 0.35%	▶get localStorage
	1.3 ms 0.35%	2.5 ms 0.70%	▶ (an... browser-sync-client.1.9.2.

Console

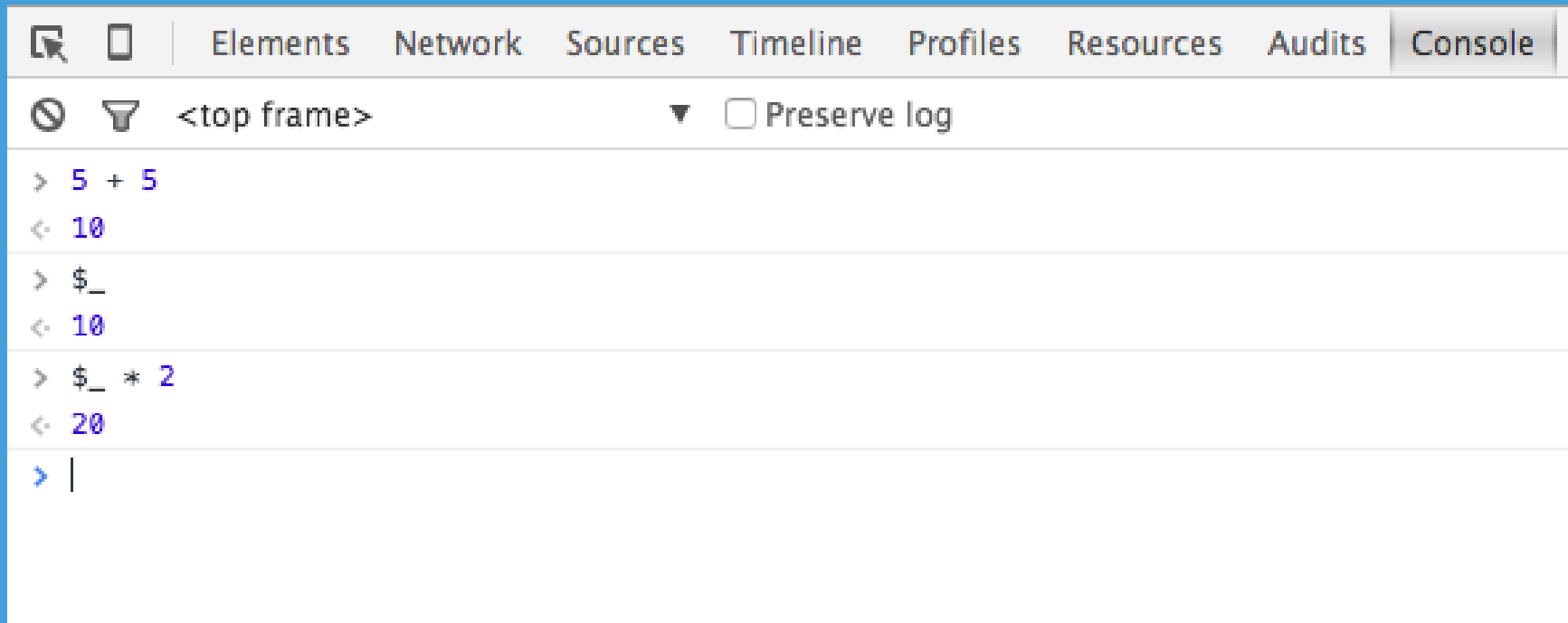
Contém toda a saída de log da aplicação, e também funciona como um REPL. Possui *autocomplete* para nomes de funções e variáveis.



Comandos

\$_

Retorna a última expressão executada no **Console**.

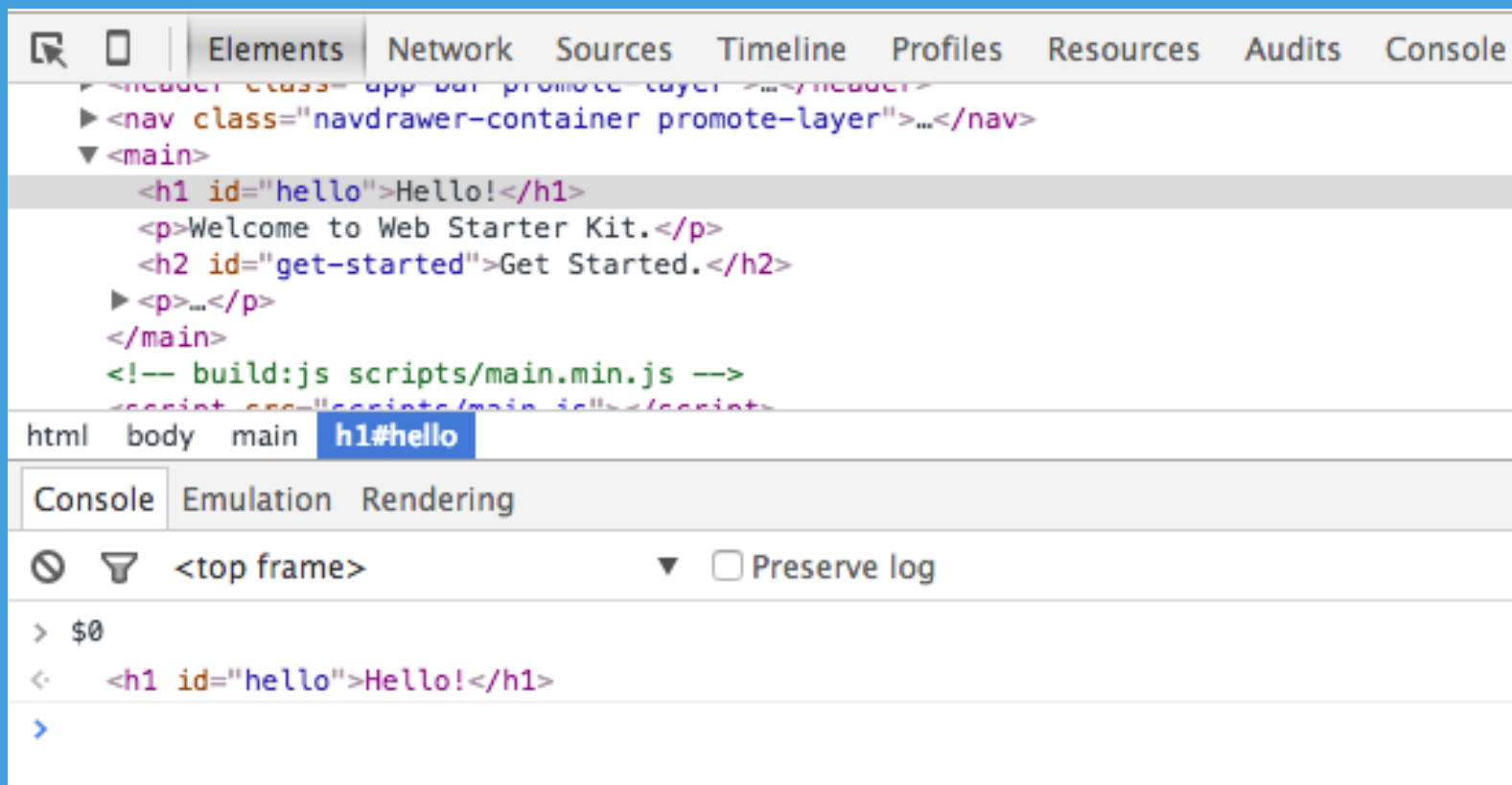


The screenshot shows a browser's developer console with the 'Console' tab selected. The console header includes a filter icon, a funnel icon, the text '<top frame>', a dropdown arrow, and a checkbox labeled 'Preserve log'. The console log contains the following entries:

```
> 5 + 5  
< 10  
> $_  
< 10  
> $_ * 2  
< 20  
> |
```

\$0 - \$4

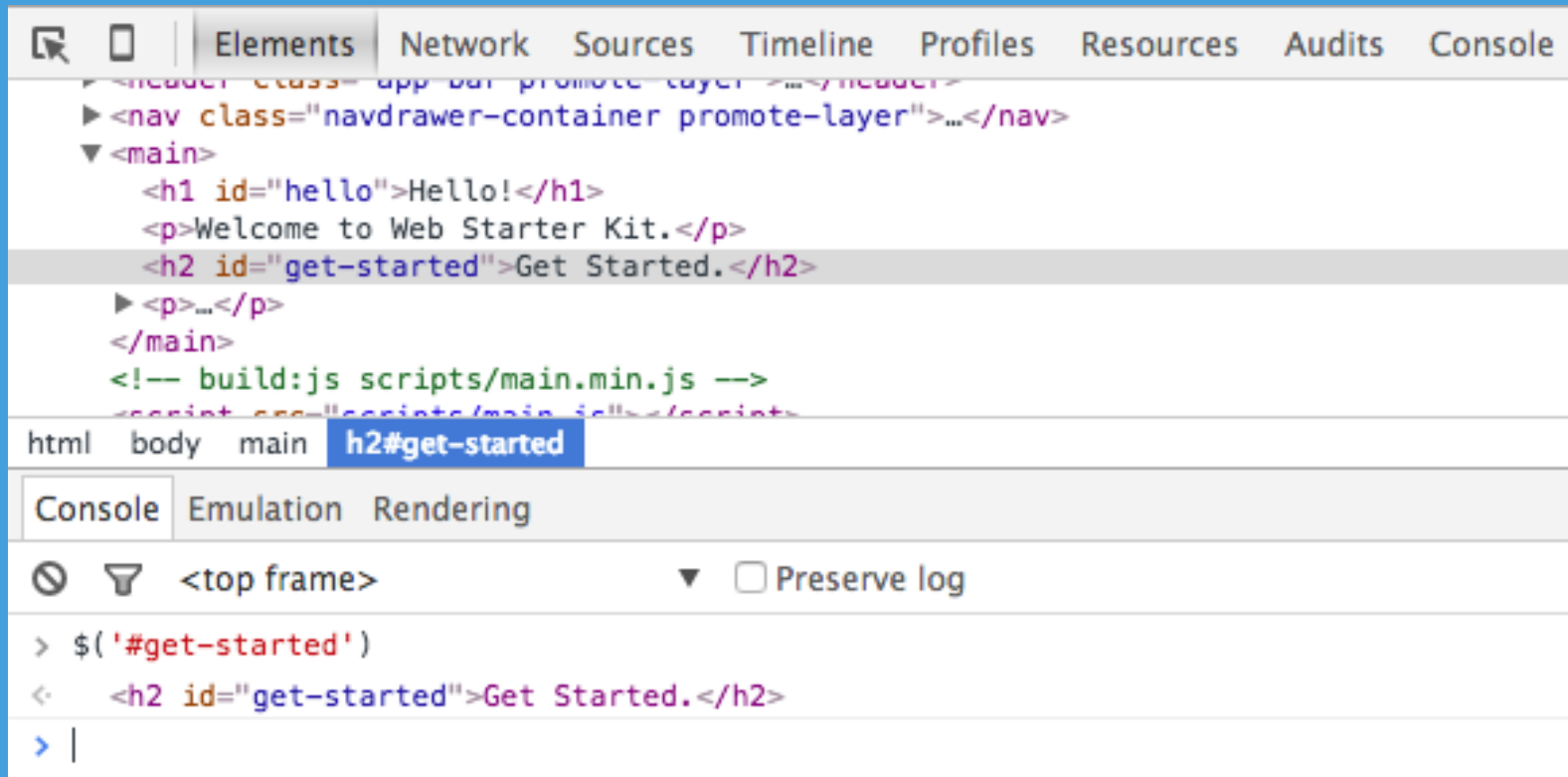
Histórico dos últimos elementos selecionados no painel **Elements** ou no painel **Profiles**



```
Elements | Network | Sources | Timeline | Profiles | Resources | Audits | Console
<header class="app-bar promote-layer">...</header>
  <nav class="navdrawer-container promote-layer">...</nav>
  <main>
    <h1 id="hello">Hello!</h1>
    <p>Welcome to Web Starter Kit.</p>
    <h2 id="get-started">Get Started.</h2>
    <p>...</p>
  </main>
  <!-- build:js scripts/main.min.js -->
  <script src="scripts/main.js"></script>
html | body | main | h1#hello
Console | Emulation | Rendering
<top frame> [v] [ ] Preserve log
> $0
< <h1 id="hello">Hello!</h1>
>
```

\$(seletor)

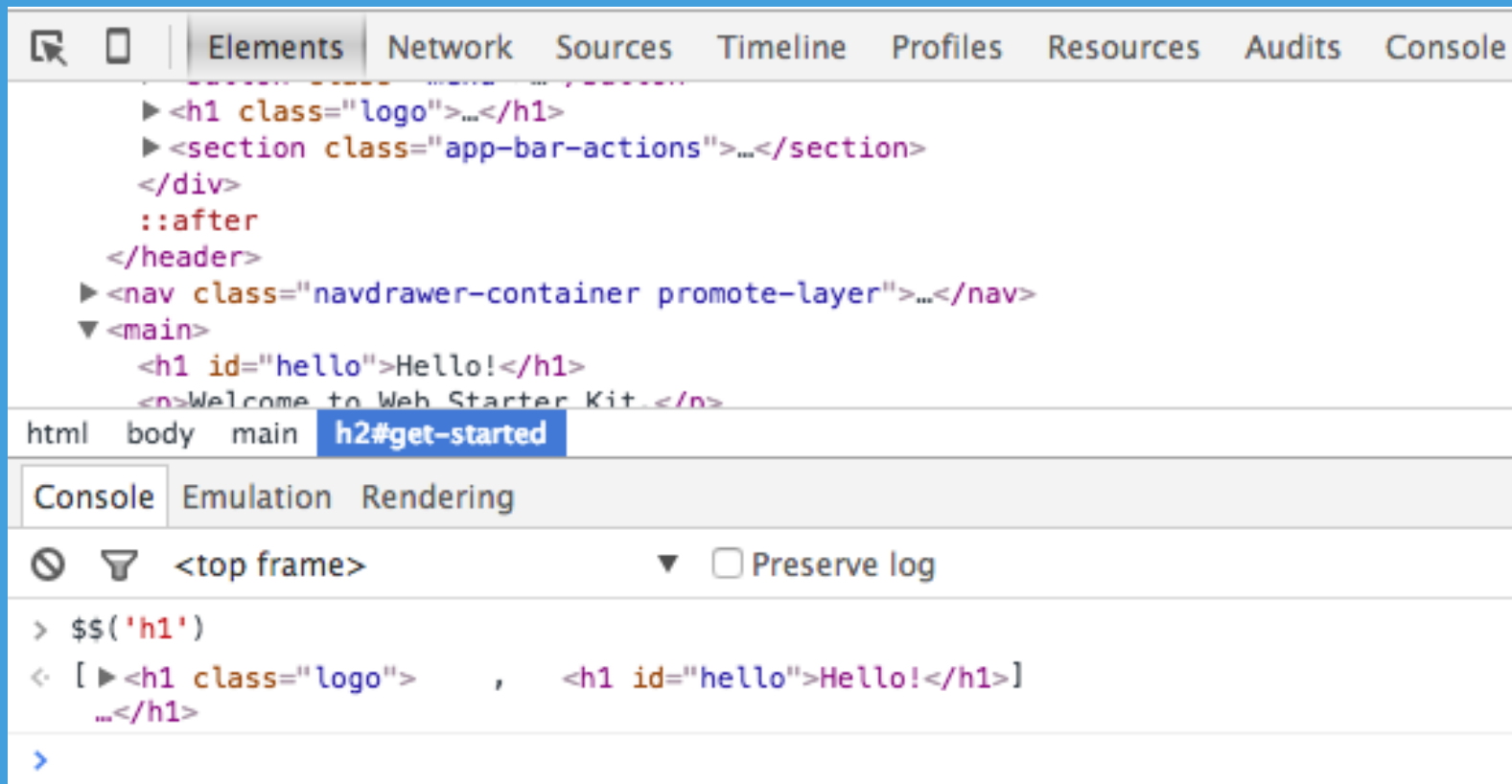
Retorna o primeiro elemento correspondente ao seletor CSS informado



The screenshot shows the Chrome DevTools interface. The top navigation bar includes 'Elements', 'Network', 'Sources', 'Timeline', 'Profiles', 'Resources', 'Audits', and 'Console'. The 'Elements' panel is expanded to show the DOM tree. The selected element is an `<h2 id="get-started">Get Started.</h2>` element. The breadcrumb below the DOM tree shows the path: `html > body > main > h2#get-started`. The 'Console' panel is active, showing the command `> $('#get-started')` and the resulting output: `<h2 id="get-started">Get Started.</h2>`. The breadcrumb for the console output is `> |`.

\$\$(seletor)

Retorna um *array* com os elementos correspondentes ao seletor CSS informado



The screenshot shows the Chrome DevTools interface. The top panel displays the DOM tree with the following structure:

```
<h1 class="logo">...</h1>
<section class="app-bar-actions">...</section>
</div>
::after
</header>
<nav class="navdrawer-container promote-layer">...</nav>
<main>
  <h1 id="hello">Hello!</h1>
  <n>Welcome to Web Starter Kit.</n>
```

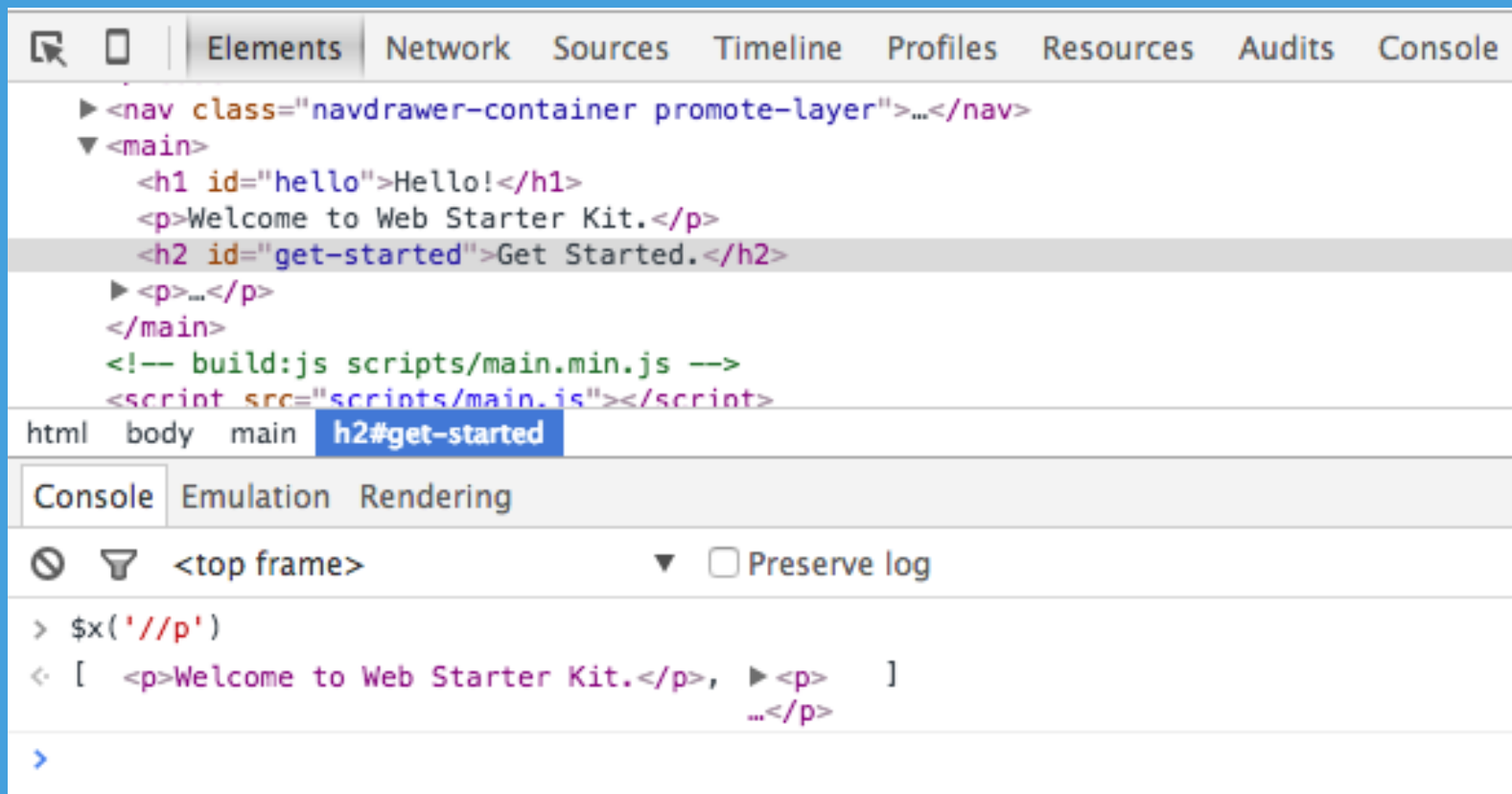
The breadcrumb below the DOM tree shows the path: `html > body > main > h2#get-started`.

The bottom panel shows the Console with the following output:

```
> $$('h1')
< [ <h1 class="logo">...</h1> , <h1 id="hello">Hello!</h1> ]
```

\$x(path)

Retorna um *array* com os elementos correspondentes a expressão *XPath* informada



The screenshot shows the Chrome DevTools interface. The top panel displays the DOM tree with the following structure:

```
<nav class="navdrawer-container promote-layer">...</nav>
<main>
  <h1 id="hello">Hello!</h1>
  <p>Welcome to Web Starter Kit.</p>
  <h2 id="get-started">Get Started.</h2>
  <p>...</p>
</main>
<!-- build:js scripts/main.min.js -->
<script src="scripts/main.js"></script>
```

The breadcrumb below the DOM tree is: `html > body > main > h2#get-started`.

The bottom panel shows the Console with the following output:

```
> $x('//p')
< [ <p>Welcome to Web Starter Kit.</p>, <p>...</p> ]
```

clear()

Limpa o histórico do **Console**

copy(objeto)

Copia o objeto em formato de texto para a área de transferência

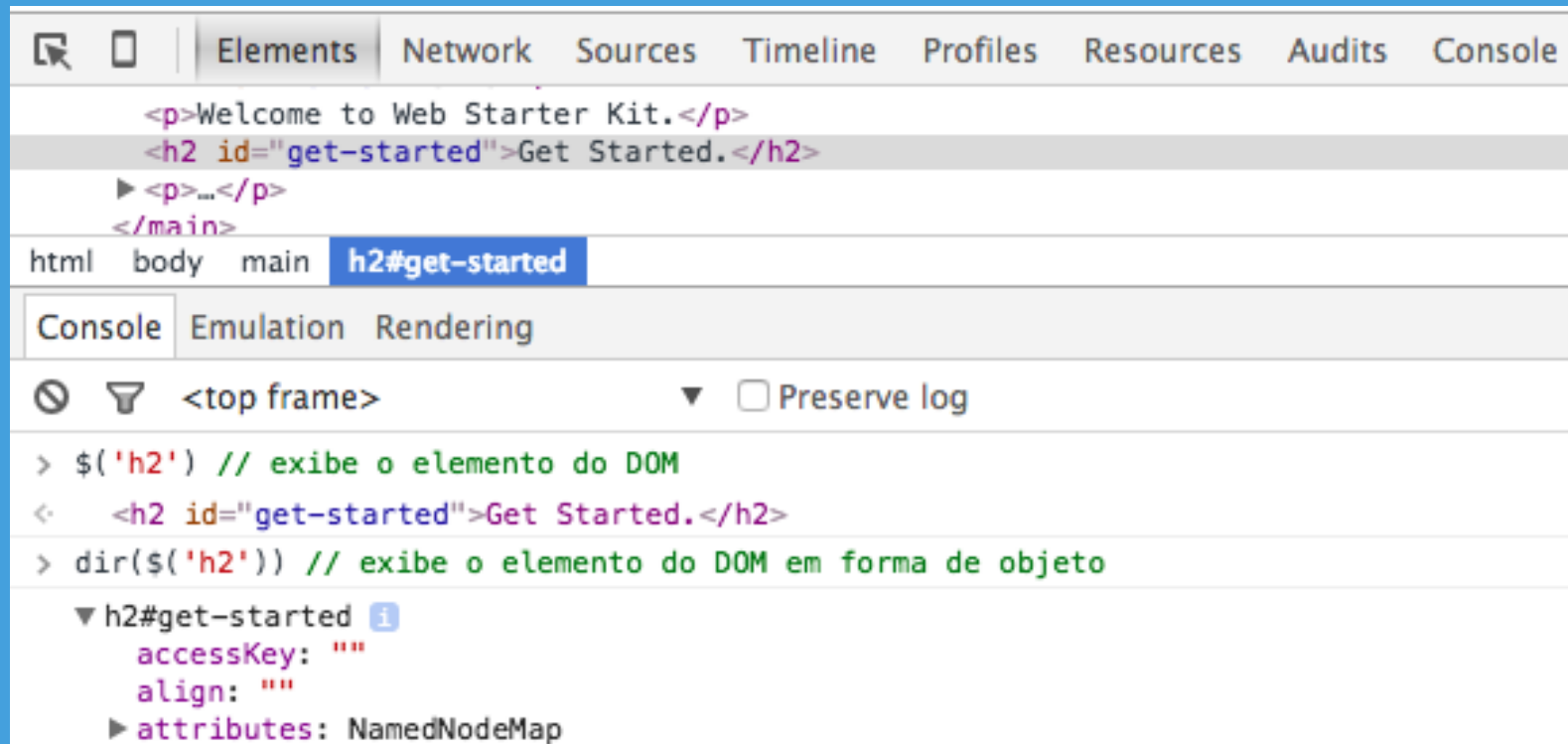
debug(função)

Quando a função informada for executada, o *debugger* será aberto no painel **Sources**, similar a um *breakpoint*.

Use `undebug(função)` para parar de *debugar*.

dir(elemento)

Exibe o elemento em forma de objeto, listando todas as suas propriedades



The screenshot shows a web browser's developer tools interface. The top navigation bar includes 'Elements', 'Network', 'Sources', 'Timeline', 'Profiles', 'Resources', 'Audits', and 'Console'. The 'Elements' panel is active, displaying a DOM tree with the following structure:

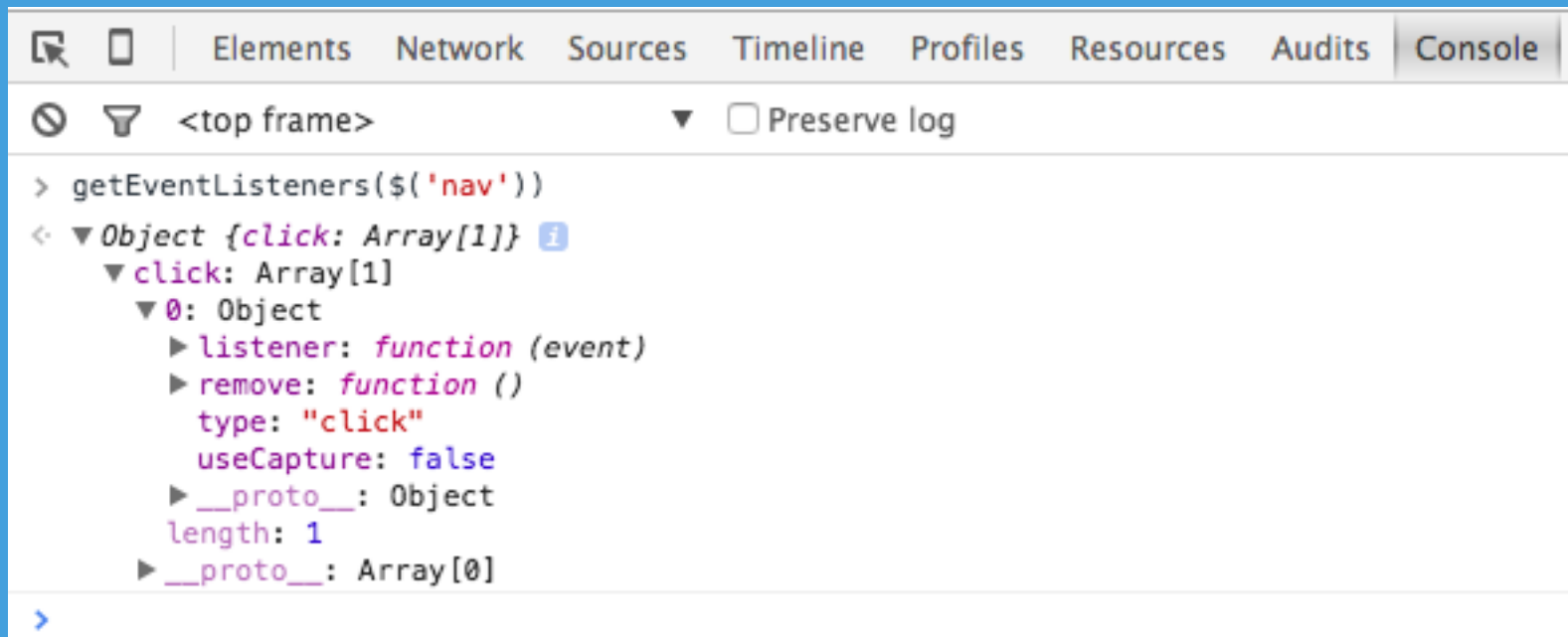
```
<p>Welcome to Web Starter Kit.</p>  
<h2 id="get-started">Get Started.</h2>  
  <p>...</p>  
</main>
```

The breadcrumb path is 'html > body > main > h2#get-started'. Below the DOM tree, the 'Console' panel is visible, showing the following commands and output:

```
> $('h2') // exibe o elemento do DOM  
< <h2 id="get-started">Get Started.</h2>  
> dir($('h2')) // exibe o elemento do DOM em forma de objeto  
▼ h2#get-started ⓘ  
  accessKey: ""  
  align: ""  
  ▶ attributes: NamedNodeMap
```

getEventListeners(elemento)

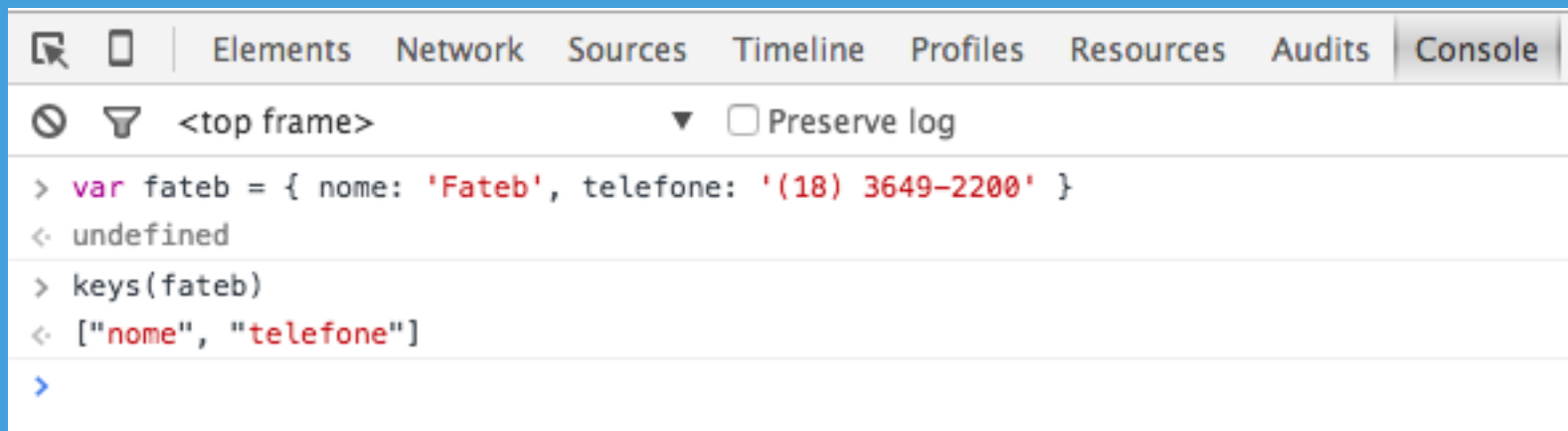
Retorna as funções que estão escutando eventos no elemento



```
> getEventListeners($('nav'))
< ▼ Object {click: Array[1]} ⓘ
  ▼ click: Array[1]
    ▼ 0: Object
      ▶ listener: function (event)
      ▶ remove: function ()
        type: "click"
        useCapture: false
      ▶ __proto__: Object
      length: 1
      ▶ __proto__: Array[0]
```

keys(objeto)

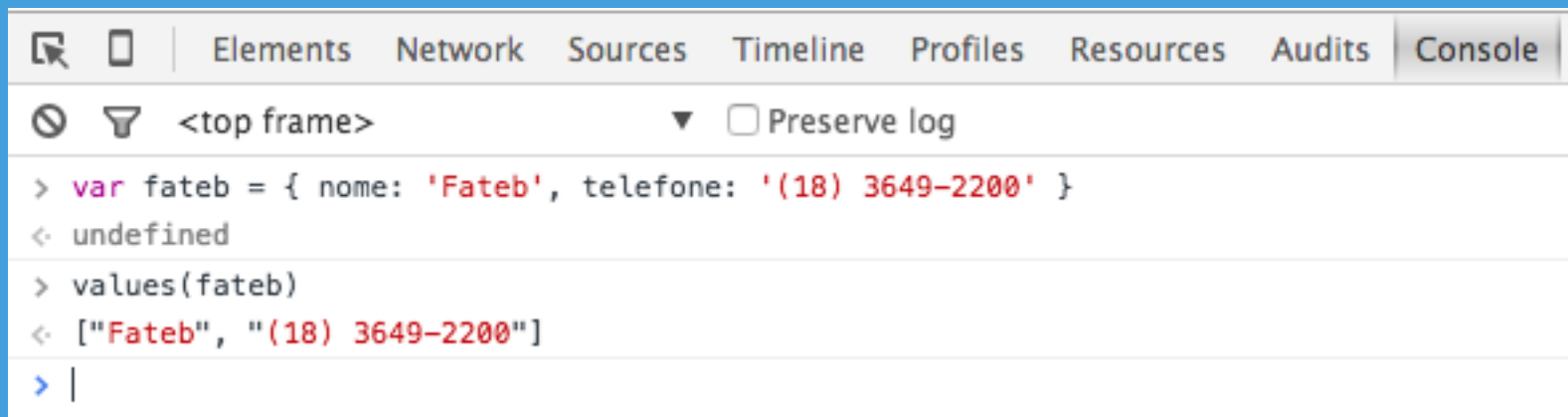
Retorna um array com os nomes das propriedades do objeto



```
Elements Network Sources Timeline Profiles Resources Audits Console
<top frame>  Preserve log
> var fateb = { nome: 'Fateb', telefone: '(18) 3649-2200' }
< undefined
> keys(fateb)
< ["nome", "telefone"]
>
```

values(objeto)

Retorna um array com os valores das propriedades do objeto




```
Elements Network Sources Timeline Profiles Resources Audits Console  
<top frame>  Preserve log  
> var fateb = { nome: 'Fateb', telefone: '(18) 3649-2200' }  
< undefined  
> values(fateb)  
< ["Fateb", "(18) 3649-2200"]  
> |
```

monitor(função)

Quando a função informada for executada, uma mensagem será exibida no **Console** com o nome dela e os valores de seus argumentos.

Use `unmonitor(função)` para parar de monitorar.

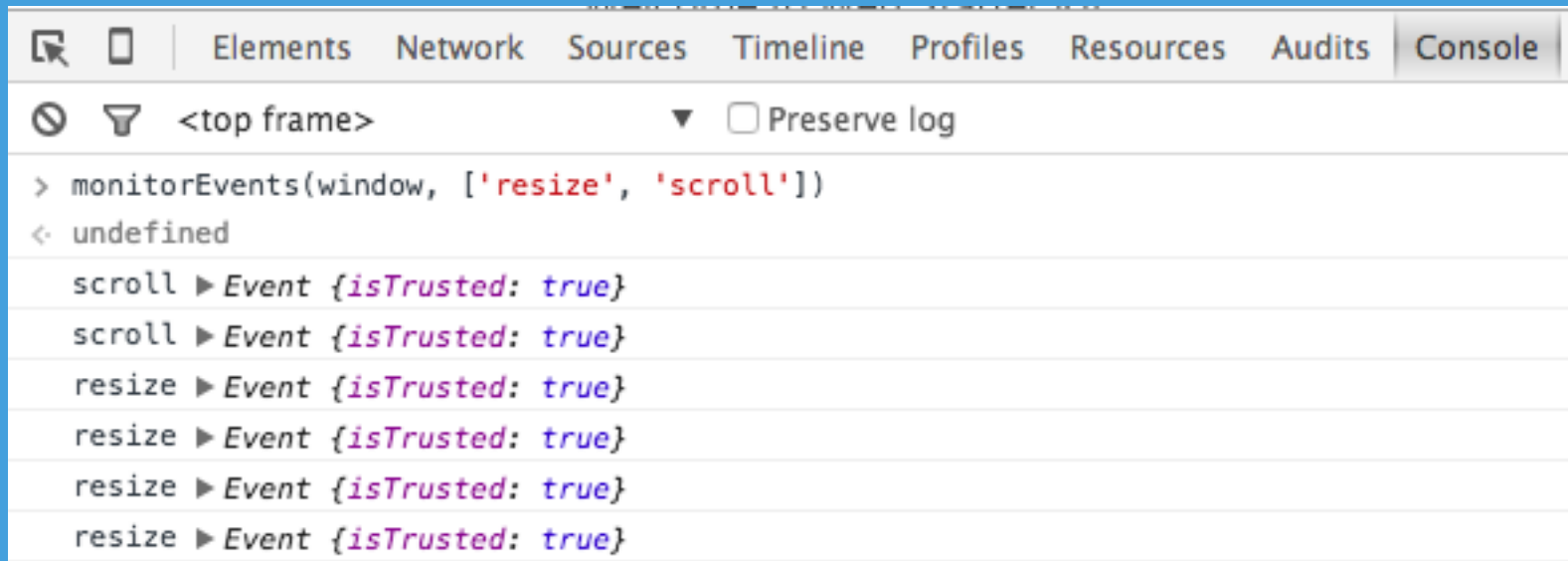


```
Elements Network Sources Timeline Profiles Resources Audits Console
<top frame> [x] Preserve log
> function multiplicar(x, y) {
  return x * y;
}
< undefined
> monitor(multiplicar)
< undefined
> multiplicar(2, 10)
function multiplicar called with arguments: 2, 10
< 20
> |
```


monitorEvents(el[,eventos])

Exibe uma mensagem no **Console** quando ocorrerem os eventos.

Use `unmonitorEvents(el[,eventos])` para parar de monitorar.

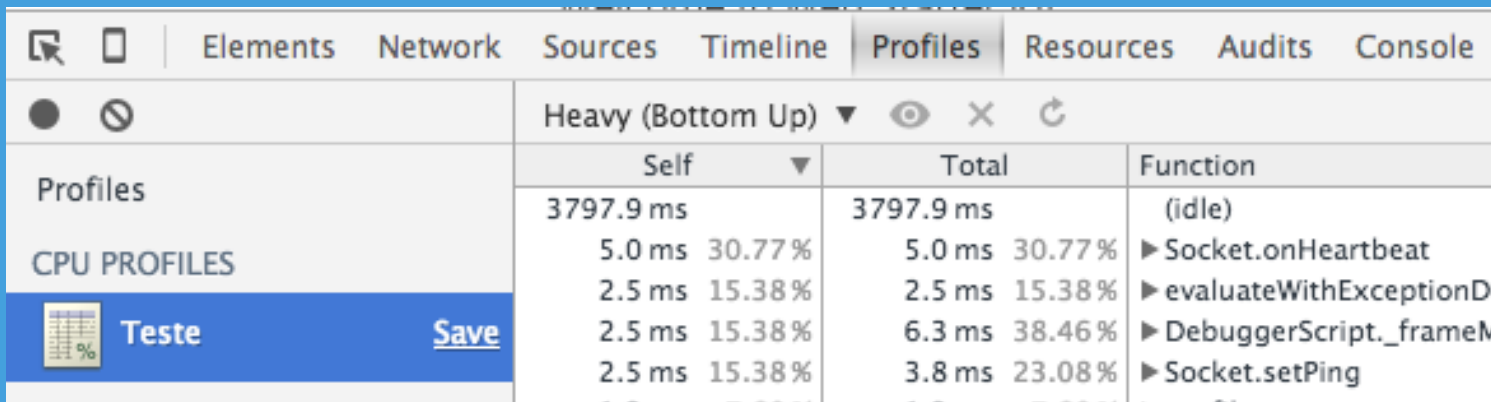


```
Elements Network Sources Timeline Profiles Resources Audits Console
<top frame>  Preserve log
> monitorEvents(window, ['resize', 'scroll'])
< undefined
scroll ▶ Event {isTrusted: true}
scroll ▶ Event {isTrusted: true}
resize ▶ Event {isTrusted: true}
resize ▶ Event {isTrusted: true}
resize ▶ Event {isTrusted: true}
resize ▶ Event {isTrusted: true}
```

profile(nome)/profileEnd(nome)

Executa uma análise de uso de CPU e ao completar, a mesma fica no painel Profiles

```
Elements Network Sources Timeline Profiles Resources Audits Console
<top frame> [x] Preserve log
> profile('Teste')
< undefined
  Profile 'Teste' started.
> profileEnd('Teste')
  Profile 'Teste' finished.
< undefined
```



The screenshot shows the Chrome DevTools Profiles panel. The 'Profiles' tab is active, displaying a CPU profile for 'Teste'. The profile is titled 'Heavy (Bottom Up)'. The table below shows the breakdown of CPU usage by function.

Function	Self	Total
(idle)	3797.9 ms	3797.9 ms
Socket.onHeartbeat	5.0 ms (30.77%)	5.0 ms (30.77%)
evaluateWithExceptionD	2.5 ms (15.38%)	2.5 ms (15.38%)
DebuggerScript._frameM	2.5 ms (15.38%)	6.3 ms (38.46%)
Socket.setPing	2.5 ms (15.38%)	3.8 ms (23.08%)

table(objetos[,cabeçalhos])

Exibe os objetos no **Console** em formato de tabela.

Cabeçalhos podem ser informados para as colunas.



```
> var jogadores = [{ nome: 'Ricardo Oliveira', gols: 20 }, { nome: 'Gabigol', gols: 8 }]
< undefined
> table(jogadores)
```

(index)	nome	gols
0	"Ricardo Oliveira"	20
1	"Gabigol"	8

```
< undefined
resize ▶ Event {isTrusted: true}
scroll ▶ Event {isTrusted: true}
>
```

Debugar smartphone com Android

Requisitos

- Chrome 32+
- Cabo USB
- Android 4.0+

Requisitos

A versão do Chrome do Desktop deve ser mais recente que a do Chrome do Android

Requisitos

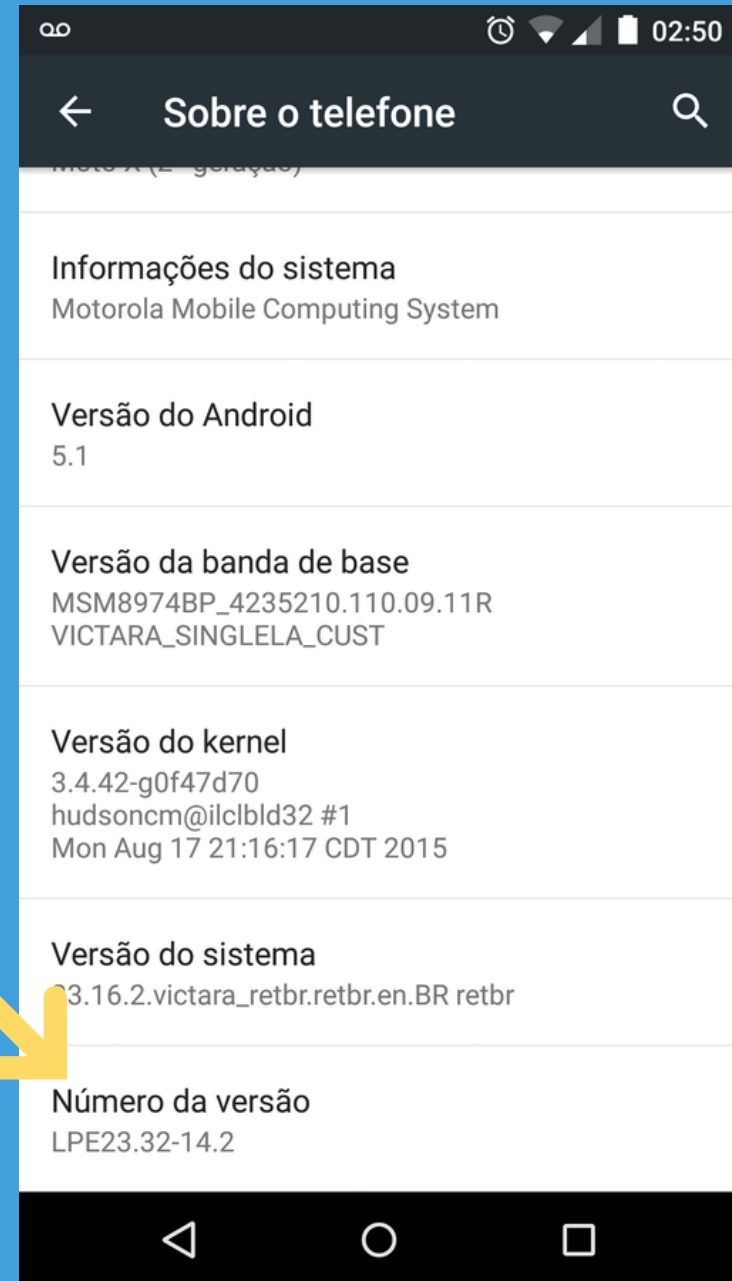
A partir da versão 4.2 do Android, as opções do desenvolvedor estão escondidas por padrão

Requisitos

Caso ainda não tenha, instale os **drivers** do seu Android em sua máquina

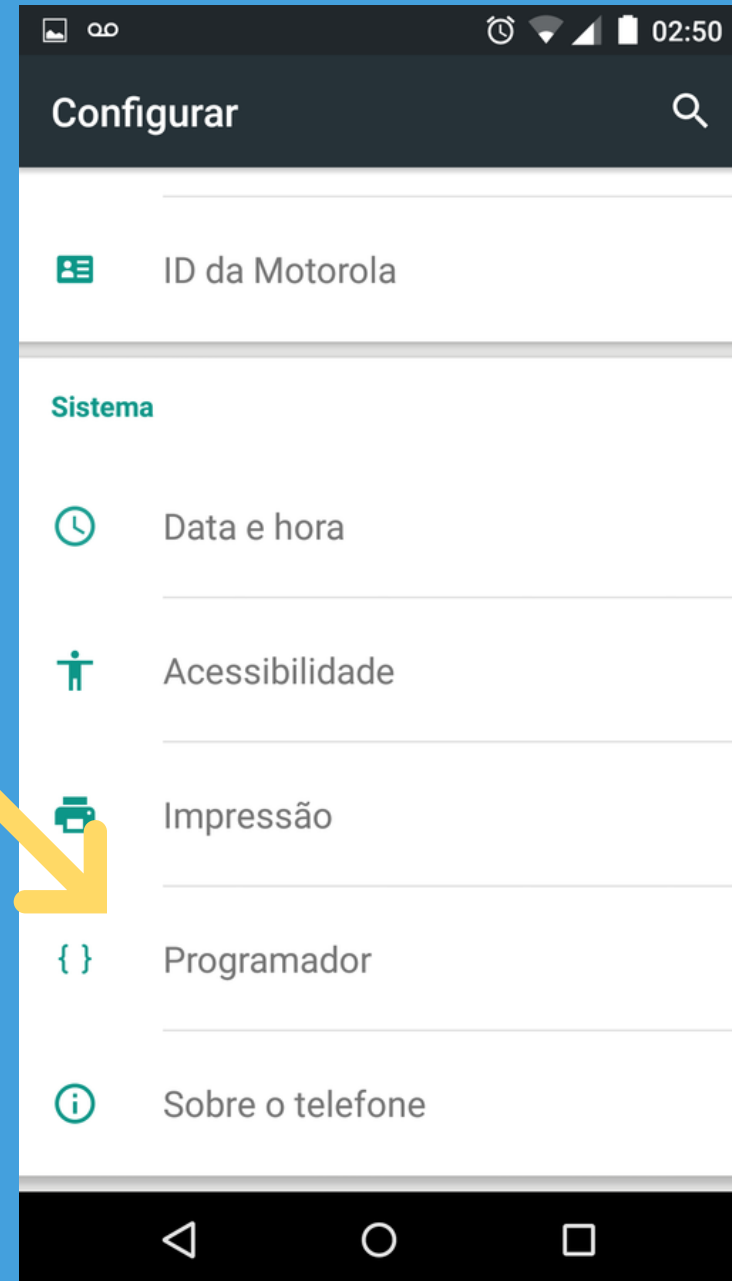
Ative modo Desenvolvedor

Em configurações, selecione
"Sobre o telefone" e clique
sobre "Número da versão"
sete vezes



Configure o Android

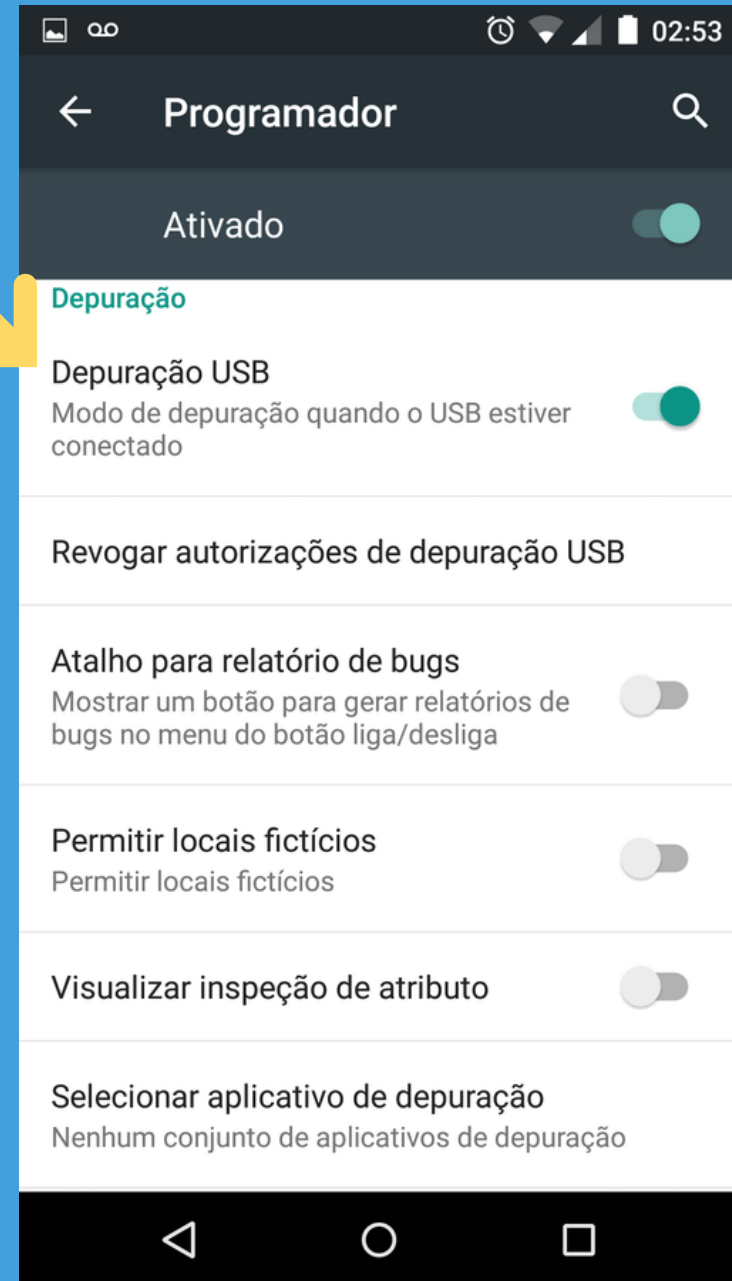
Em seu Android, vá até configurações e selecione "Programador" (em algumas versões será "Opções do Desenvolvedor").



Configure o Android

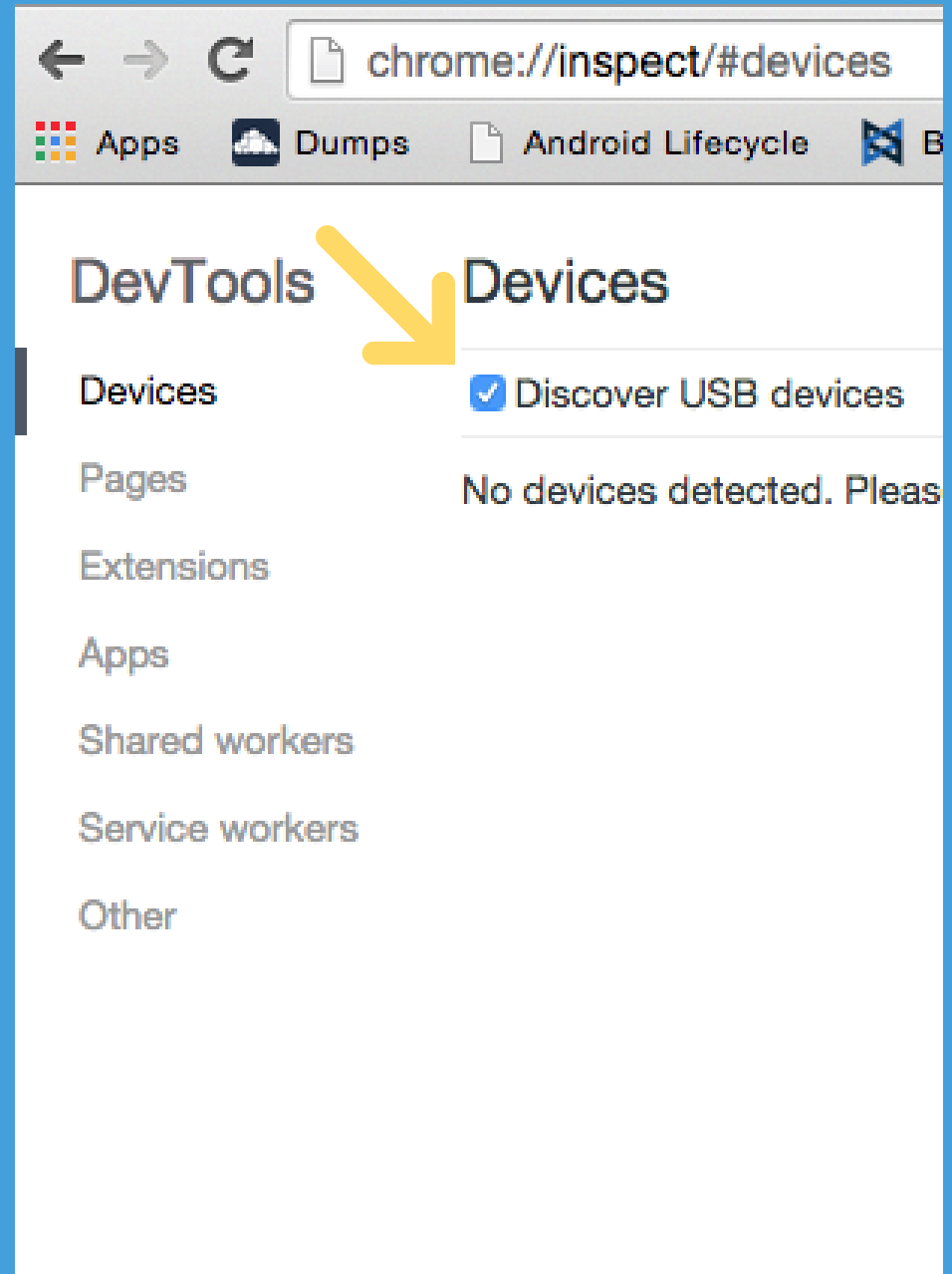
Nas opções do desenvolvedor, ative a "Depuração USB".

Clique em OK



Conecte o Android

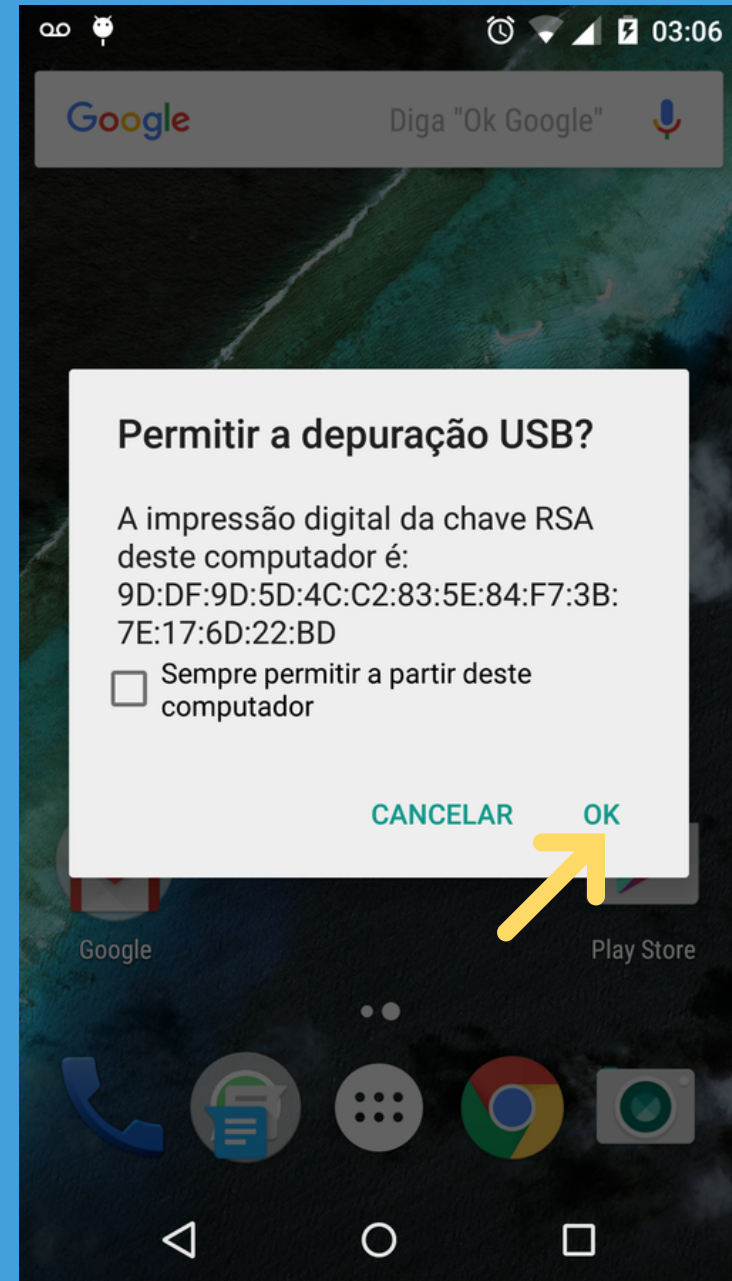
Com o Android conectado na sua máquina com um cabo USB, abra uma aba do Chrome com a url: <chrome://inspect> e marque o checkbox "Discover USB devices"



Conecte o Android

No Android, permita a depuração via USB clicando em **OK**.

Marque o *checkbox* caso deseje sempre permitir a depuração para seu computador.



Selecione uma página

Em

`chrome://inspect/#devices`,
selecione uma página - que
está aberta no Chrome do
Android - e clique em `inspect`

chrome://inspect/#devices


Android Lifecycle Backbone.js Un

Devices

Discover USB devices Port forwarding...

XT1097 #0013590339

Chrome

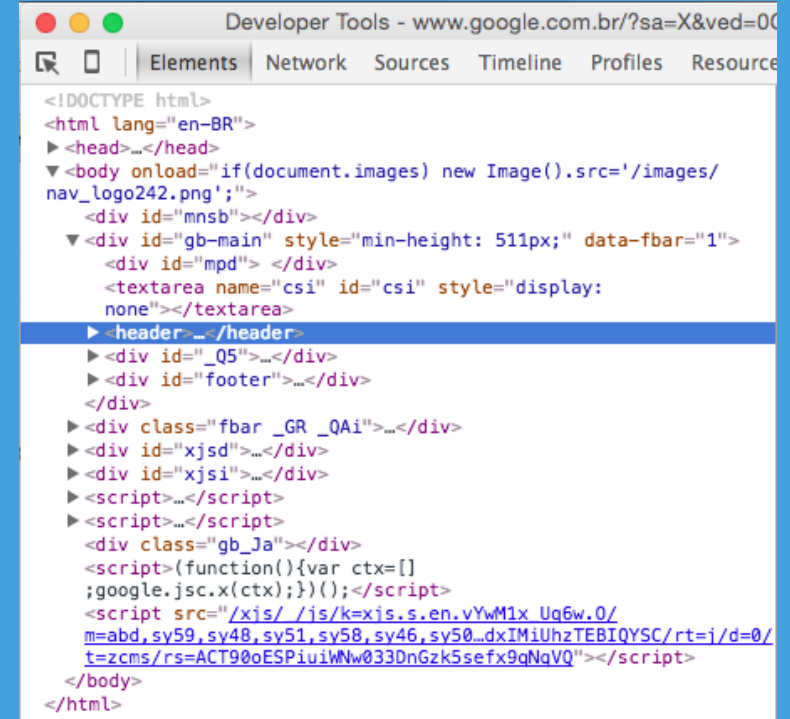
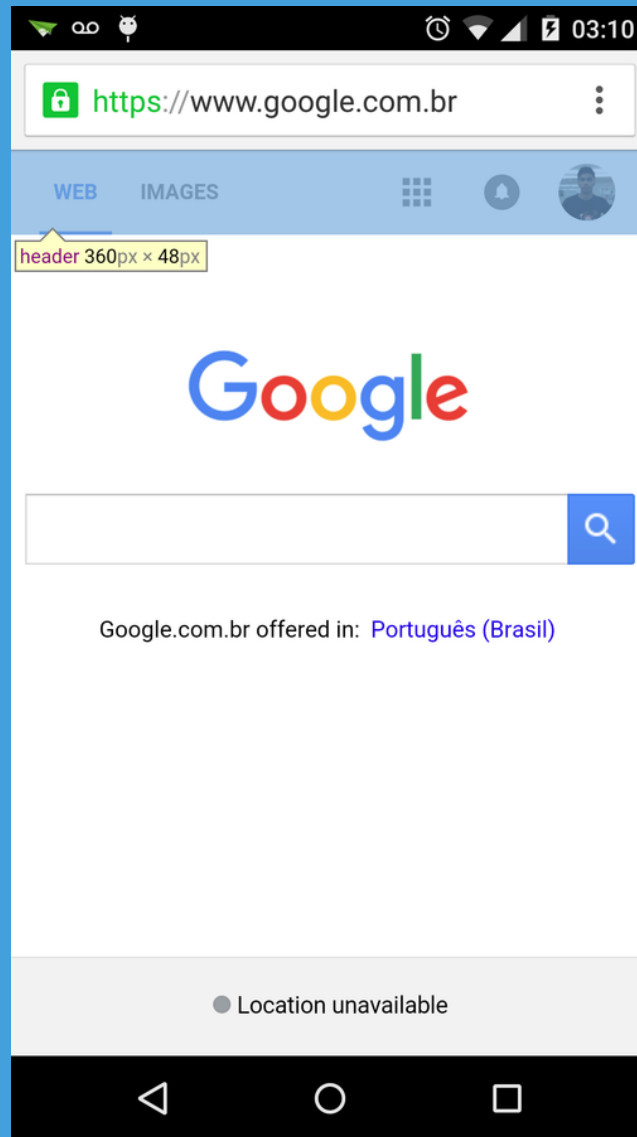
 Google <https://www.google.com.br/?sa=X>
[inspect](#) [focus](#) [tab](#) [reload](#) [close](#)

com.facebook.katana (54.0.0.23.62)

Facebook (powered by Stetho)
[inspect](#)

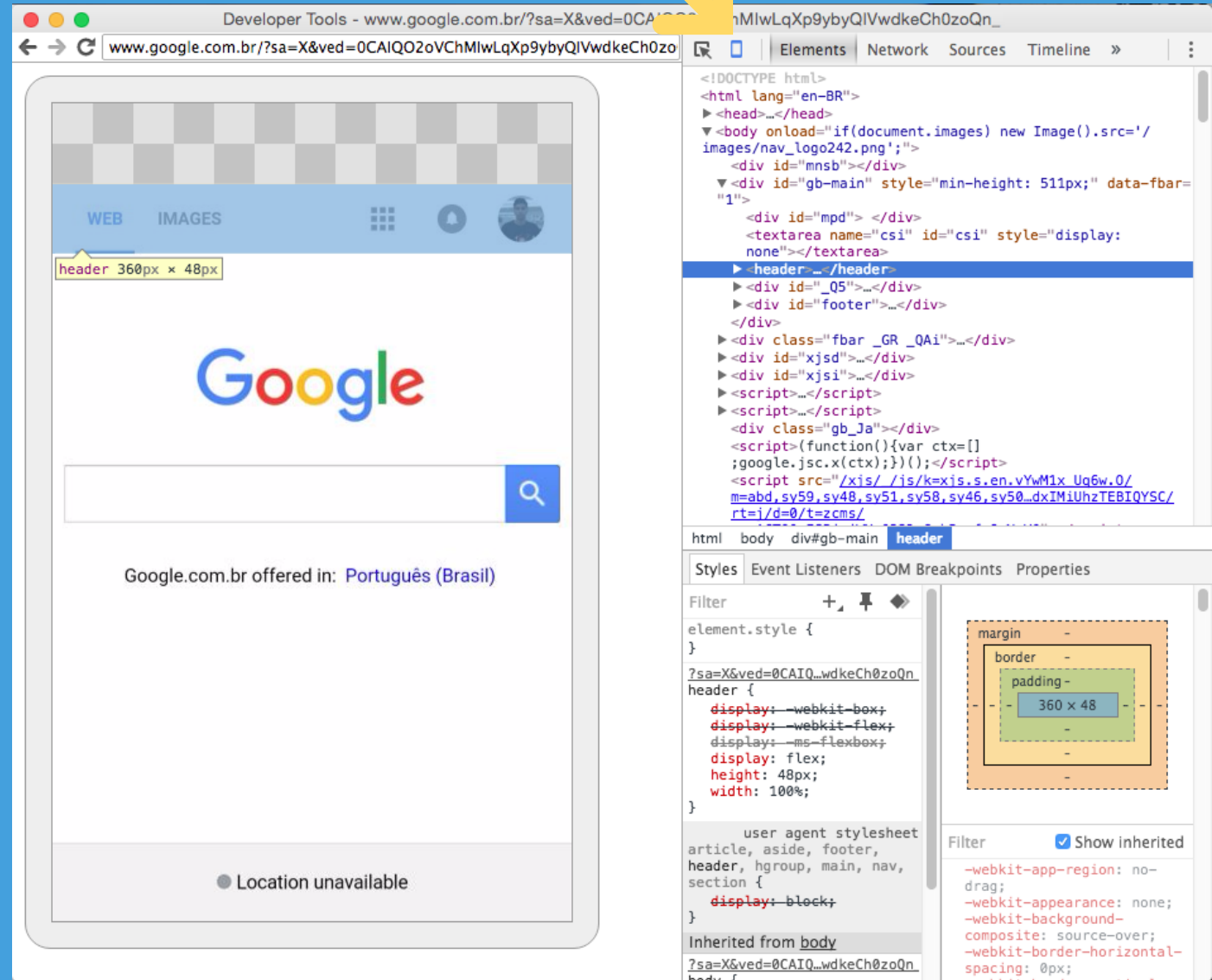
Pronto!

Selecione e altere alguns elementos, e veja como eles mudam diretamente no Android.



Pronto!

Selecione o ícone do smartphone para fazer um *screencast* para a tela do PC



The image shows a browser window displaying the Google mobile interface. A yellow arrow points to the 'Elements' tab in the developer tools. The 'header' element is selected, and its CSS styles are shown in the 'Styles' panel. The styles include:

```
element.style {
}
?sa=X&ved=0CAIQ...wckeCh0zo0n
header {
  display: webkit-box;
  display: webkit-flex;
  display: ms-flexbox;
  display: flex;
  height: 48px;
  width: 100%;
}
user agent stylesheet
article, aside, footer,
header, hgroup, main, nav,
section {
  display: block;
}
Inherited from body
?sa=X&ved=0CAIQ...wckeCh0zo0n
body {
```

The 'Styles' panel also shows a visual representation of the header element's box model, with a padding of 360px x 48px. The 'Properties' panel shows the following styles:

```
margin: -;
border: -;
padding: -;
360 x 48;
-;
-;
```

The 'Properties' panel also shows the following styles:

```
Filter
-webkit-app-region: no-drag;
-webkit-appearance: none;
-webkit-background-composite: source-over;
-webkit-border-horizontal-spacing: 0px;
```


Links

<https://developers.google.com/web/tools/chrome-devtools/>

<https://developers.google.com/web/tools/chrome-devtools/debug/command-line/command-line-reference>

<http://devtoolstips.com/>

<https://umaar.com/dev-tips/>

Quem seguir

@aerotwist

@addyosmani

@paul_irish

@ChromeDevTools

@ChromiumDev

Obrigado :)

tegon.github.io/guia-do-f12/slides.pdf

Leonardo Tegen