



Before we begin



Download the Chrome web browser

`google.com/chrome`



Have a text editor ready. If you don't have one, try Visual Studio Code

`code.visualstudio.com/`



Building Your First Chrome Extension



#GHC19



Nice to meet you



Anna Kutch
Senior Software Engineer



Zoe Sabin
Engineering Lead



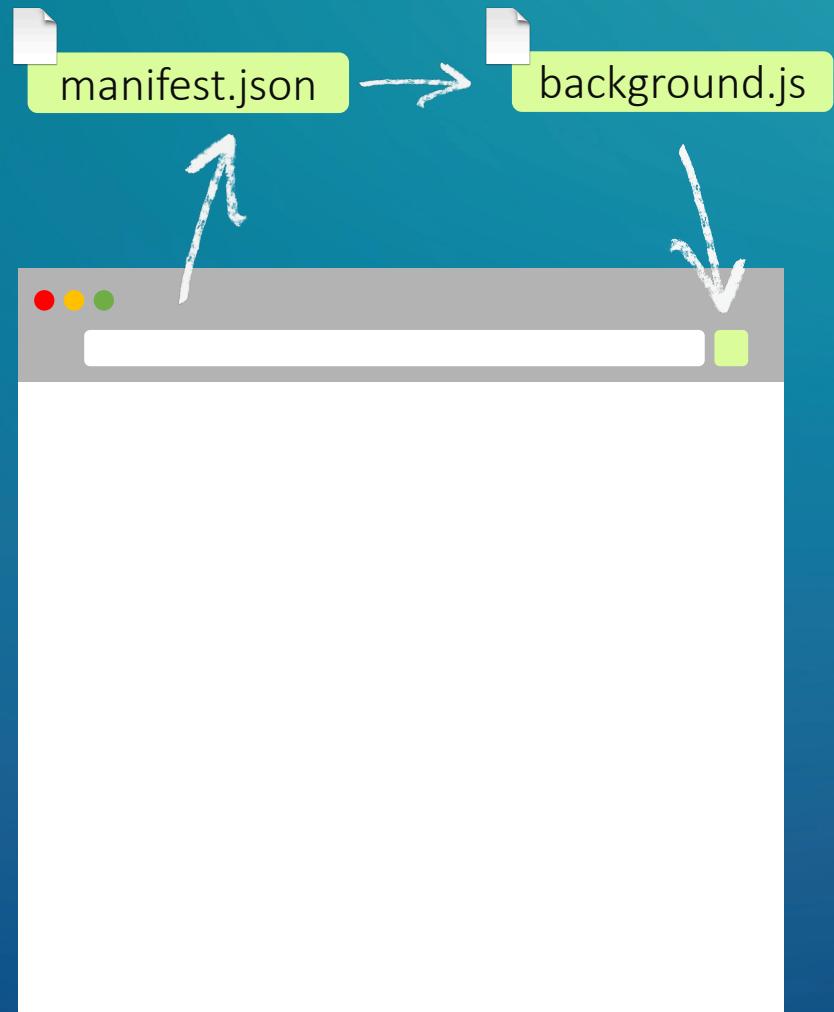
Agenda

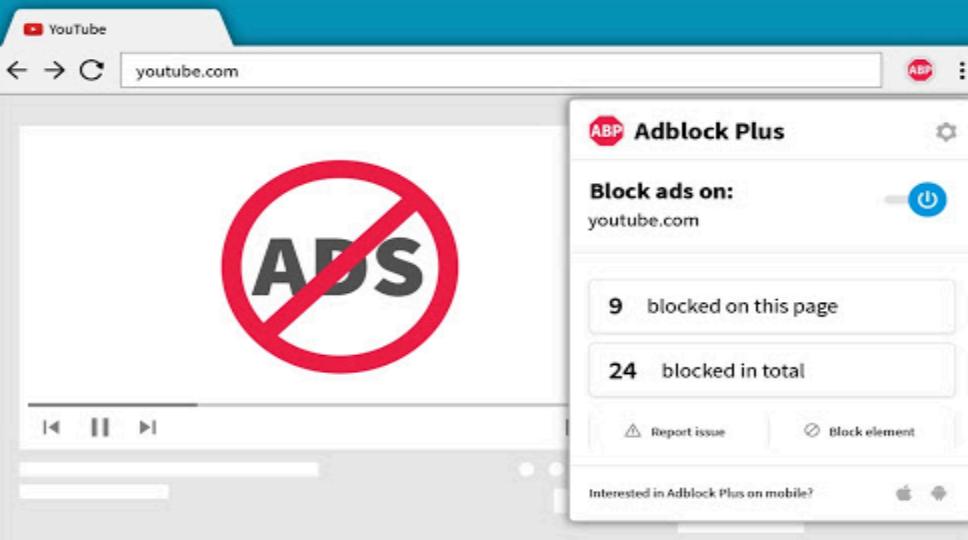
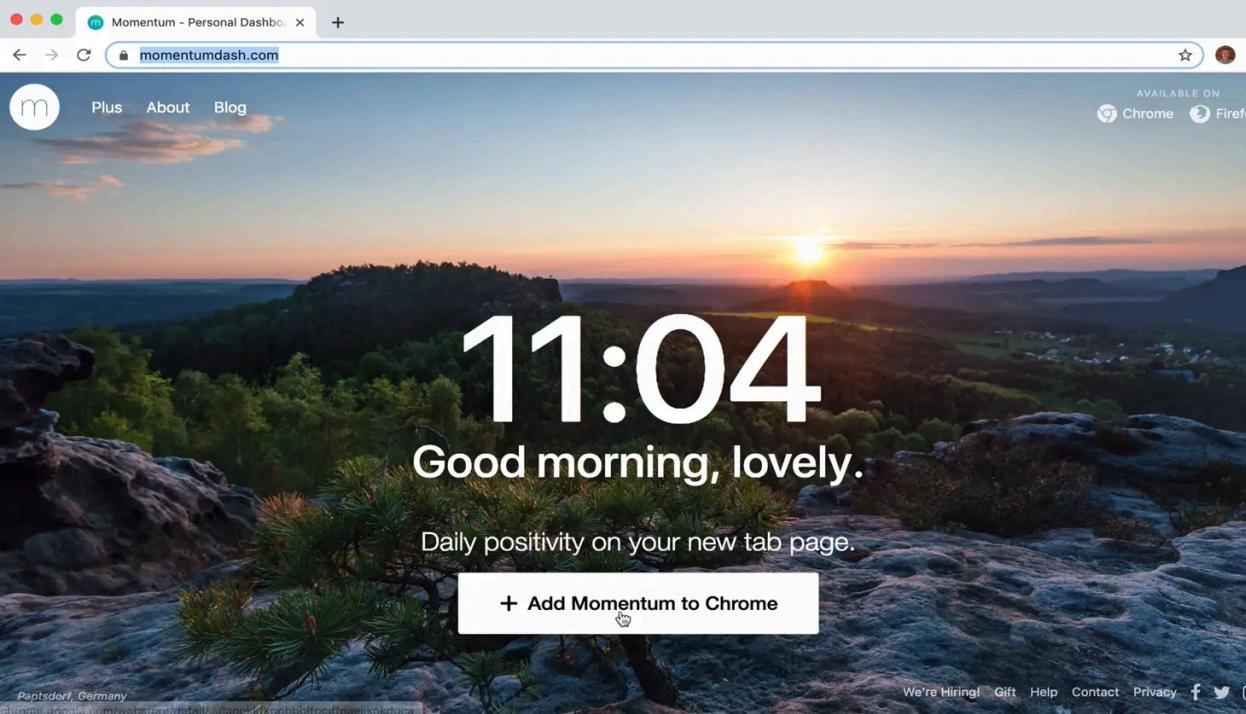
- What is a Chrome extension?
- Build a Chrome theme
- Build a Chrome extension



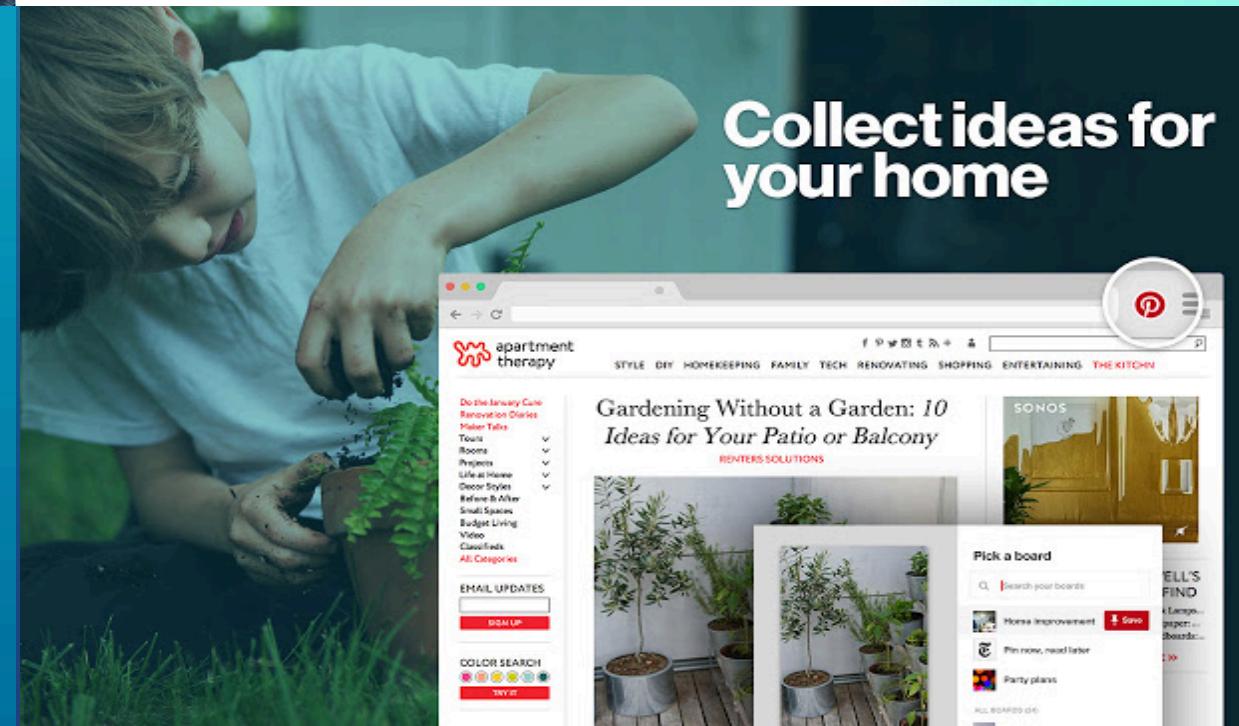
What is a Chrome extension?

- Program that runs in the Chrome browser
- Bundle of JavaScript, CSS, and HTML available outside of a webpage
- Customize & extend the functionality of Chrome





The Grammarly homepage. The top navigation bar includes "Plus", "About", "Blog", and the Grammarly logo. Below the header, the text "AVAILABLE ON" is followed by "Chrome" and "Firefox" with their respective icons. The main headline "A Better Way to Write" is displayed in large, bold, black font. To the right, a large image of a person's hands writing on a piece of paper is overlaid with a red "M" icon. Below the image, a text box contains the sentence "It may happen that we need to decide tomorrow." with the word "happen" underlined. Another text box below it says "Rewrite the phrase We may need".



Search the store Extensions Themes

For hubspot.com

Categories

All

Features

- Runs Offline
- By Google
- Free
- Available for Android
- Works with Google Drive

Ratings

- ★★★★★ & up
- ★★★★☆ & up
- ★★★☆☆ & up
- ★★★☆☆ & up

[Privacy Policy](#)[Terms of Service](#)[About Chrome Web Store](#)

Houseparty

Editor's Picks

Chrome favorites in extensions

[View all](#)

Boxel Rebound

★★★★★ 923



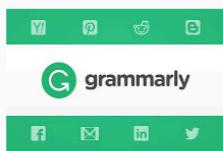
Custom Cursor for Chrome™

★★★★★ 5,374



Dark Reader

★★★★★ 5,386



Grammarly for Chrome

★★★★★ 36,925



Messaging, Memo

LINE

★★★★★ 6,029



honey

Honey

★★★★★ 138,567



Office

Office

★★★★★ 4,025



Tabby Cat

Tabby Cat

★★★★★ 4,170

Enhance your Gameplay

Companion extensions for popular games

[View all](#)

Colorful Tic Tac Toe

★★★★★ 50



Ice dododo 2

★★★★★ 25



FarmVille2 X-Press

★★★★★ 4,122



Colorful Rubik's Cube

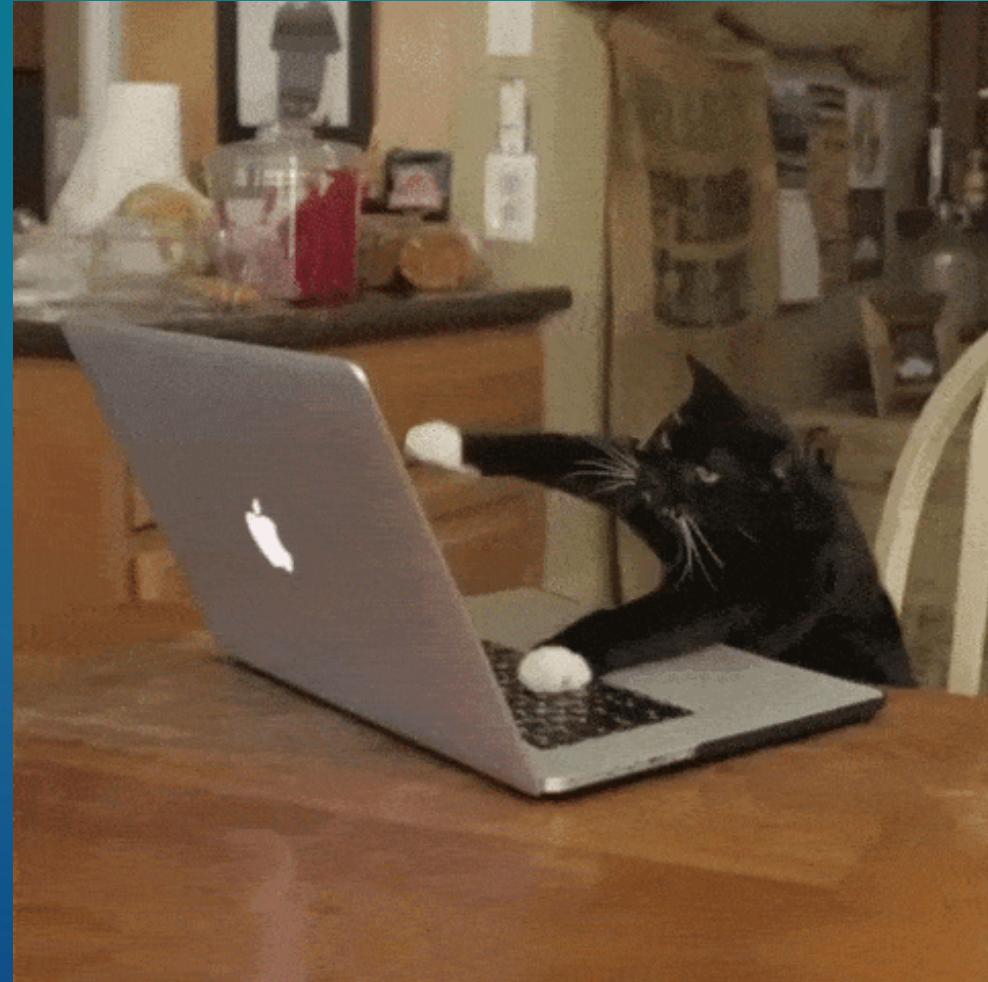
★★★★★ 56

What extensions do you use?

#GHC19



Let's build a
Chrome theme



#GHC19



Theme

- Download Chrome + text editor
- Download code
- Upload and apply theme



Chrome + Text Editor

google.com/chrome

code.visualstudio.com





Folder structure





manifest.json

theme/manifest.json



```
1 {
2   "manifest_version": 2,
3   "version": "1.0",
4   "name": "HubSpot theme",
5   "theme": {
6     "images": {
7       "theme_ntp_background": "background.png"
8     },
9     "colors": {
10       "frame": [250, 185, 169],
11       "toolbar": [106, 117, 184],
12       "ntp_text": [106, 117, 184],
13       "ntp_link": [106, 117, 184],
14       "ntp_section": [106, 117, 184],
15       "button_background": [106, 117, 184]
16     },
17     "tints": {
18       "buttons": [0.33, 0.5, 0.47]
19     },
20     "properties": {
21       "ntp_background_alignment": "bottom"
22     }
23   }
24 }
25 }
```



tinyurl.com/y6aezgbq

Search or jump to... Pull requests Issues Marketplace Explore

HubSpot / chrome_extension_workshop Unwatch ▾ 5 Star 0 Fork 0

Code Issues 0 Pull requests 0 Actions Projects 0 Wiki Security Insights Settings

Chrome extension workshop Edit

Manage topics

3 commits 1 branch 0 releases 1 contributor

Branch: master ▾ New pull request Create new file Upload files Find File Clone or download ▾

Anna Kutch change initial script
extension change initial script
theme assets
README.md Initial commit

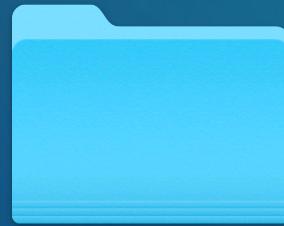
Clone with SSH Use HTTPS
git@github.com:HubSpot/chrome_extensi

Open in Desktop Download ZIP 

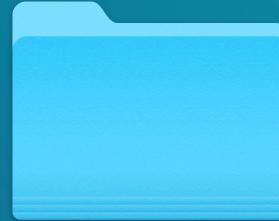
#GHC19



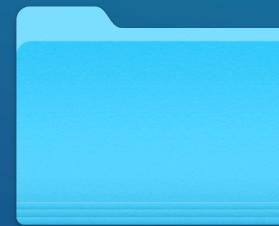
Workshop



chrome_workshop



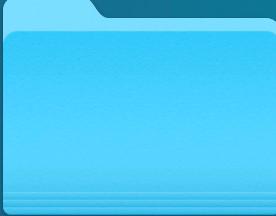
theme



extension



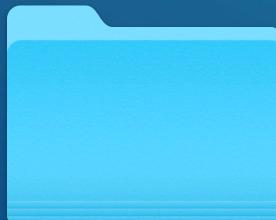
chrome_workshop



theme



manifest.json



extension



Developer mode

chrome://extensions

The screenshot shows the Chrome Extensions management interface at `chrome://extensions`. The 'Developer mode' toggle switch in the top right corner is turned on, indicated by a white circle. The page displays a grid of installed extensions:

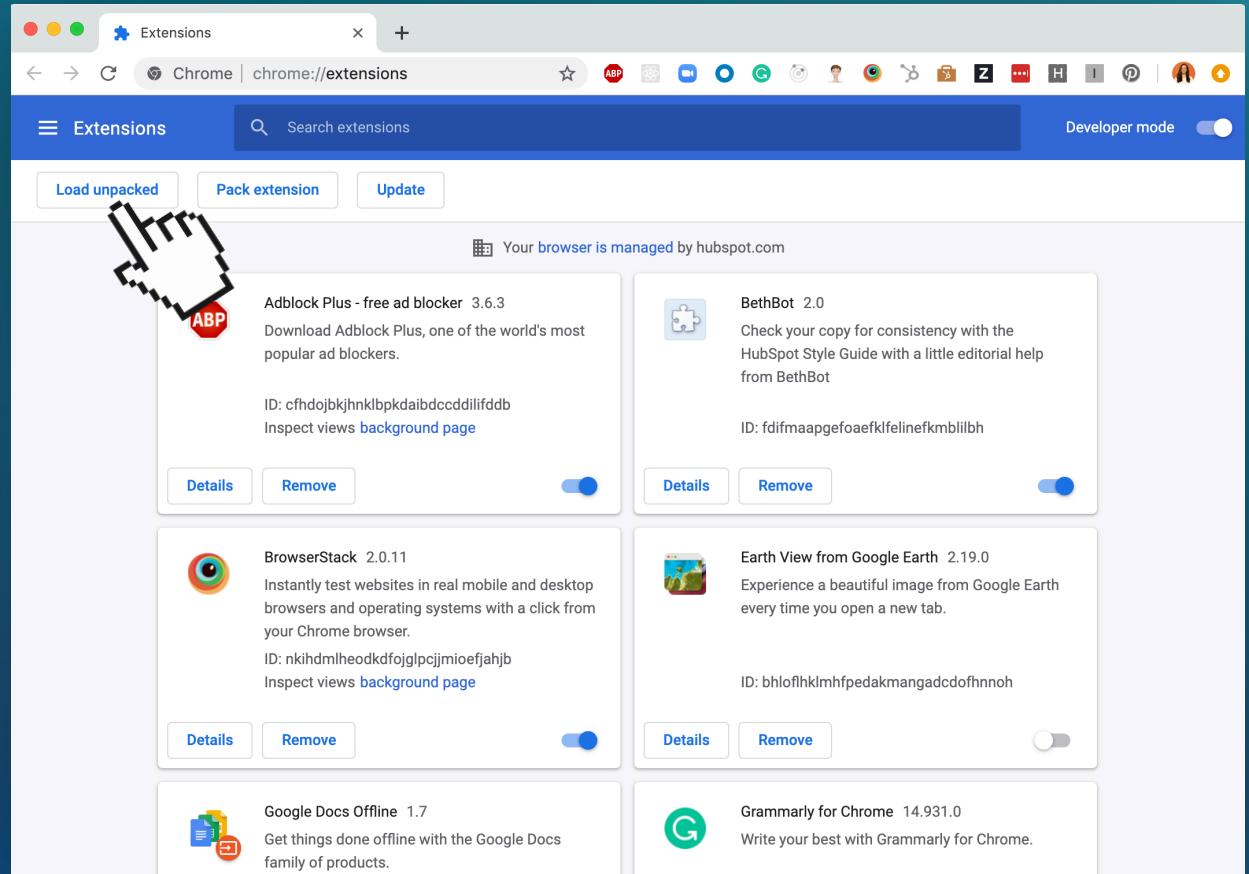
- Adblock Plus - free ad blocker** 3.6.3: Download Adblock Plus, one of the world's most popular ad blockers. ID: cfhdojbkjhnkbpkdaibdccddilfddb. Inspect views [background page](#).
- BethBot** 2.0: Check your copy for consistency with the HubSpot Style Guide with a little editorial help from BethBot. ID: fdifmaapgeofaefklfelinefkmbllbh.
- BrowserStack** 2.0.11: Instantly test websites in real mobile and desktop browsers and operating systems with a click from your Chrome browser. ID: nkihdmilehoodkfodjglpcijmioefjahjb. Inspect views [background page](#).
- Earth View from Google Earth** 2.19.0: Experience a beautiful image from Google Earth every time you open a new tab. ID: bhloflhkhmhfpedakmangadcdohnnoh.
- Google Docs Offline** 1.7: Get things done offline with the Google Docs family of products.
- Grammarly for Chrome** 14.931.0: Write your best with Grammarly for Chrome.

Each extension card includes 'Details' and 'Remove' buttons and a toggle switch for enabling or disabling the extension.



Load unpacked

chrome://extensions

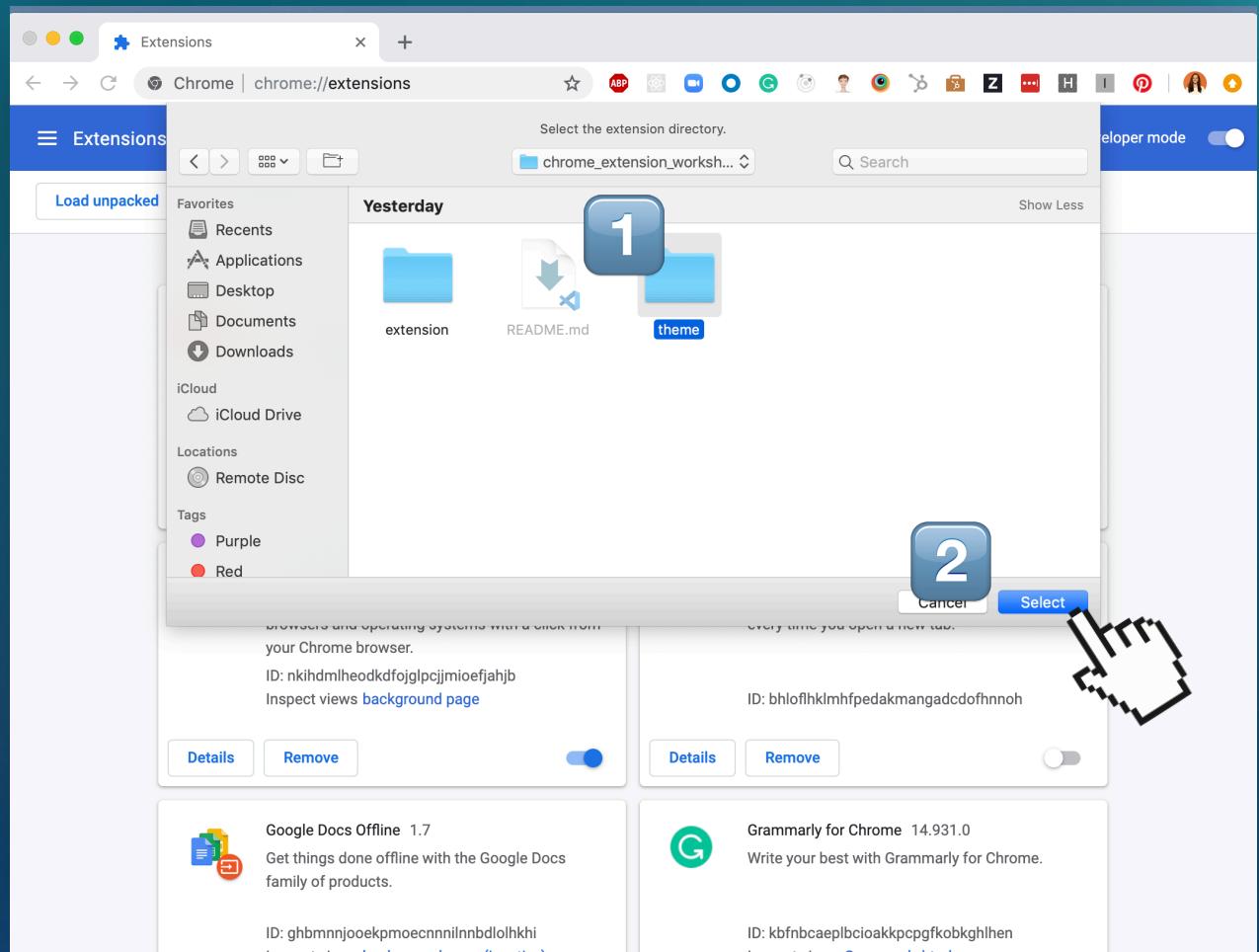


#GHC19



Select "theme" folder

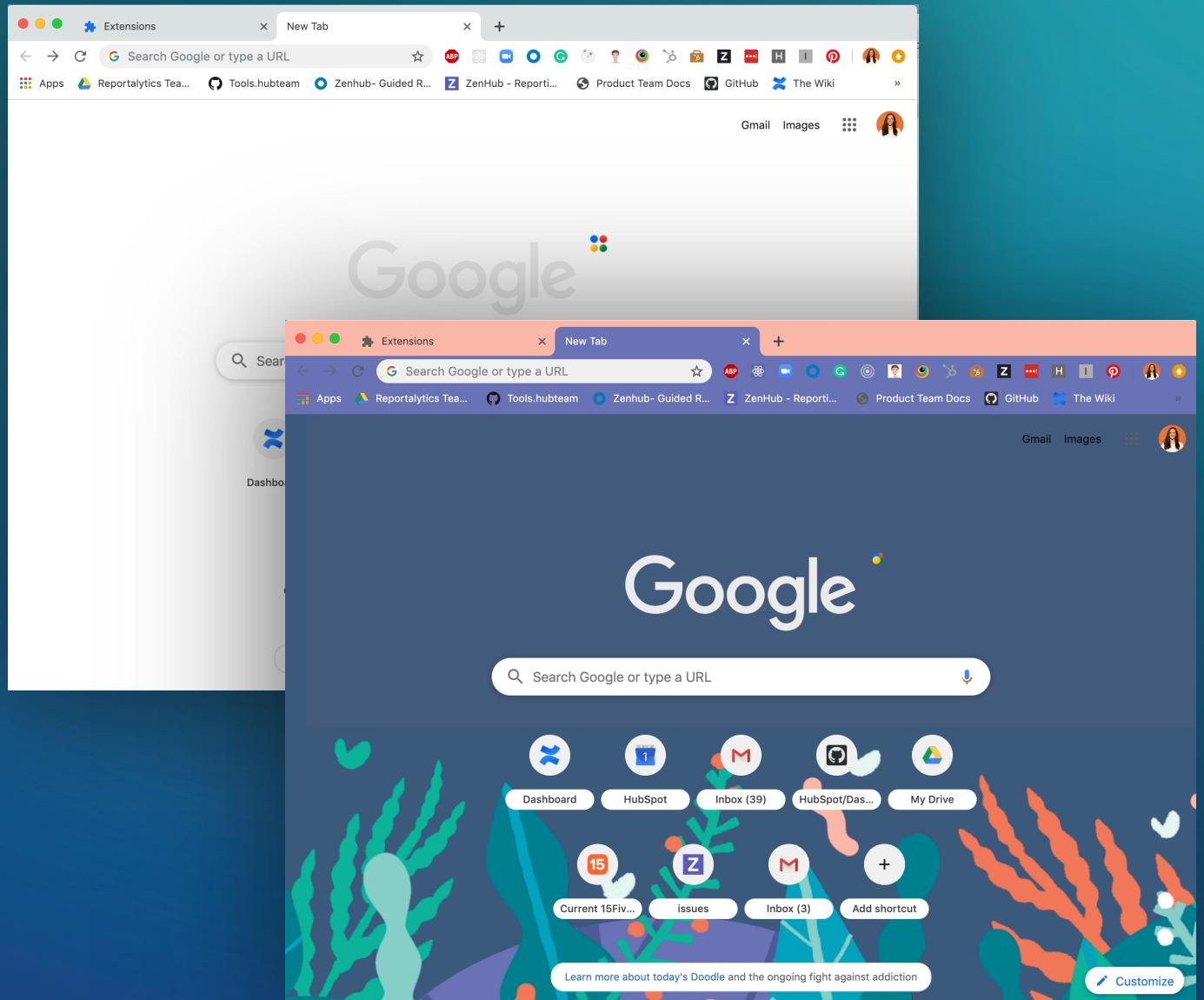
chrome://extensions



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Voilà!



#GHC19



Open manifest.json

The screenshot shows a code editor interface with a dark theme. A file dialog is open in the foreground, prompting the user to 'Open manifest.json'. The file path is 'chrome_extension_workshop/extension/manifest.json'. The 'Open' button is highlighted with a blue box and a large number '3'. A hand cursor is positioned over the 'Open' button.

File Dialog:

- 1 New file
- 2 Open folder...
- 3 Add workspace folder...
- New Folder

File Explorer:

- Desktop (selected)
- Documents
- Downloads
- iCloud
- iCloud Drive
- Locations
- Remote Disc
- Network
- Media
- Music
- Photos

Open Editors:

- CHROME_EXTENSION_W...
- extension
- theme
- background.png
- manifest.json
- README.md

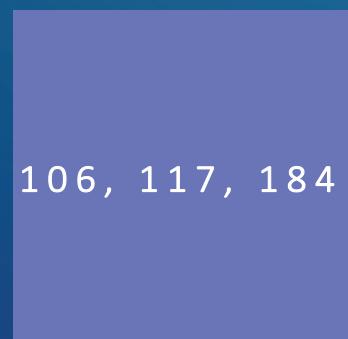
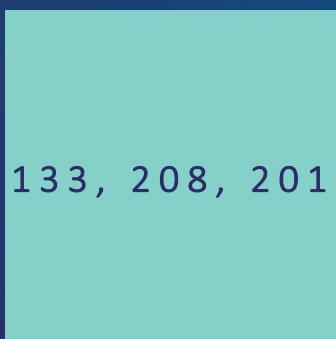
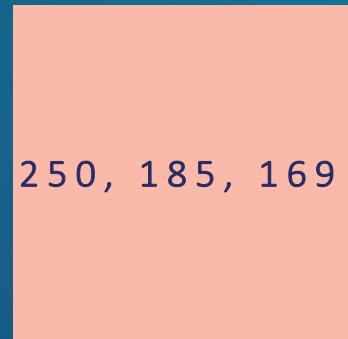
Bottom Status Bar:

- master*
- 0 0 0 0
- 1
- #GHC19



theme/manifest.json

Change the frame

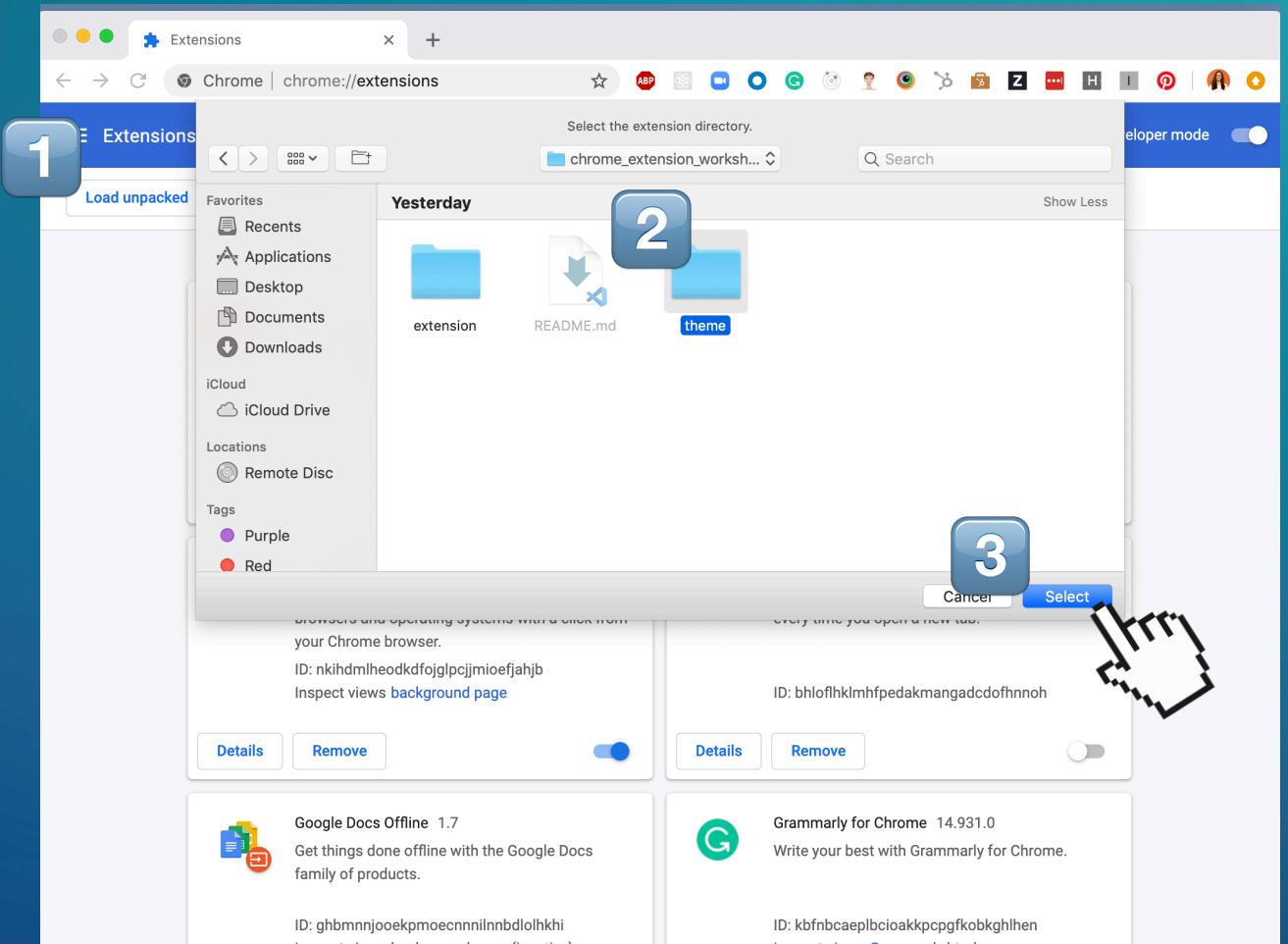


```
1 {
2   "manifest_version": 2,
3   "version": "1.0",
4   "name": "HubSpot theme",
5   "theme": {
6     "images": {
7       "theme_ntp_background": "background.png"
8     },
9     "colors": {
10       "frame": [250, 185, 169],
11       "toolbar": [106, 117, 184],
12       "ntp_text": [106, 117, 184],
13       "ntp_link": [106, 117, 184],
14       "ntp_section": [106, 117, 184],
15       "button_background": [106, 117, 184]
16     },
17     "tints": {
18       "buttons": [0.33, 0.5, 0.47]
19     },
20     "properties": {
21       "ntp_background_alignment": "bottom"
22     }
23   }
24 }
```



Load unpacked

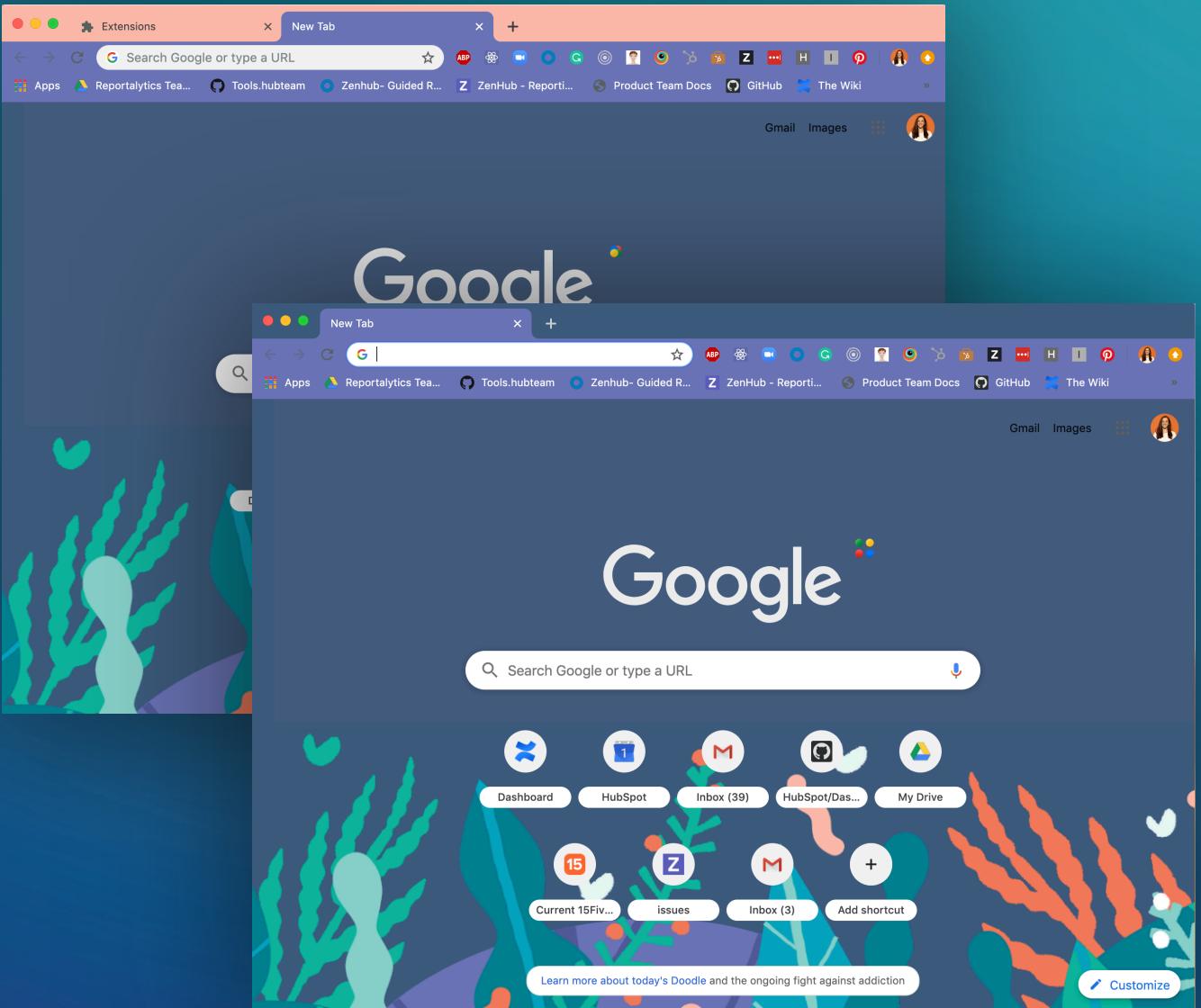
chrome://extensions



#GHC19



See your changes



#GHC19

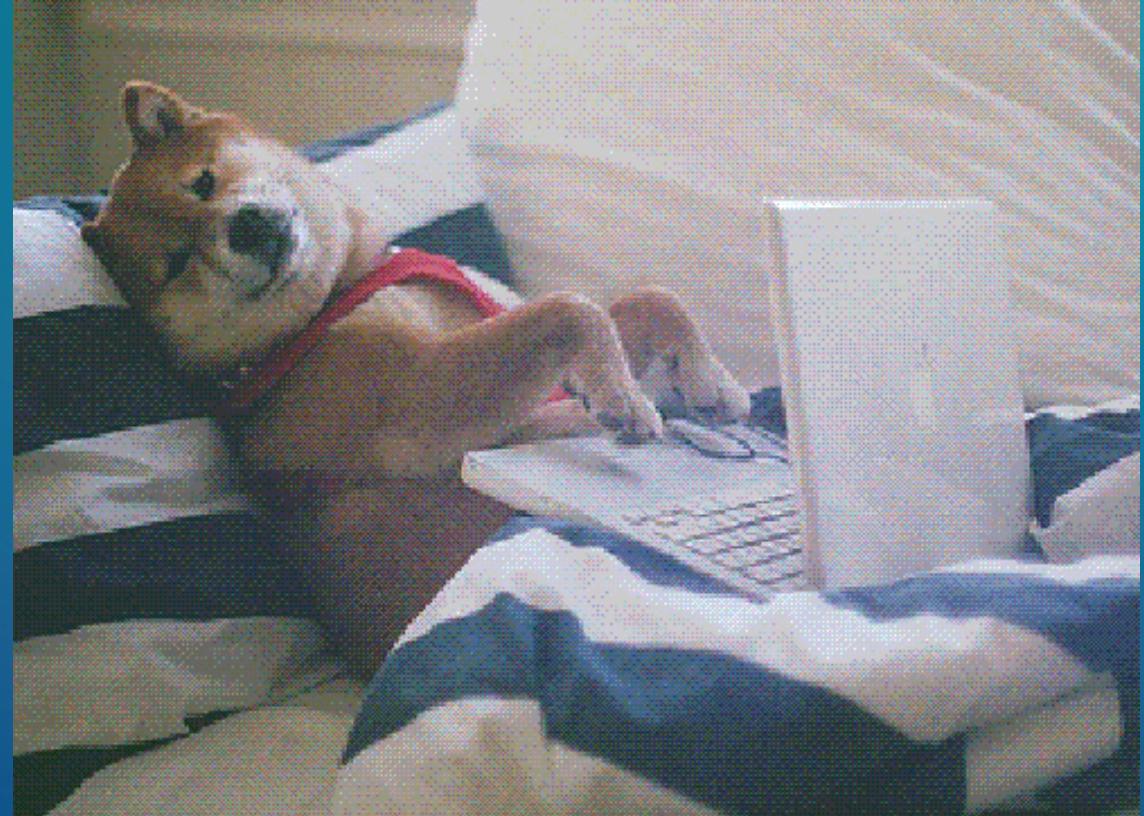
WHOA

WE'RE HALFWAY THERE!





Let's build a
Chrome extension



#GHC19

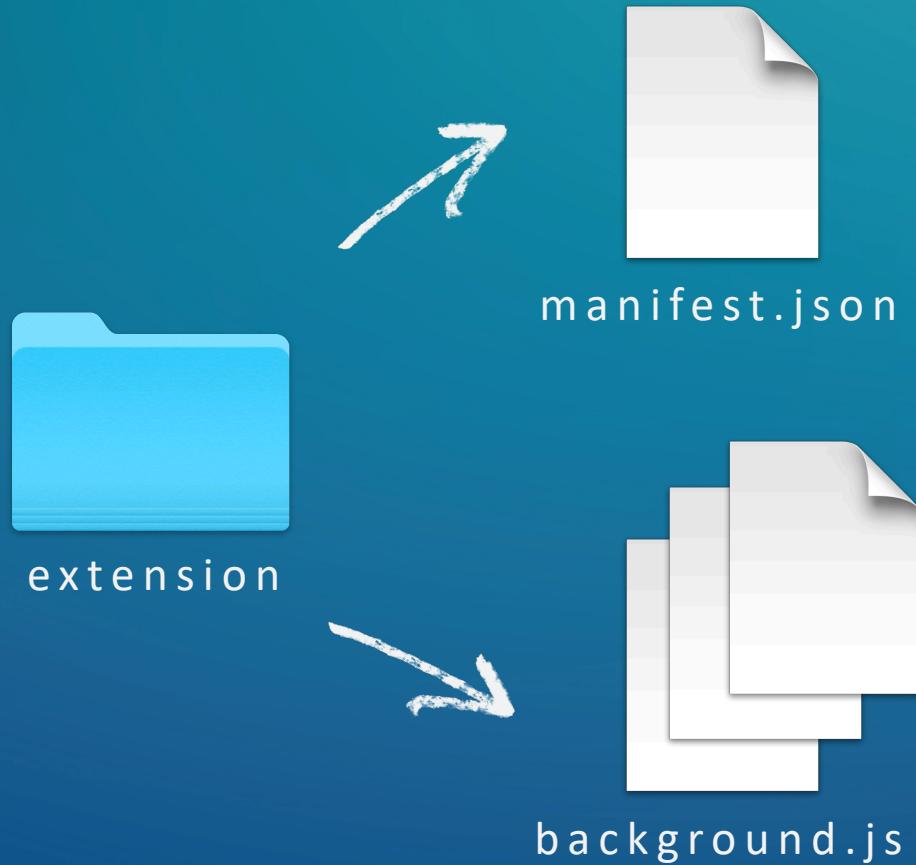


Extension

- Folder structure
- The browser console
- What are callbacks?
- The Screenshot Extension



Folder structure





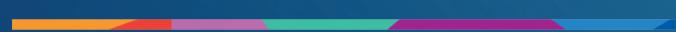
manifest.json

extension/manifest.json

```
1
2 {
3   "name": "Screenshot",
4   "version": "1.0",
5   "manifest_version": 2,
6   "description": "Take and download a screenshot of the current tab",
7   "background": {
8     "persistent": false,
9     "scripts": [
10       "background_one.js"
11     ]
12   },
13   "browser_action": {
14     "default_icon": "camera.png",
15     "default_title": "Say cheese!"
16   },
17   "permissions": [
18     "activeTab",
19     "downloads"
20   ]
21 }
22
```



background_one.js



extension/background_one.js

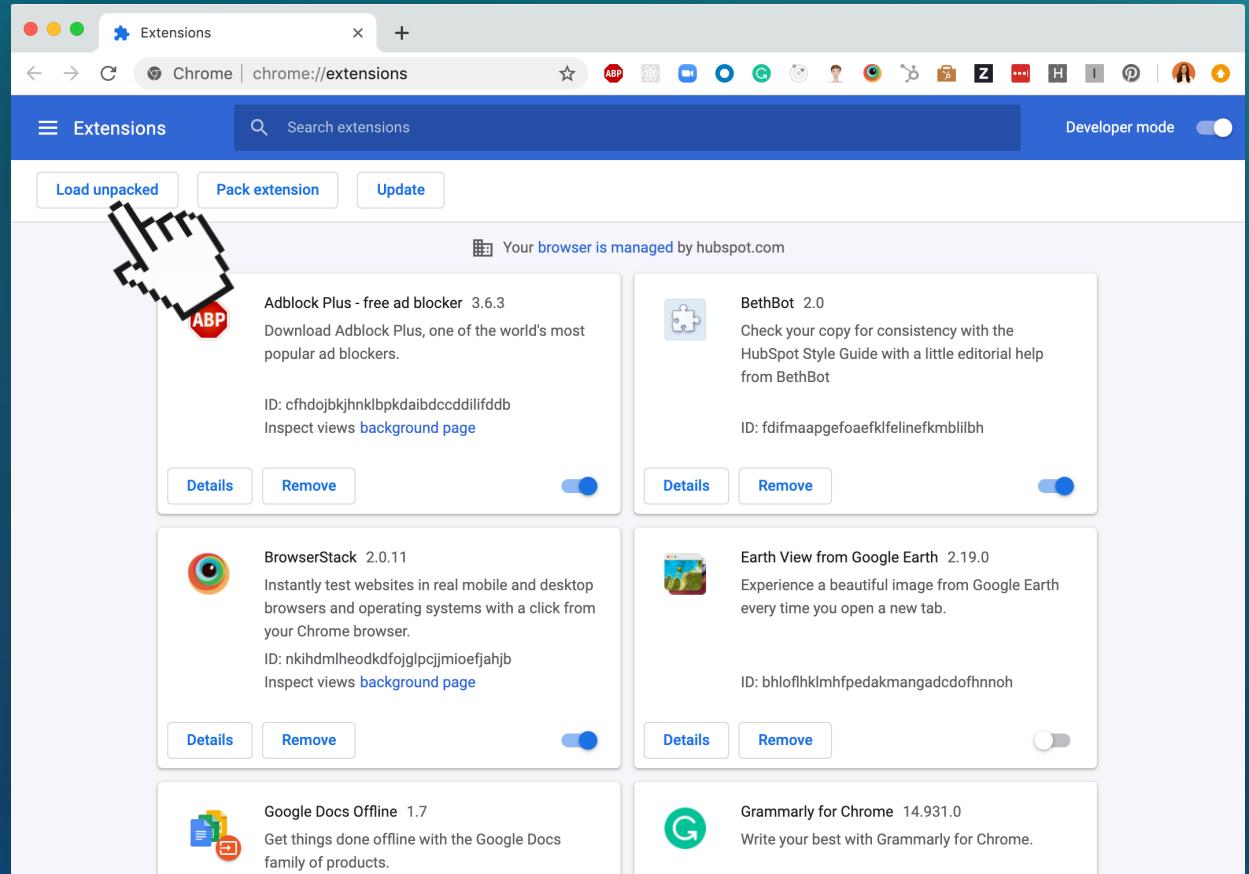


```
1 console.log("Hello world");
```



Load unpacked

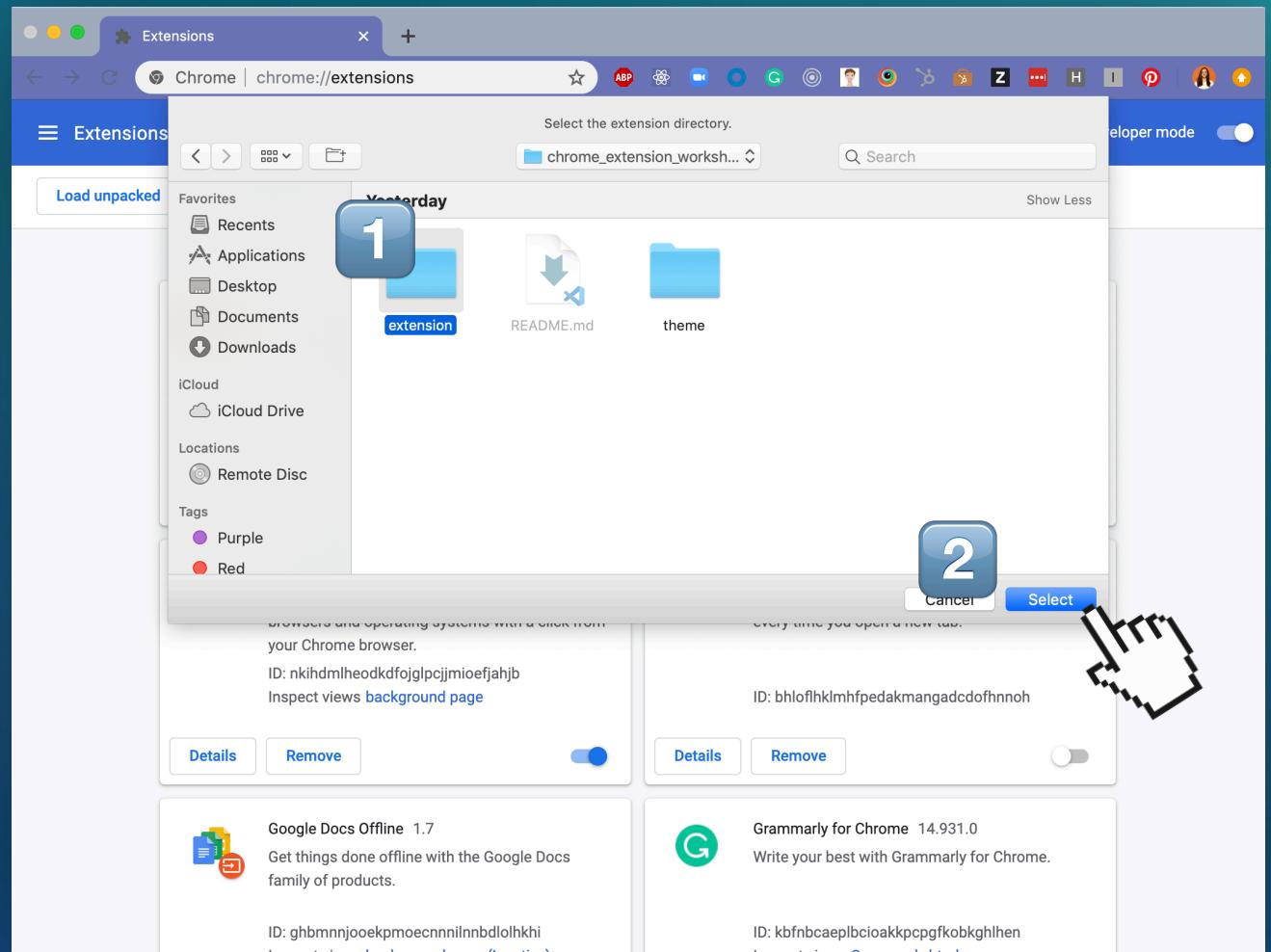
chrome://extensions





Select "extension" folder

chrome://extensions





View background page

chrome://extensions

The screenshot shows the Chrome Extensions page (`chrome://extensions`) with the title bar "Extensions". Below the title bar, there's a toolbar with icons for ABP, G, and others. A search bar says "Search extensions". Underneath, there are buttons for "Load unpacked", "Pack extension", and "Update". A message at the top right says "Your browser is managed by hubspot.com". The main content area displays several extensions:

- Screenshot 1.0**: ID: iikeljppejelhkcllaeogfpgidgidie. Description: Take a screenshot of current tab and open in a new tab with a Download button. Status: Inactive. A large hand cursor icon is positioned over the "Details" button.
- BethBot 2.0**: ID: cfhdojbkjhnlbpkdaibdcc. Description: Check your copy for consistency with the HubSpot Style Guide with a little editorial help.
- Adblock Plus - free ad blocker**: ID: cfhdojbkjhnlbpkdaibdcc. Description: Download Adblock Plus, one of the most popular ad blockers.
- BrowserStack 2.0.11**: ID: cfhdojbkjhnlbpkdaibdcc. Description: Instantly test websites in real browsers and operating systems.



DevTools - chrome-extension://iikeljppejelhkcllaeeogfpgidgidie/_generated_background_page.html

Elements Console Sources Network **Performance** Memory Application Security Audits Adblock Plus HubSpot > :

Preserve log Disable cache Online ↑ ↓

10 ms 20 ms 30 ms 40 ms 50 ms 60 ms 70 ms 80 ms 90 ms 100 ms 110 ms

Recording network activity...
Perform a request or hit ⌘ R to record the reload.
[Learn more](#)

Console What's New Remote devices Rendering

Default levels ▾

1 message Hello world background_one.js:1

1 user mes...
No errors
No warnings
1 info
No verbose

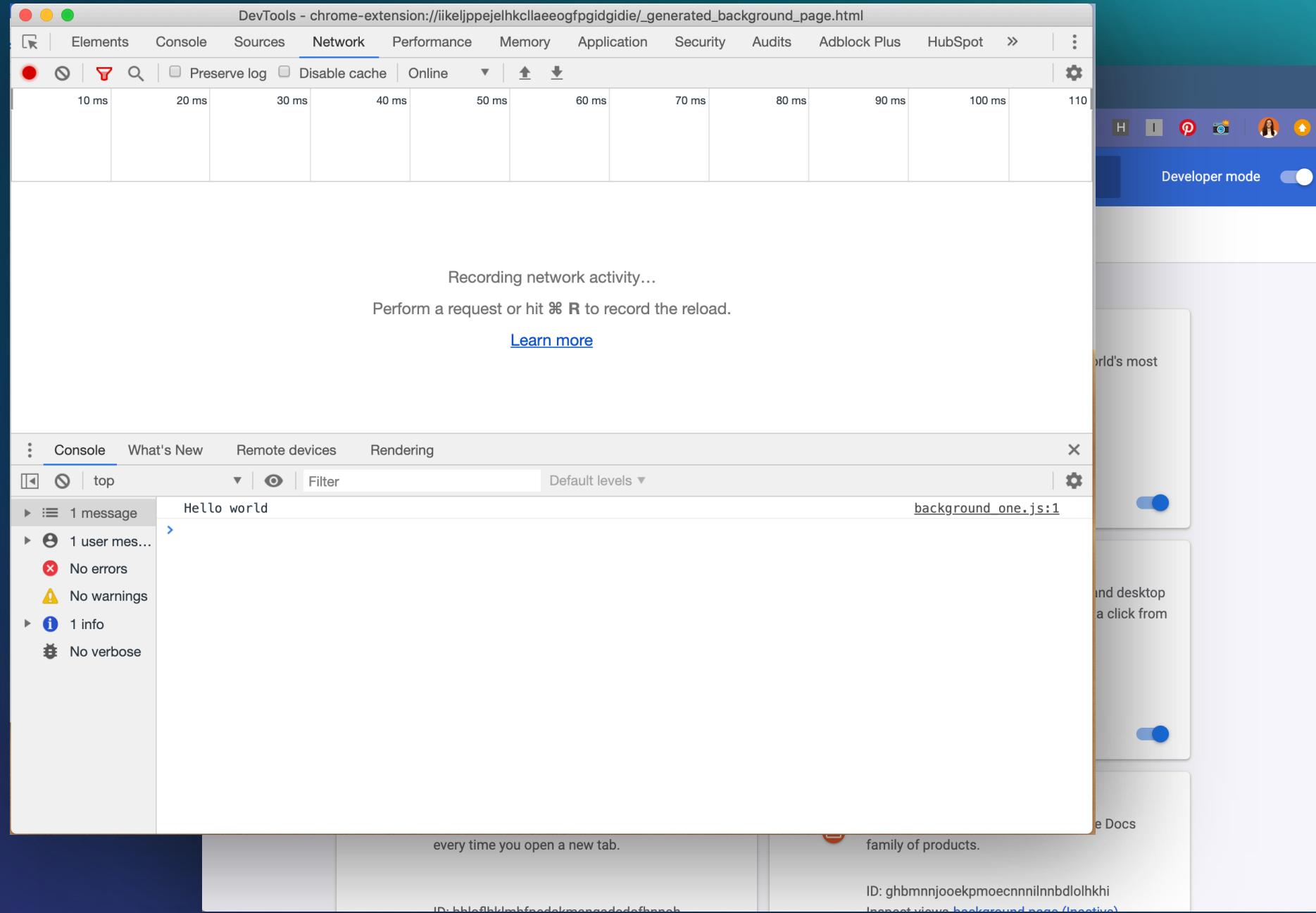
every time you open a new tab.

family of products.

ID: ghbmnjjooekpmoeecnlnnbdlohlkh
background_page (inactive)

Developer mode

#GHC19





background_two.js



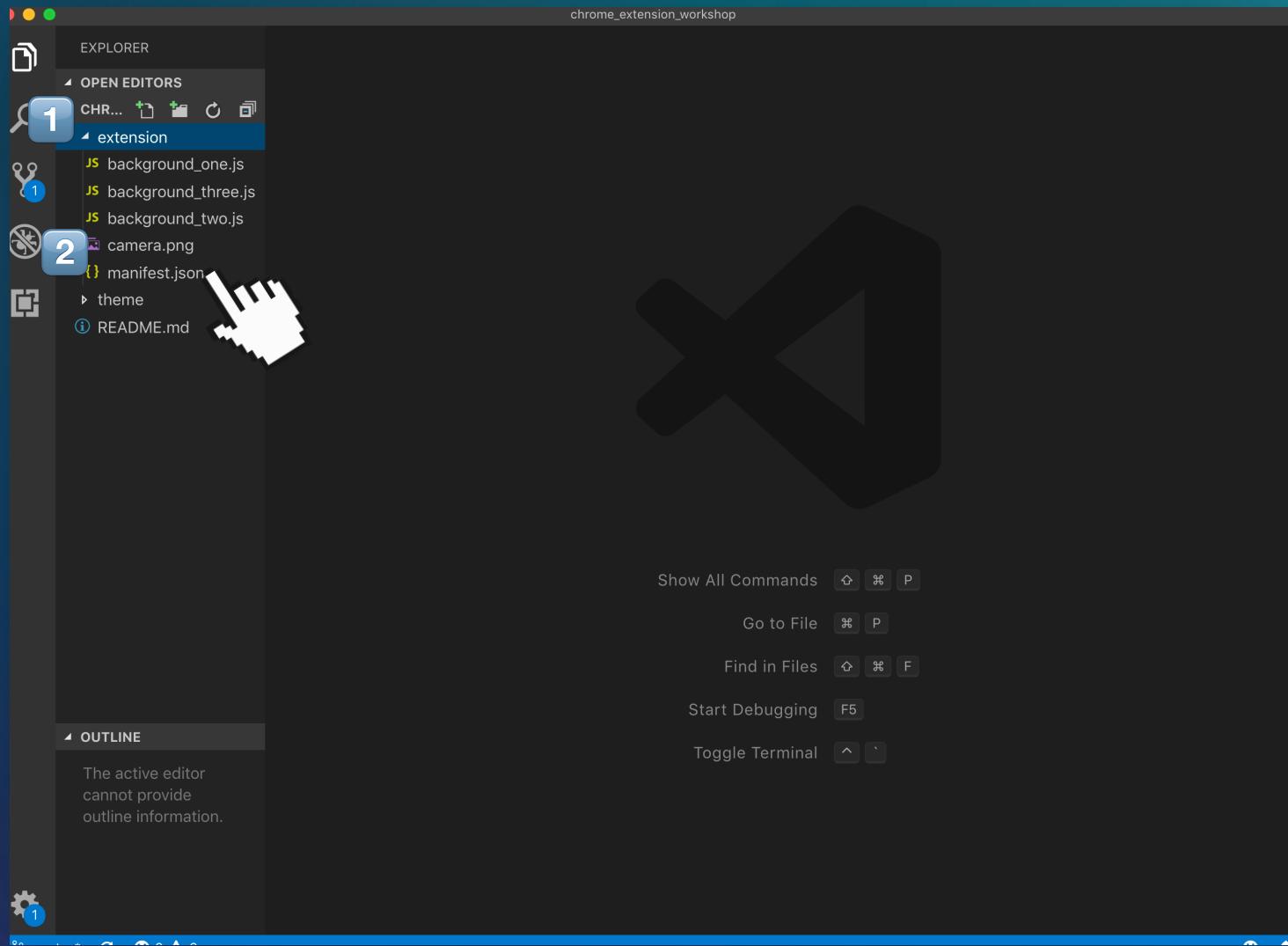
extension/background_two.js



```
1 function logHelloWorld() {  
2   console.log("Hello world");  
3 }  
4  
5 chrome.browserAction.onClicked.addListener(logHelloWorld);
```



Open manifest.json





Update manifest.json



extension/manifest.json

```
1
2 {
3   "name": "Screenshot",
4   "version": "1.0",
5   "manifest_version": 2,
6   "description": "Take and download a screenshot of the current tab",
7   "background": {
8     "persistent": false,
9     "scripts": [
10       "background_two.js"
11     ],
12   },
13   "browser_action": {
14     "default_icon": "camera.png",
15     "default_title": "Say cheese!"
16   },
17   "permissions": [
18     "activeTab",
19     "downloads"
20   ]
21 }
22
```



Refresh extension

chrome://extensions

The screenshot shows the Chrome Extensions management interface. At the top, there's a toolbar with icons for ABP, DevTools, and other browser controls. Below the toolbar, the title bar says "Extensions" and the address bar shows "Chrome | chrome://extensions". A search bar is present above the extension cards. There are three main buttons at the top of the card area: "Load unpacked", "Pack extension", and "Update". The first card visible is "Screenshot 1.0", which has a "Details" button, a "Remove" button, and a toggle switch that is turned on. A large hand cursor icon is positioned over this toggle switch. The second card is "Adblock Plus - free ad blocker", and the third is "BrowserStack 2.0.11". Each card displays its name, a brief description, and "Details" and "Remove" buttons.



View background page

chrome://extensions

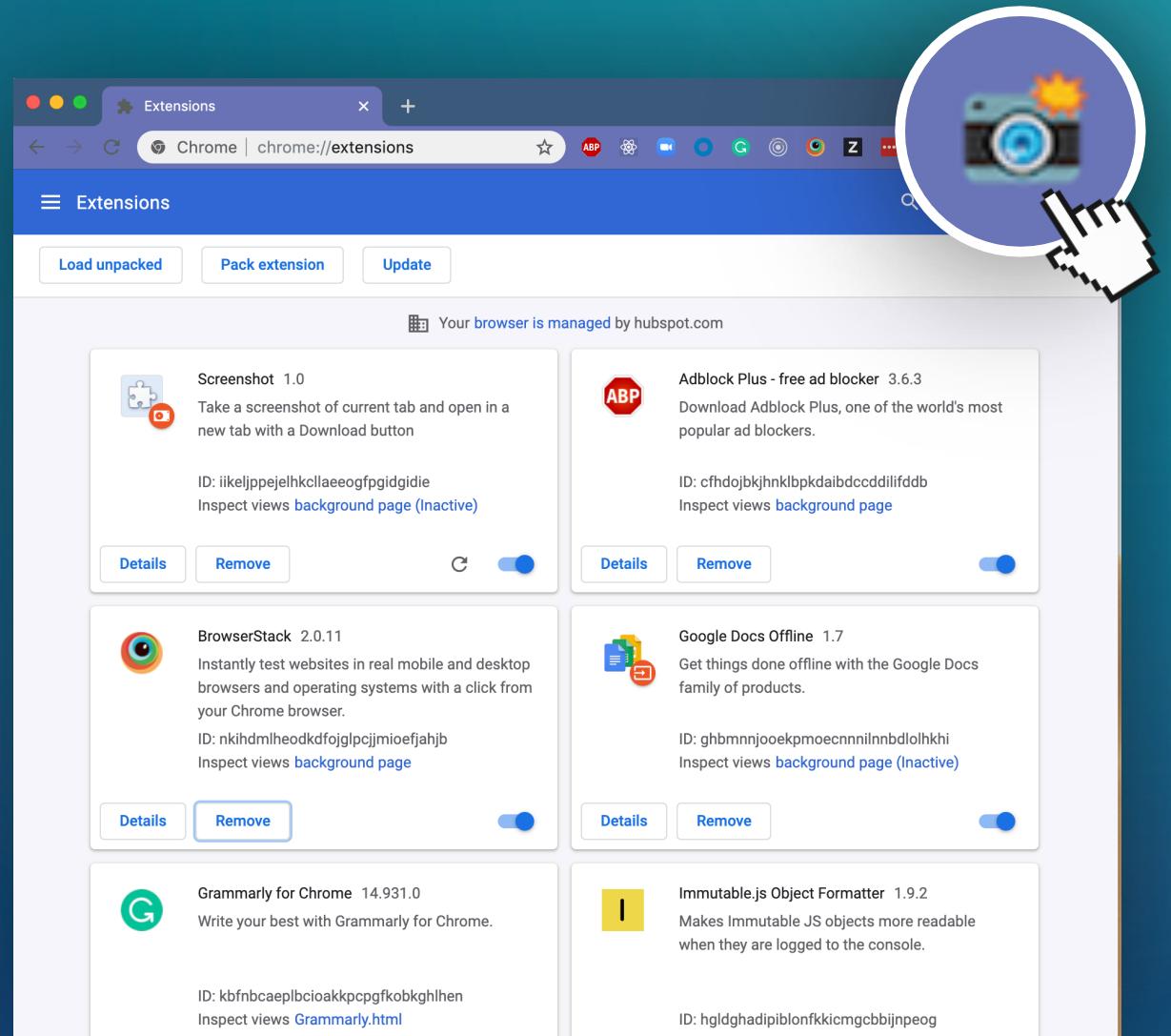
The screenshot shows the Chrome Extensions page (`chrome://extensions`) with the title bar "Extensions". Below the title bar, there's a toolbar with icons for ABP, G, and others. A search bar says "Search extensions". Below the search bar are three buttons: "Load unpacked", "Pack extension", and "Update". A message at the top right says "Your browser is managed by hubspot.com". The main content area displays several extensions:

- Screenshot 1.0**: ID: iikeljppejelhkcllaeogfpgidgidie. Description: Take a screenshot of current tab and open in a new tab with a Download button. Status: Inactive. A large hand cursor icon is positioned over the "Details" button.
- BethBot 2.0**: ID: cfhdojbkjhnlbpkdaibdcc. Description: Check your copy for consistency with the HubSpot Style Guide with a little editorial help.
- Adblock Plus - free ad blocker**: ID: cfhdojbkjhnlbpkdaibdcc. Description: Download Adblock Plus, one of the most popular ad blockers.
- BrowserStack 2.0.11**: ID: cfhdojbkjhnlbpkdaibdcc. Description: Instantly test websites in real browsers and operating systems.

Each extension card has "Details" and "Remove" buttons. A toggle switch is visible on the right side of the Screenshot 1.0 card.



Click browser action





DevTools - chrome-extension://iikeljppejelhkcllaeeogfpgidgidie/_generated_background_page.html

Elements Console Sources Network Performance Memory Application Security Audits Adblock Plus HubSpot ⚡ :

Preserve log Disable cache Online ↑ ↓ ⚡

10 ms 20 ms 30 ms 40 ms 50 ms 60 ms 70 ms 80 ms 90 ms 100 ms 110 ms

Recording network activity...
Perform a request or hit ⌘ R to record the reload.
[Learn more](#)

Console What's New Remote devices Rendering

Default levels ▾

1 message Hello world background_one.js:1

1 user mes...
No errors
No warnings
1 info
No verbose

every time you open a new tab.

family of products.

ID: ghbmnjjooekpmoeecnlnnbdlohlkh
background_page (inactive)

Developer mode

World's most
and desktop
a click from
e Docs



background_three.js



extension/background_three.js

```
1
2 function downloadScreenshot(screenshotUrl) {
3   // download screenshot file
4   chrome.downloads.download({
5     url: screenshotUrl
6   });
7 }
8
9 function takeScreenshot() {
10  // take a screenshot of the current tab
11  chrome.tabs.captureVisibleTab(downloadScreenshot);
12 }
13
14 // when extension button is clicked
15 chrome.browserAction.onClicked.addListener(takeScreenshot);
```



Update manifest.json

extension/manifest.json

```
1
2 {
3   "name": "Screenshot",
4   "version": "1.0",
5   "manifest_version": 2,
6   "description": "Take and download a screenshot of the current tab",
7   "background": {
8     "persistent": false,
9     "scripts": [
10       "background_three.js"
11     ]
12   },
13   "browser_action": {
14     "default_icon": "camera.png",
15     "default_title": "Say cheese!"
16   },
17   "permissions": [
18     "activeTab",
19     "downloads"
20   ]
21 }
22
```





Refresh extension

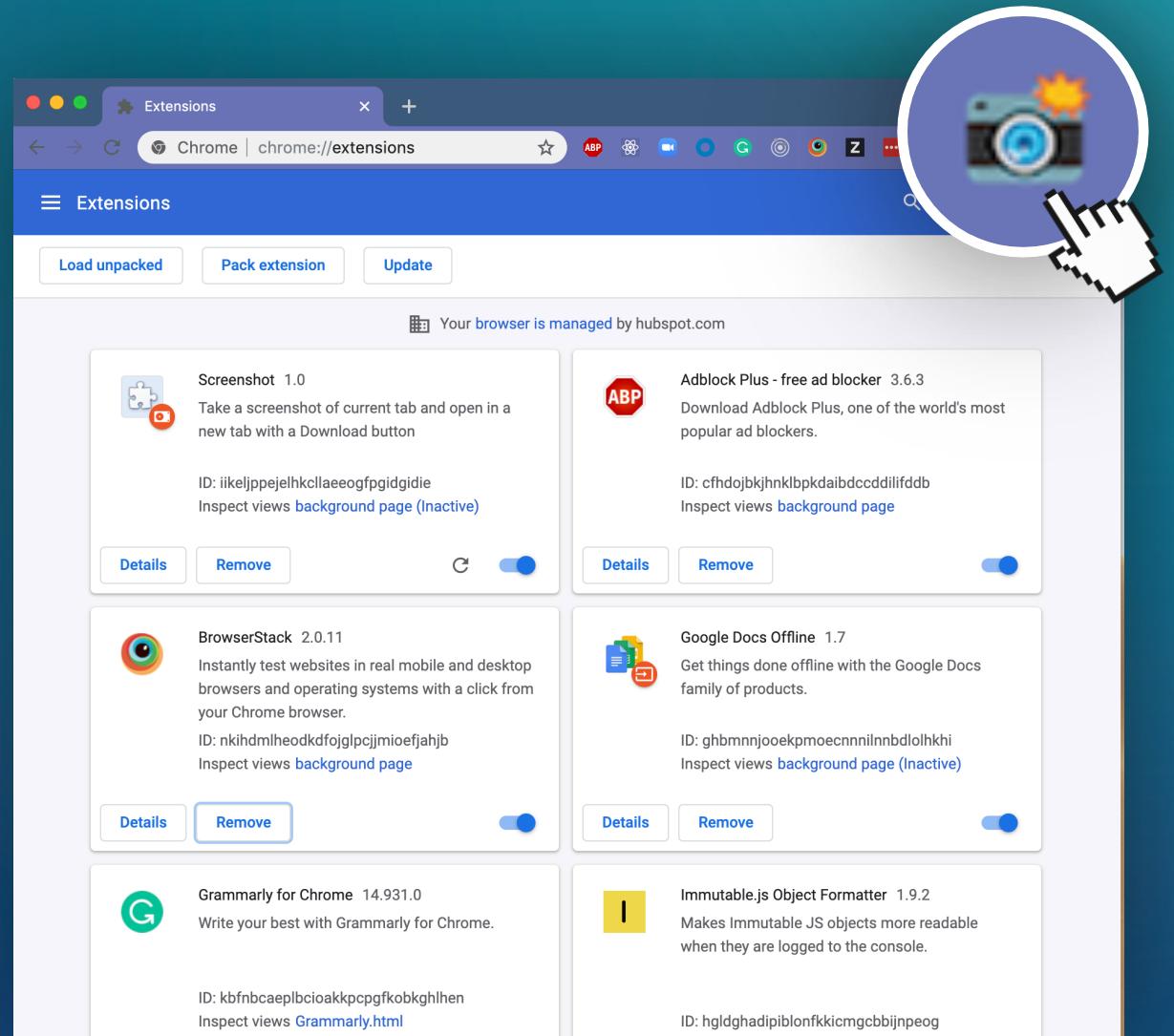
chrome://extensions

The screenshot shows the Chrome Extensions management interface at `chrome://extensions`. At the top, there are buttons for **Load unpacked**, **Pack extension**, and **Update**. A message at the top right states, "Your browser is managed by hubspot.com". Below this, several extensions are listed:

- Screenshot 1.0**: ID: `iikeljppejelhkcllaeeogfpgidgidie`. Description: Take a screenshot of current tab and open in a new tab with a Download button. Status: Enabled (indicated by a blue toggle switch). A hand cursor icon with a circular selection is hovering over the refresh icon in the extension card.
- Adblock Plus - free ad blocker**: ID: `cfhdojbkjhnkbpkdaibdccddilmejjad`. Description: Download Adblock Plus, one popular ad blocker. Status: Enabled.
- BethBot 2.0**: ID: `gcbfjgkldmehlajhmkjgkdknjkfj`. Description: Check your copy for consistency with the HubSpot Style Guide with a little editorial help. Status: Enabled.
- BrowserStack 2.0.11**: ID: `gcbfjgkldmehlajhmkjgkdknjkfj`. Description: Instantly test websites in real browsers and operating systems. Status: Enabled.



Click browser action





BOOM!

Extensions

Chrome | chrome://extensions

Extensions Search extensions Developer mode

Load unpacked Pack extension Update

Screenshot 1.0 Take and download a screenshot of the current tab
ID: licpjopihlijppmmidldphenphohlko Inspect views background page

Details Remove

AdBlock 3.57.0 The most popular Chrome extension, with over 60 million users! Blocks ads all over the web.
ID: gighmmpioblkfepjocnamgkkbiglidom Inspect views devtools://devtools/bund... 1 more...

Details Remove

Dashlane - Password Manager 6.1936.1 Never Forget Another Password. Store them securely as you browse. Autofill them and log in instantly to your favorite websites.
ID: fdjamakpfbbddfjaooiikfcapjohcfmg Inspect views background page

Details Remove

Full Page Screenshot 1.2.0 Take awesome screenshots of entire websites and capture page elements. No sign up. Offline.
By Conceptboard
ID: glgomjpomoahapeekneidkinhcjfnnhmb Inspect views background page (Inactive)

Details Remove

Google Docs Offline 1.7 Get things done offline with the Google Docs family of products.
ID: ghmnnjooekpmoecnnnilnnbdlolhki Inspect views background page (Inactive)

Details Remove

Google Hangouts 2019.411.420.3 Hangouts brings conversations to life with photos, emoji, and even group video calls for free.
ID: nckgahadagoajjgafhacjanaoiiphad Inspect views background page,1 more...

Show All X

download (2).jpeg

#GHC19



Questions?



Cleanup theme

chrome://settings/appearance

The screenshot shows the Chrome Settings page with the URL `chrome://settings/appearance`. The left sidebar has sections like People, Autofill, Appearance (which is selected and highlighted in blue), Search engine, Default browser, On startup, Advanced, Extensions, and About Chrome. The main content area is titled "Appearance". It includes settings for Themes (HubSpot theme), Show home button (Disabled), Show bookmarks bar (disabled), Font size (Medium (Recommended)), Customize fonts, Page zoom (100%), Pressing Tab on a webpage highlights links, as well as form fields (enabled), and Show warning before quitting with `⌘Q` (enabled). Below this is the "Search engine" section, which shows Google as the search engine used in the address bar and a link to Manage search engines.

Reset to default

Themes
HubSpot theme

Show home button
Disabled

Show bookmarks bar

Font size
Medium (Recommended)

Customize fonts

Page zoom
100%

Pressing Tab on a webpage highlights links, as well as form fields

Show warning before quitting with ⌘Q

Search engine

Search engine used in the address bar
Google

Manage search engines

Thank you

zsobin@hubspot.com / akutch@hubspot.com

We're Hiring! HubSpot.com/jobs

