

CSCI 4140 – Tutorial 9

Remote debugging on Android or iOS devices

Matt YIU, Man Tung ([mtyiucse](mailto:mtyiucse@gmail.com))

SHB 118

Office Hour: Tuesday, 3-5 pm

2015.03.19

Outline

- Why remote debugging?
- Requirements
- Remote debugging on Android
- Remote debugging on iOS

Why remote debugging?

- **Mobile web development** is becoming more popular
 - *“The way your web content behaves on mobile can be dramatically different from the desktop experience”* (from <https://developer.chrome.com/devtools/docs/remote-debugging>)

Sidetrack: Designing for mobile devices

- Differences for designing for mobile devices:
 - Working with **small screens**
 - Solved by **responsive web design**
 - Working with **touch screens**
 - Solved by using **DOM Touch events** (https://developer.mozilla.org/en-US/docs/Web/Guide/Events/Touch_events)
 - Optimizing **images**
 - Also solved by **responsive web design**
 - Use images with retina screen support (keyword: **@2x**)
 - **Mobile APIs**
 - Introduced by **HTML5**
 - New possibilities offered by mobile devices, such as **orientation** and **geolocation**

Ref.: <https://developer.mozilla.org/en-US/docs/Web/Guide/Mobile>

Why remote debugging?

- **Mobile web development** is becoming more popular
- For desktop, we have the **developer tools** for debugging
- For mobile devices, how can we debug our webpages?
- **Remote debugging** addresses the need!
 - With remote debugging, you can debug live content on your mobile device from your **development machine!**

Requirements

- For **Android** users, you need:
 - Chrome 32 or later installed on your development machine (Mac/Windows/Linux)
 - A USB cable to connect your Android device
 - **Chrome for Android** installed on your **Android 4.4+** device
- For **iOS** users, you need:
 - Safari on your development machine (**Mac only**)
 - A USB cable to connect your iOS device
 - Safari and **iOS 6** or later on your iOS device
- For those do not have an Android or iOS device:
 - Use **emulator** for [Android](#) (Mac/Windows/Linux) or [iOS](#) (Xcode on Mac)

Debugging Firefox for Android is also possible. But, we will skip it because of the time limit...

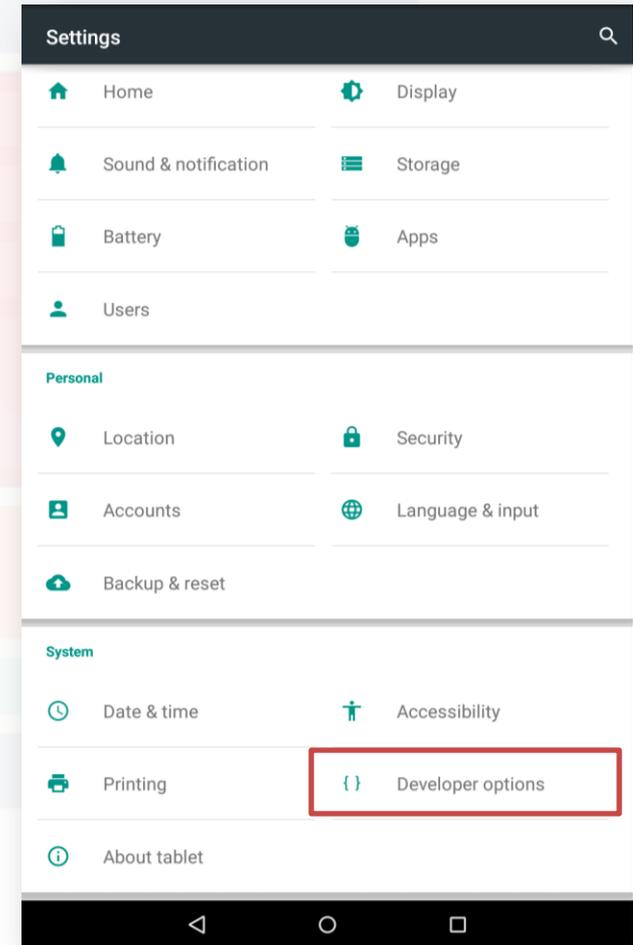


Remote debugging on Android

Warning: Chrome on iOS is not supported!

Setting up your Android device

- Step 1: Enable **USB debugging**
 - Select “Settings > Developer options”

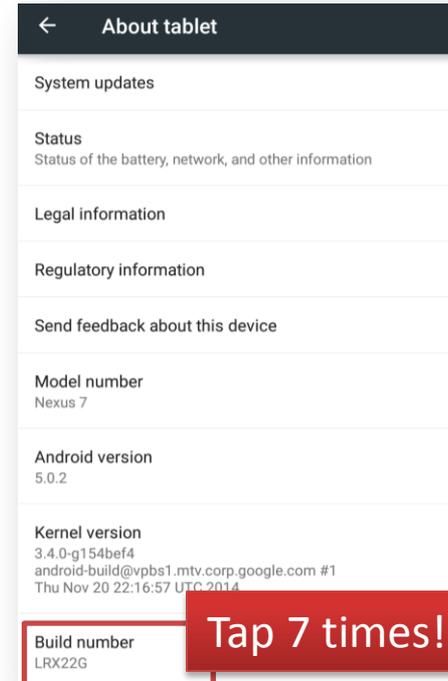


Setting up your Android device

- Step 1: Enable **USB debugging**
 - Select “**Settings > Developer options**”

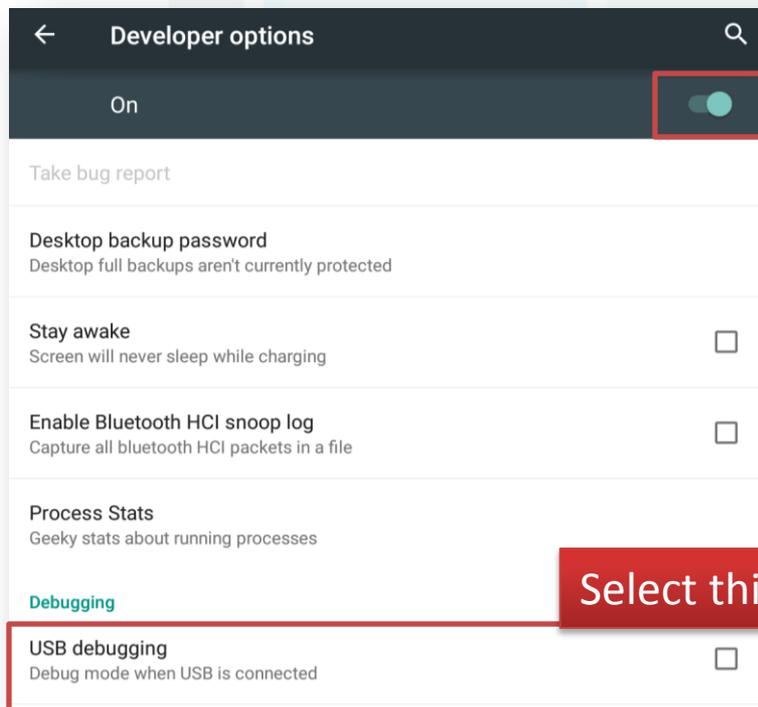
If you cannot find the options...

- It is because the developer options are hidden by default on Android 4.2 and later
- To enable the developer options, select “**Settings > About phone/tablet**” and tap “**Build number**” 7 times



Setting up your Android device

- Step 2: In **Developer options**, select the **USB debugging** checkbox
 - An alert prompts you to allow USB debugging. Tap **OK**



Select this

Allow USB debugging?

USB debugging is intended for development purposes only. Use it to copy data between your computer and your device, install apps on your device without notification, and read log data.

CANCEL OK

Setting up your Android device

- Step 3: Connect the device to your development machine using a **USB cable**
 - Install the appropriate **USB driver** for your device for **Windows**
 - See [OEM USB Drivers](#) on the Android Developers' site

Discovering devices in Chrome

- After setting up remote debugging on Android, **discover** your device on your **desktop** Chrome browser
- Step 1: Navigate to “**chrome://inspect**” and confirm that **Discover USB devices** is checked
 - Alternatively, you can select **Chrome menu > More tools > Inspect Devices**



Discovering devices in Chrome

- Step 2: On your **Android device**, an alert prompts you to allow USB debugging from your computer. Tap **OK**
 - The message **USB debugging connected** displays in the device's notification drawer

Allow USB debugging?

The computer's RSA key fingerprint is:
9F:39:97:33:BF:DC:E2:D4:03:D3:46:34:93:56:E7:4D

Always allow from this computer

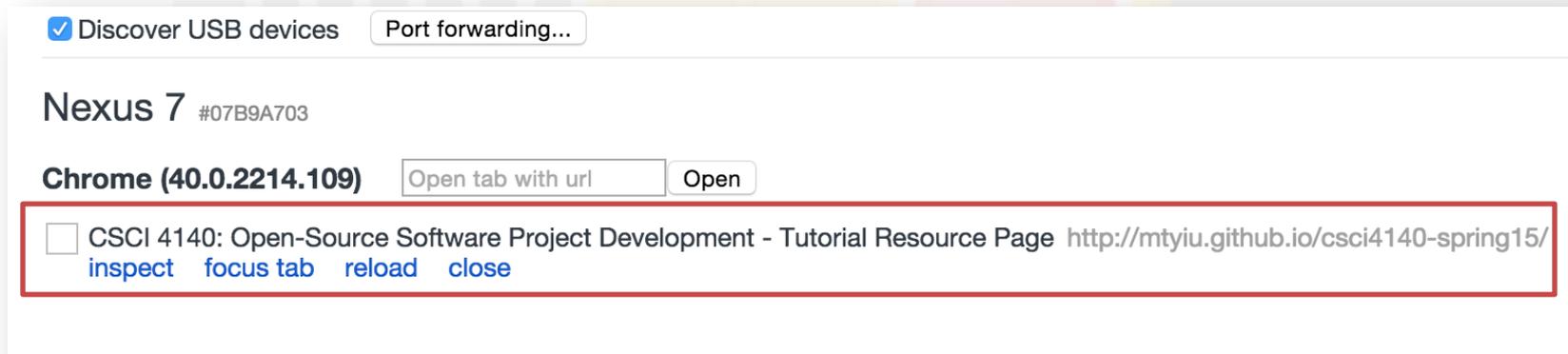
CANCEL

OK

To skip this alert in the future, check
Always allow from this computer.

Discovering devices in Chrome

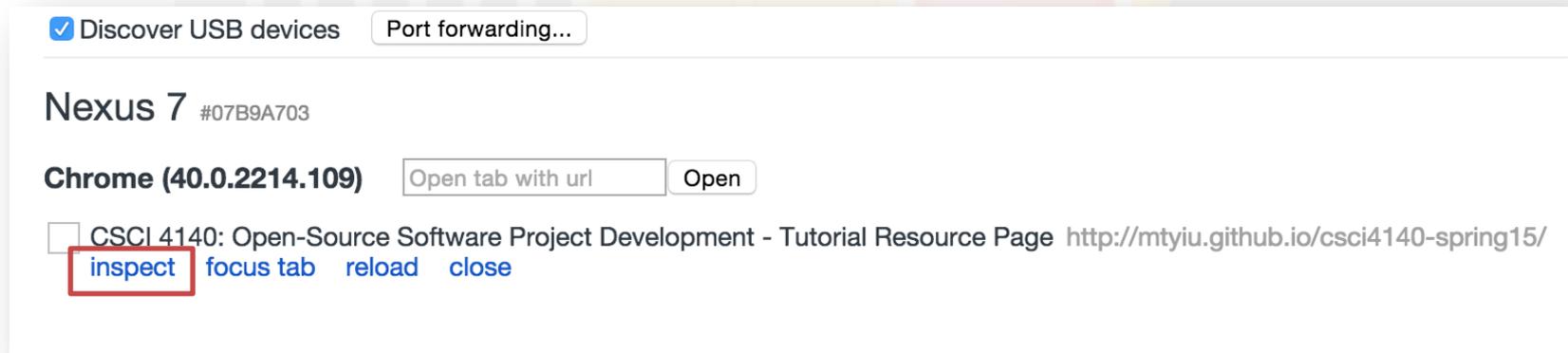
- Step 3: On your computer, the **chrome://inspect** page displays every connected device, together with its **open tabs** and **debug-enabled WebViews**
 - Consult the [Troubleshooting](#) section if you cannot see them



Desktop

Debugging remote browser tabs

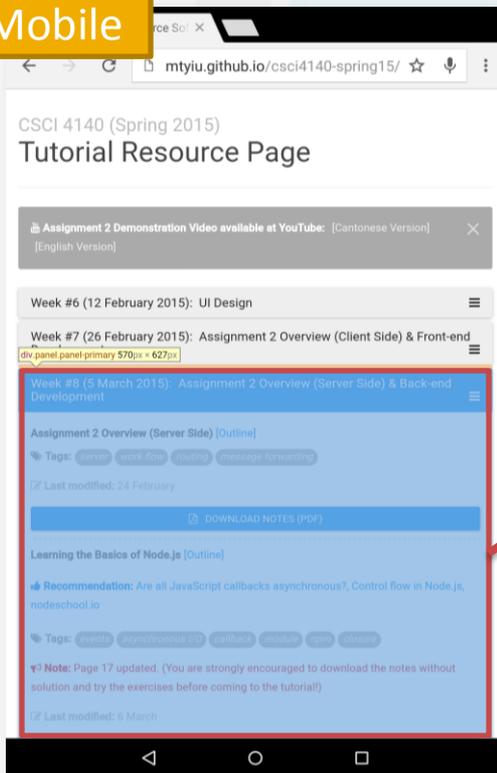
- Now you are ready to launch **DevTools** and debug your **remote browser tabs**
- Click **inspect** below the browser tab you want to debug



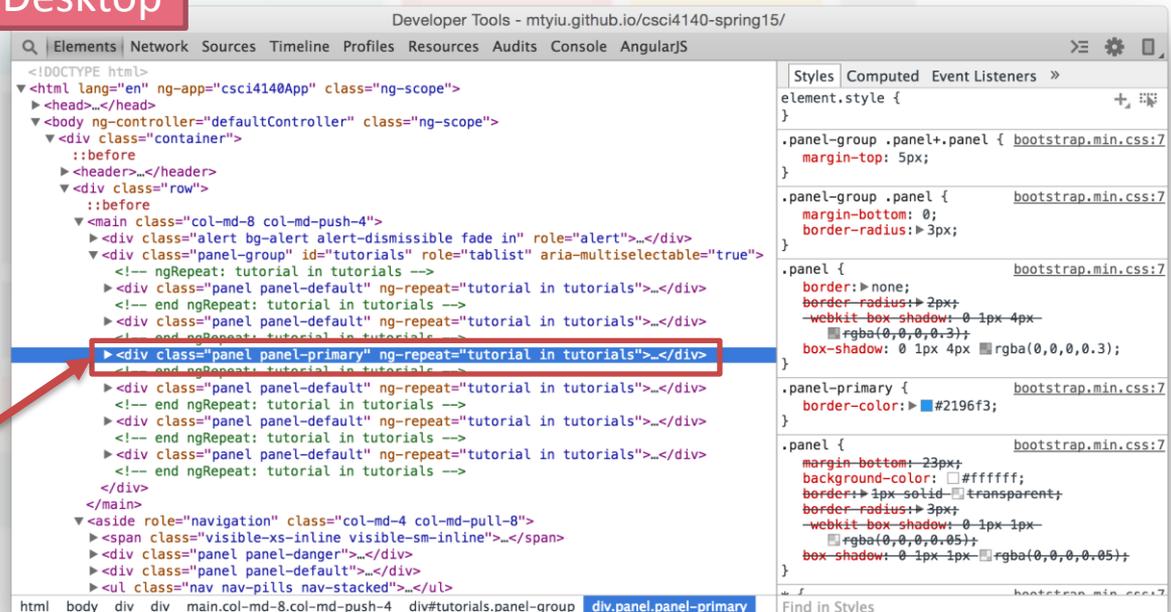
Debugging remote browser tabs

- A new instance of **Chrome DevTools** launches on the computer
 - The usage of this DevTools is the same as that of the one for desktop

Mobile



Desktop



Debugging tips

- Use **F5** (or **Cmd+R** on Mac) to reload a **remote page** from the DevTools window
- Keep the device on a **cellular network** and use the **Network** panel to view the **network waterfall** under actual mobile conditions
- Use the **Timeline** panel to analyze **rendering** and **CPU usage**
- If you're running a local web server, use [port forwarding](#) or [virtual host mapping](#) to access the site on your device

References

- The instructions are mostly *copied* from <https://developer.chrome.com/devtools/docs/remote-debugging>
 - Content available under the [CC-By 3.0 license](https://creativecommons.org/licenses/by/3.0/)



Will be skipped

Remote debugging on Android

In case there are some Firefox fans...

Prerequisites

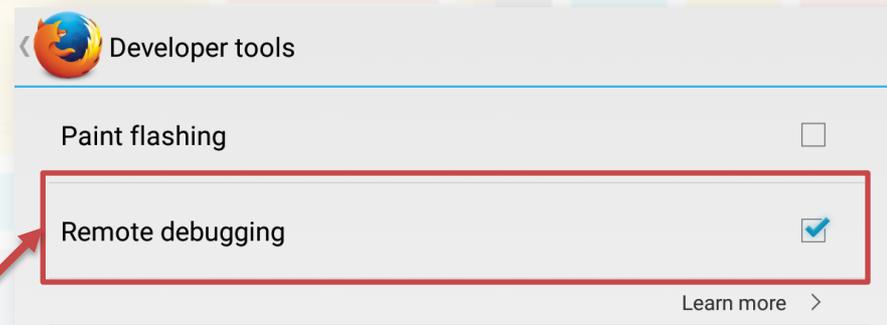
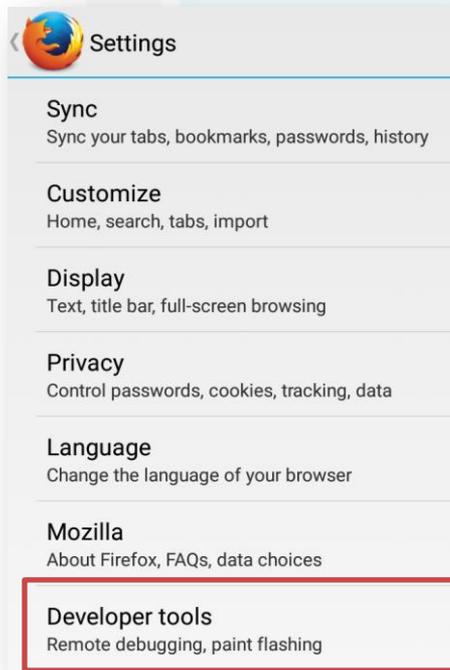
- A desktop computer with **Firefox 36+** installed
- An Android device with **Firefox for Android 35+** installed
- A **USB cable** to connect the two devices

Setting up your Android device

- Step 1: Again, you need to enable **USB debugging** on your Android device
- Please follow **pp. 8-11** to enable USB debugging

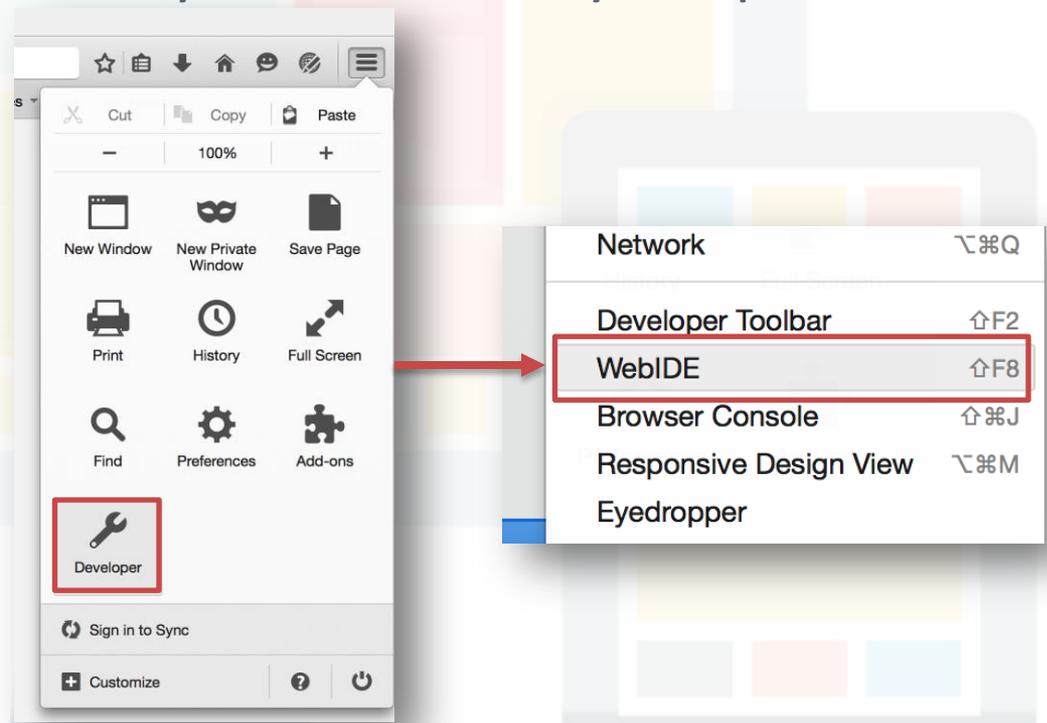
Setting up your Android device

- Step 2: Enable **remote debugging** in Firefox for Android
- Open the browser and open its menu, select **Settings** > **Developer tools**. Check the “**Remote debugging**” box.



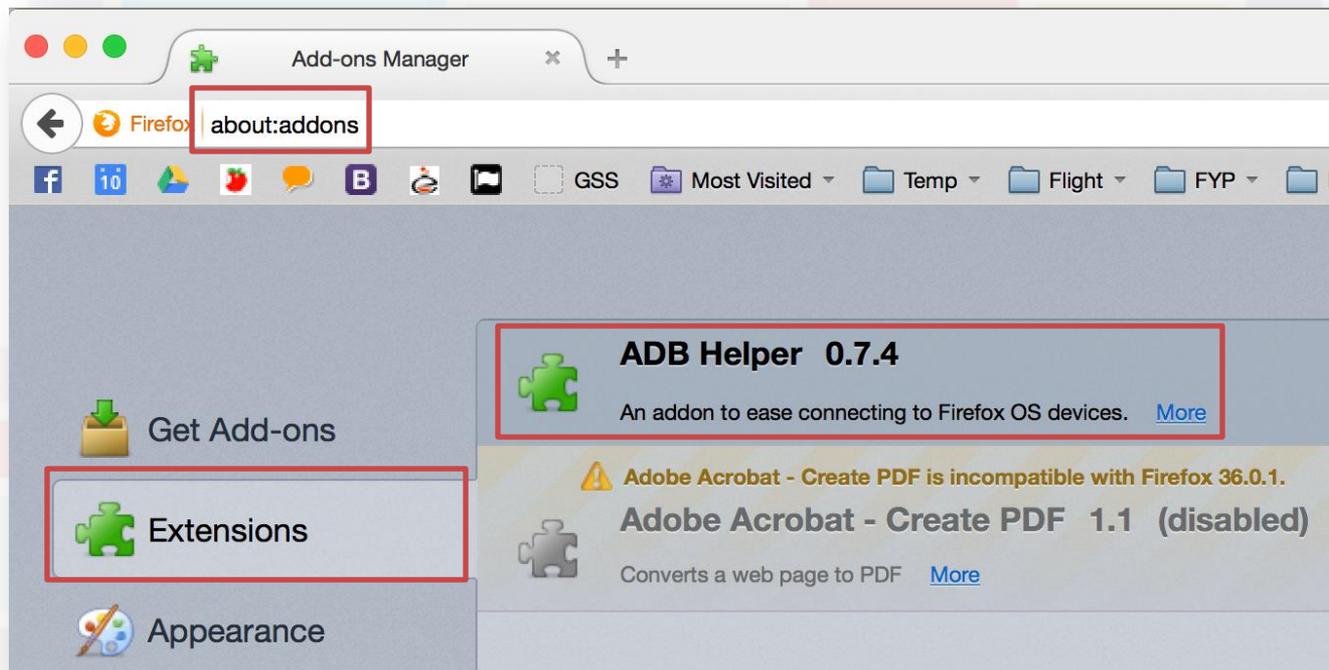
Configuring Firefox on Desktop

- You desktop Firefox needs to have the **ADB Helper** add-on, version 0.7.1 or higher
- It will be installed automatically the first time you open the **WebIDE**
- To open WebIDE, click the menu button > **Developer** > **WebIDE**



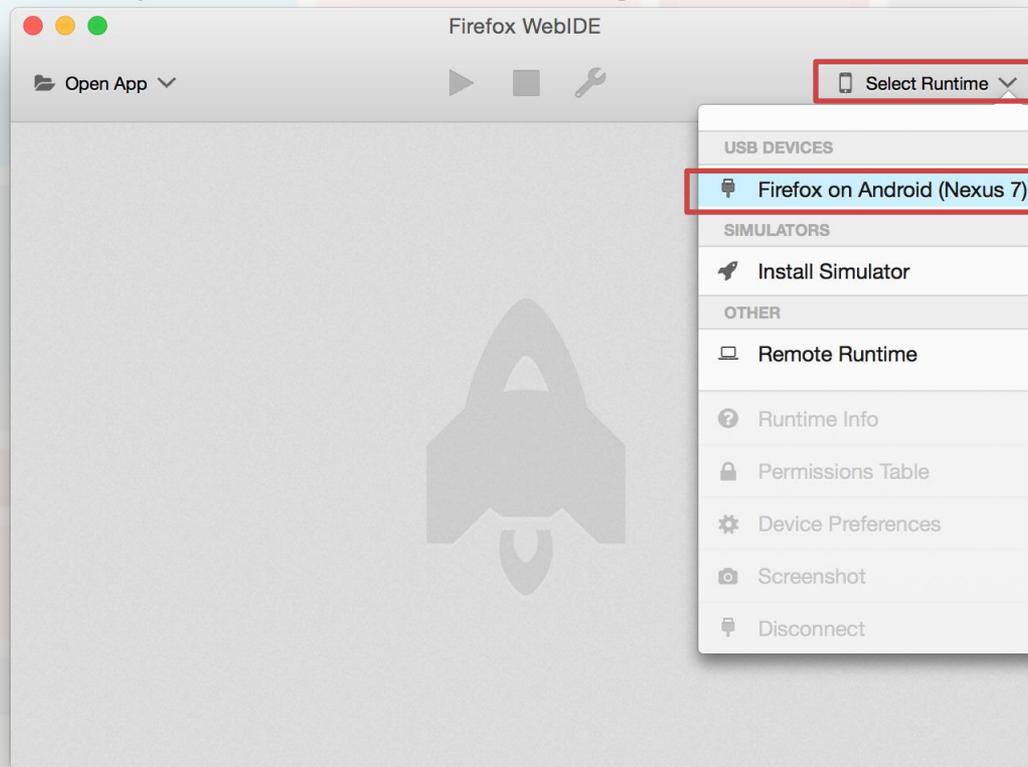
Configuring Firefox on Desktop

- To verify that ADB Helper is installed, navigate to “**about:addons**” and select the “**Extension**” tab



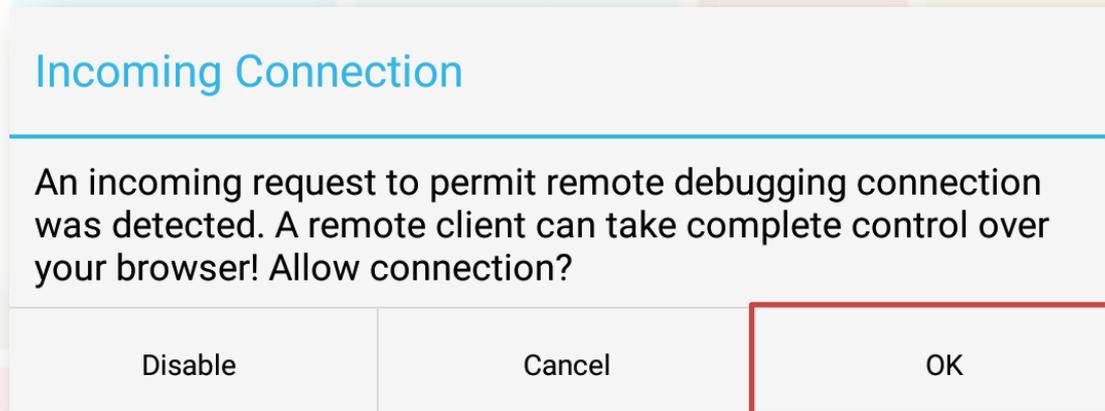
Connecting devices in Firefox

- Step 1: In WebIDE, click “**Select Runtime**” and select the Android device you want to debug



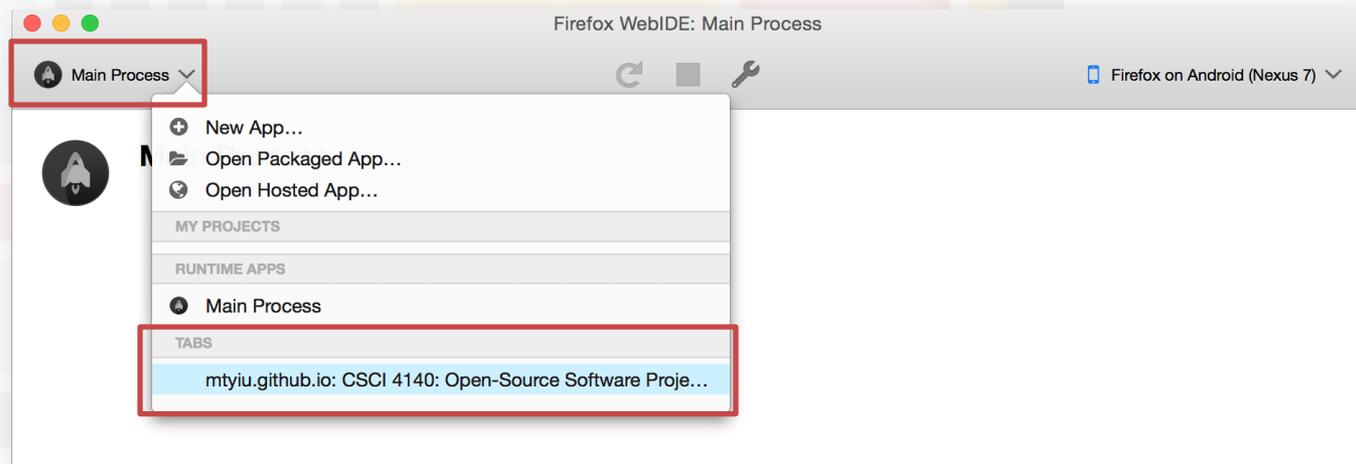
Connecting devices in Firefox

- Step 2: On your **Android device**, an alert prompts you to allow USB debugging from your computer. Tap **OK**



Debugging remote browser tabs

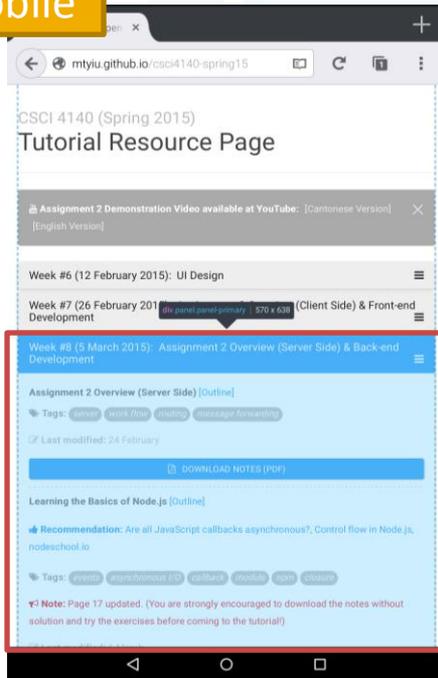
- Now you are ready to launch **Firefox Developer Tools** and debug your **remote browser tabs**
- In the WebIDE, click “**Main Process**” and select the remote tab that you want to debug



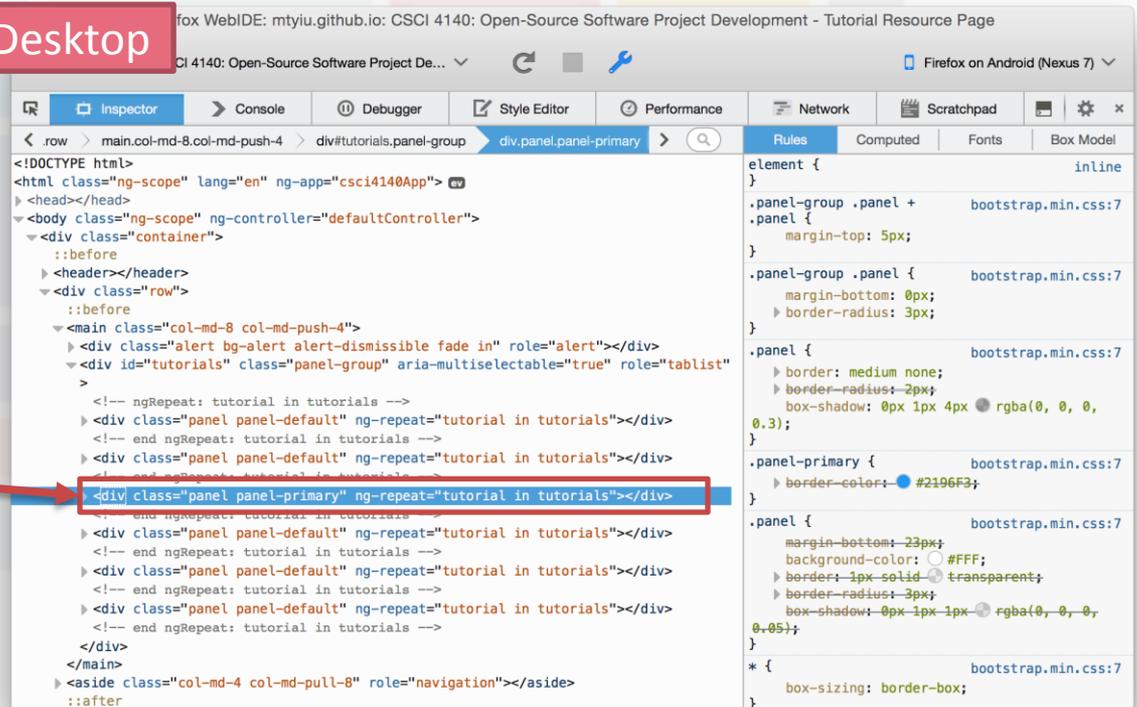
Debugging remote browser tabs

- The Firefox Developer Tools will open up and you can start debugging!

Mobile



Desktop



References

- The instructions are mostly adapted from https://developer.mozilla.org/en-US/docs/Tools/Remote_Debugging/Debugging_Firefox_for_Android_with_WebIDE

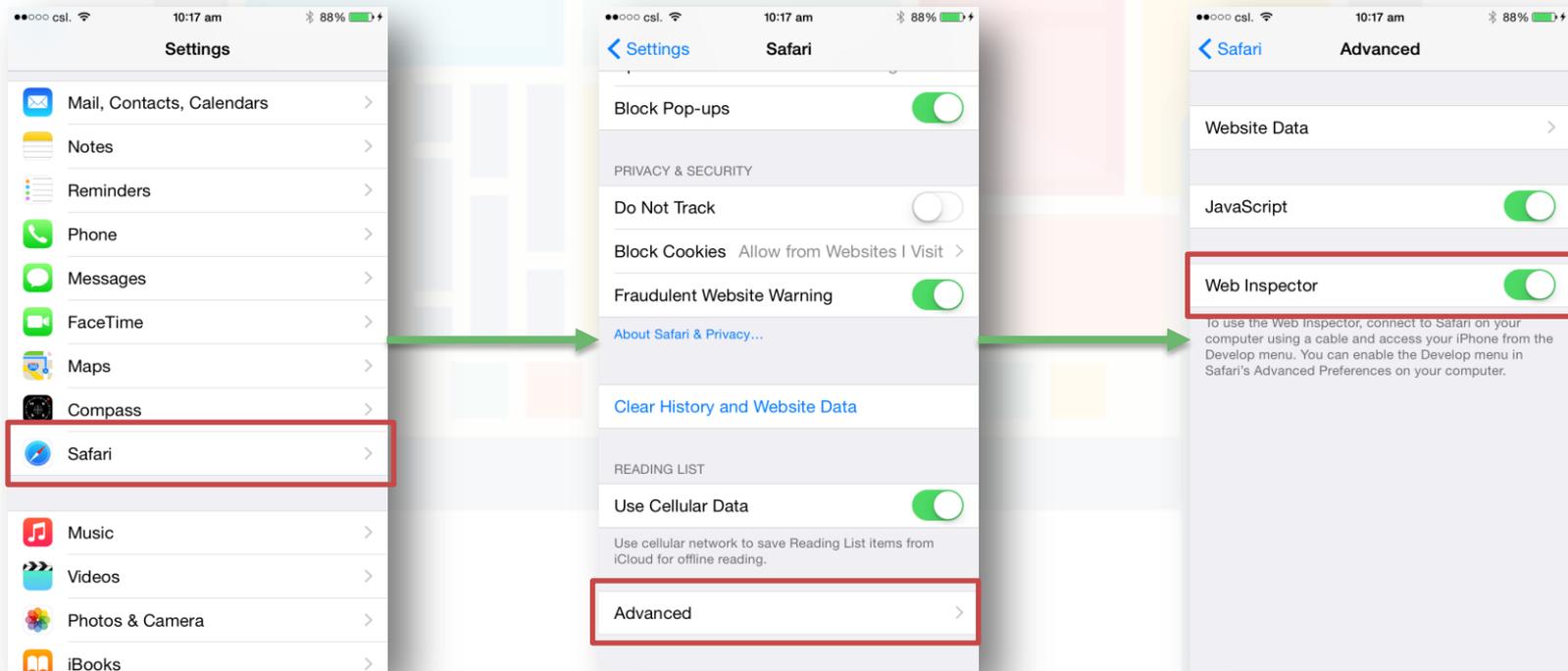


Remote debugging on iOS

Warning: Safari for Windows is not supported!

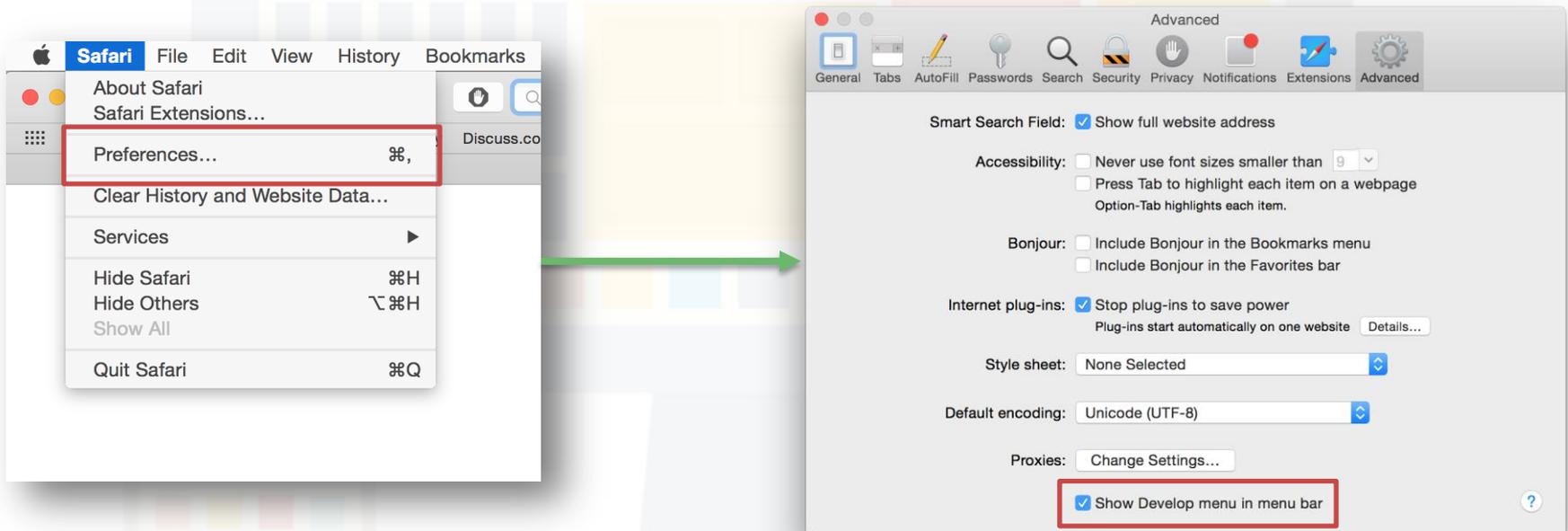
Setting up your iOS device

- Enable **Web Inspector**
 - Go to the **Settings** app and choose “**Safari > Advanced**”
 - Toggle on the **Web Inspector** switch



Setting up Safari on Mac

- Enable **Develop** menu
 - In desktop Safari, go to “**Safari > Preferences...**” menu
 - Select the **Advanced** tab
 - Select the “**Show Develop menu in menu bar**” checkbox

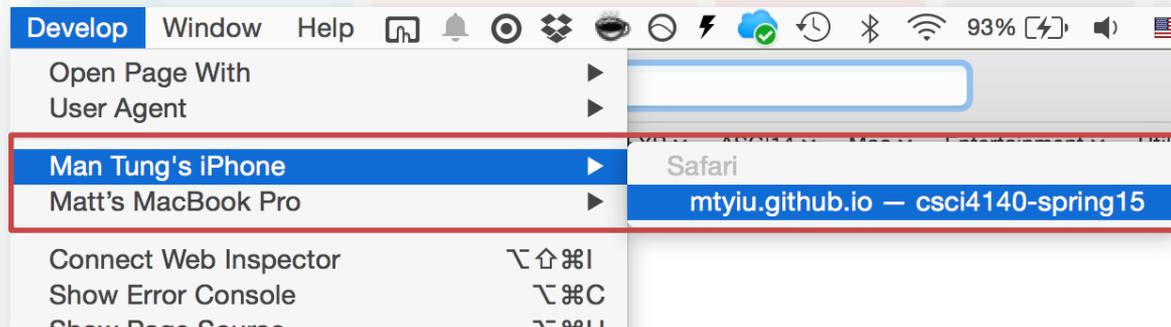


Discovering devices in Safari

- Connect the device to your development machine using a **USB cable**
- To begin inspecting, simply enter the URL of the page you want to inspect on the device
- At the same time, open Safari on Mac

Debugging remote browser tabs

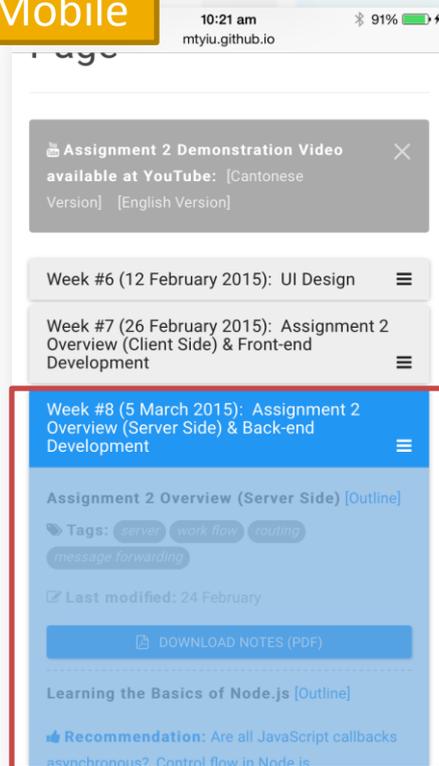
- Choose the site from the “**Develop**” menu in Safari



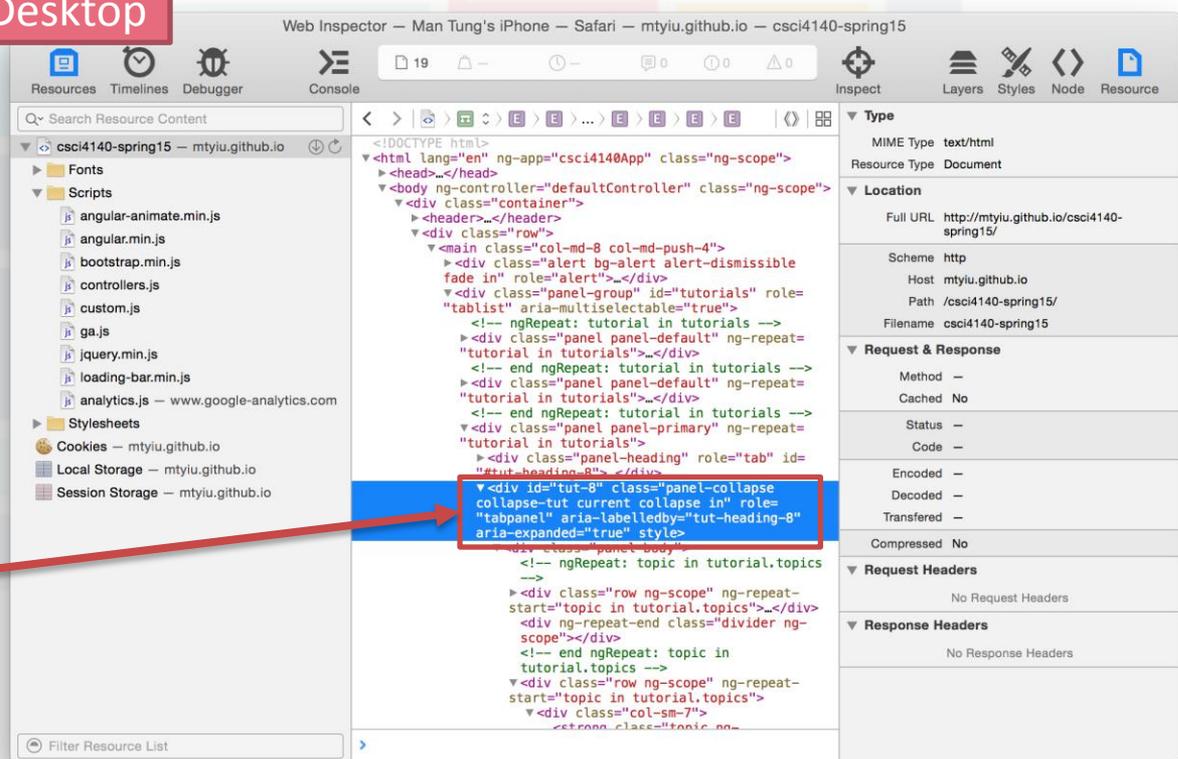
Debugging remote browser tabs

- **Safari's Web Inspector** will open up and you can start remote debugging!

Mobile



Desktop



Remote debugging for other browsers

- You may find some useful information on:
 - <http://developer.telerik.com/featured/a-concise-guide-to-remote-debugging-on-ios-android-and-windows-phone/>
 - <http://stackoverflow.com/questions/11262236/ios-remote-debugging>
- **Disclaimer:** I didn't try the tools listed on these pages 😊
- Good luck to your assignment and project (if you are using the mobile browser as the controller)!

– End –