

# Creating an App Experience for Mobile and Desktop

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**Maximiliano Firtman**  
MOBILE+WEB DEVELOPER  
@firt [www.firt.mobi](http://www.firt.mobi)

# Overview

## Creating an app experience for mobile and desktop

- The PWA criteria
- The app experience
- Working with pages within a PWA
- Progressive enhancement
- The icon
- Abilities
- Limitations



# The PWA Criteria

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Progressive Web App is a  
design pattern for the web

When does a website  
become a PWA?

# Three Main Components of a PWA

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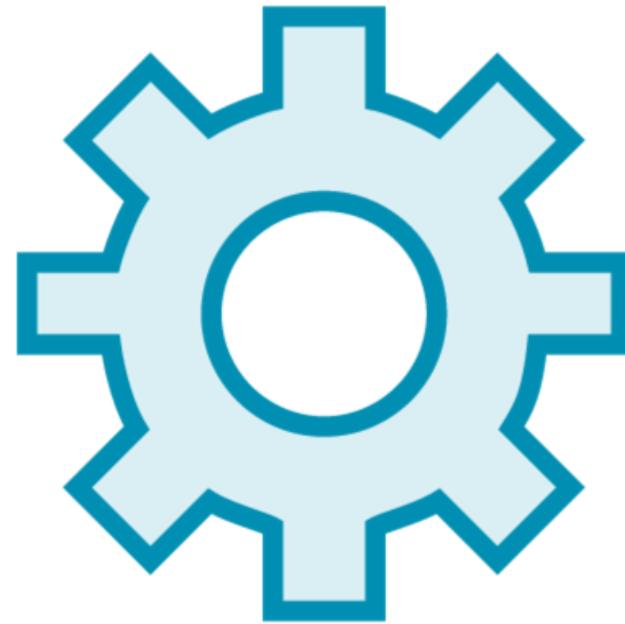


**Web app**

# Three Main Components of a PWA

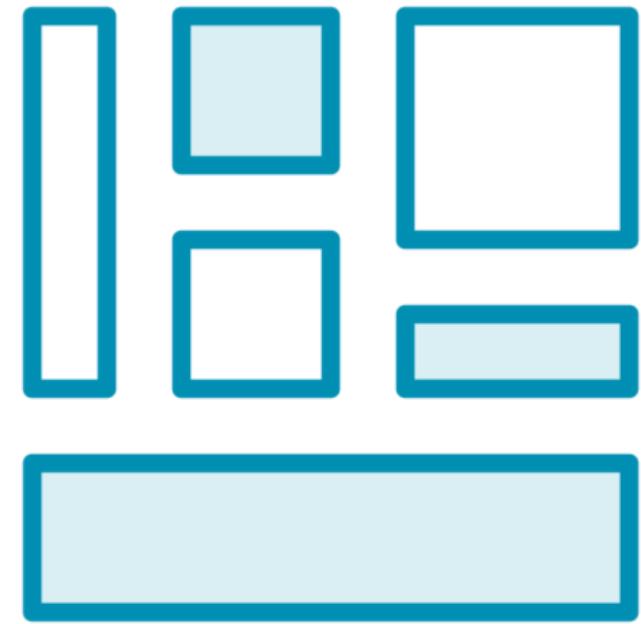


**Web app**

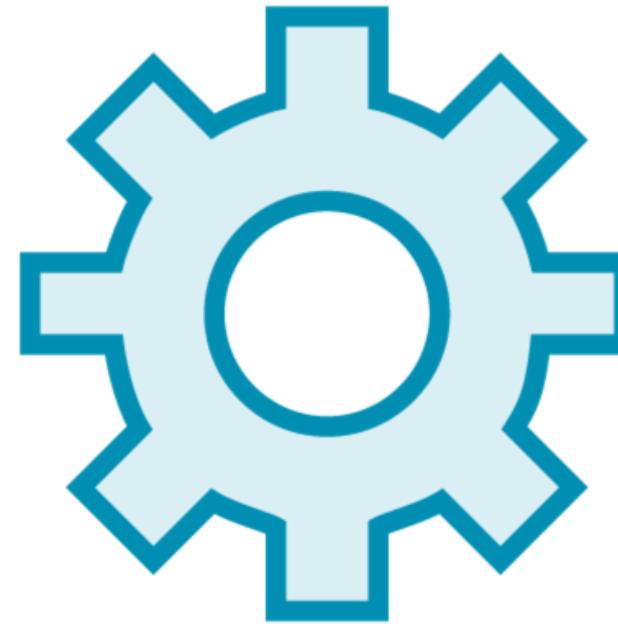


**Service worker**

# Three Main Components of a PWA



**Web app**

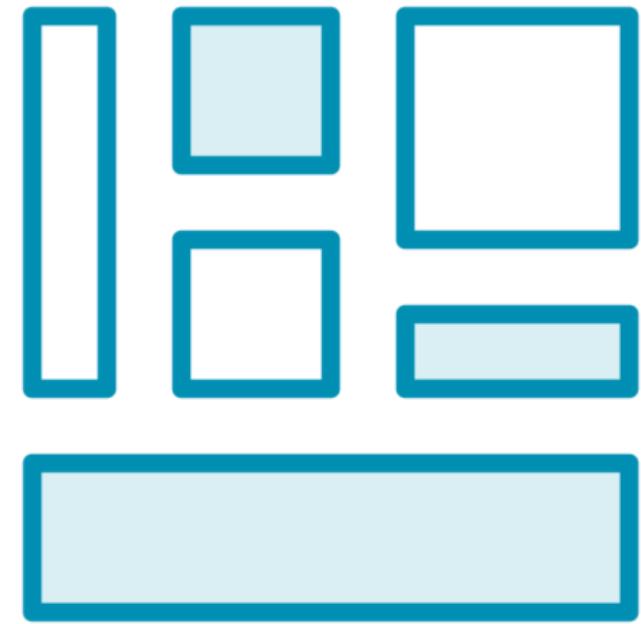


**Service worker**

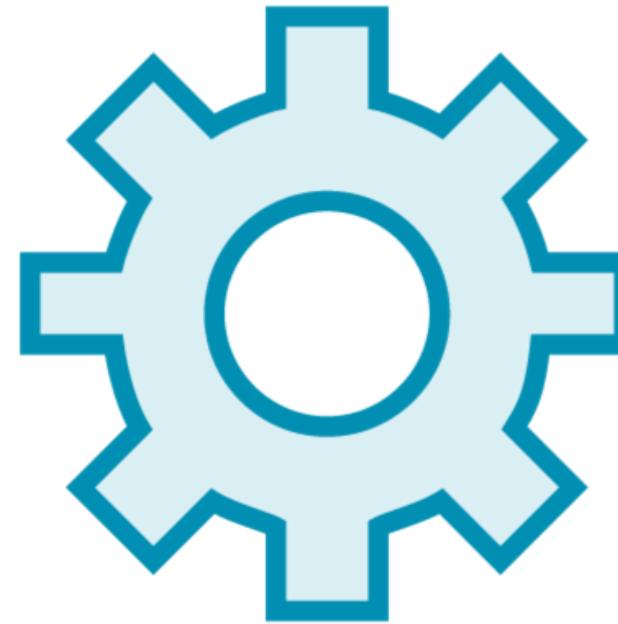


**App distribution**

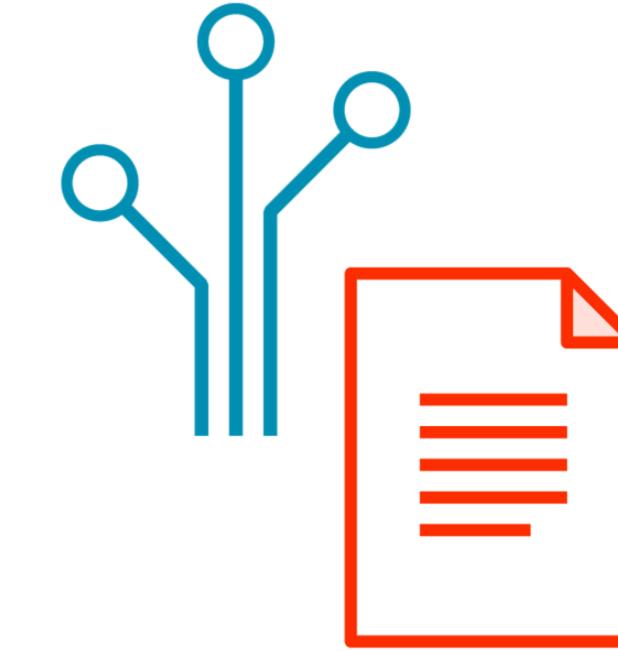
# Three Main Components of a PWA



**Web app**



**Service worker**



**Web app manifest**

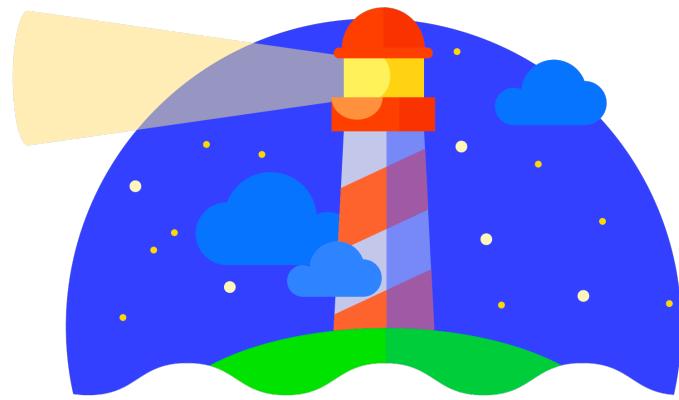
```
{  
  "name": "PWA Name",  
  "theme_color": "#385770",  
  "background_color":  
    "#18481d",  
  "display": "standalone",  
  "orientation": "portrait",  
  "scope": "/",  
  "start_url": "/",  
  "icons": [ ]  
}
```



### Web app manifest

- W3C spec
- JSON file
- Attached to your web app
- Meta data for app installation

How do you know if a URL  
is a PWA?



## Lighthouse

Open source, maintained by Chrome

Available as a CLI and within DevTools

It tests your website against PWA Criteria

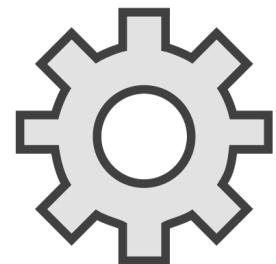
Criteria may change with time



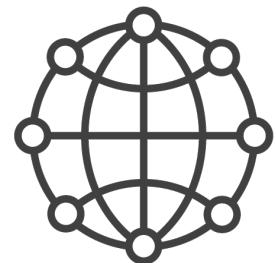
# Progressive Web App Installability Criteria



**App meta data is present**



**Service worker is installed (secure connection)**



**App works offline**

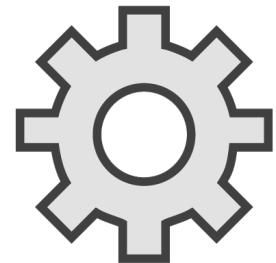


**App is fast**

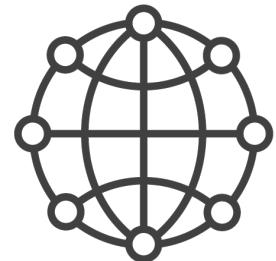
# Progressive Web App Installability Criteria



**App meta data is present**



**Service worker is installed (secure connection)**



**App works offline**



**App is fast**





If it passes the criteria,

- It's officially a PWA
- Installation will be possible
- A hint for the user may appear
- Future SEO and discoverability
- Content can get out of the browser's UI

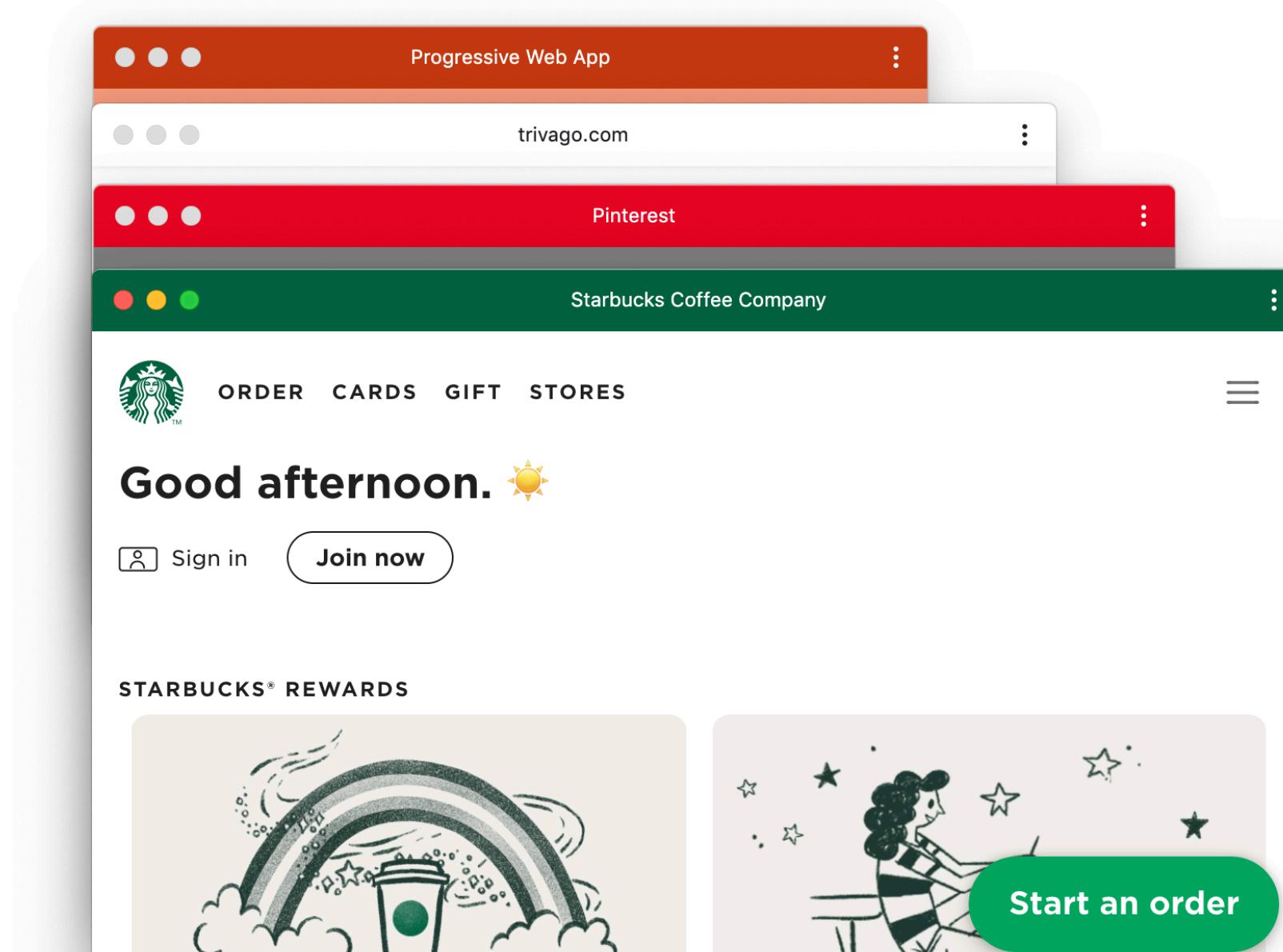


# The App Experience

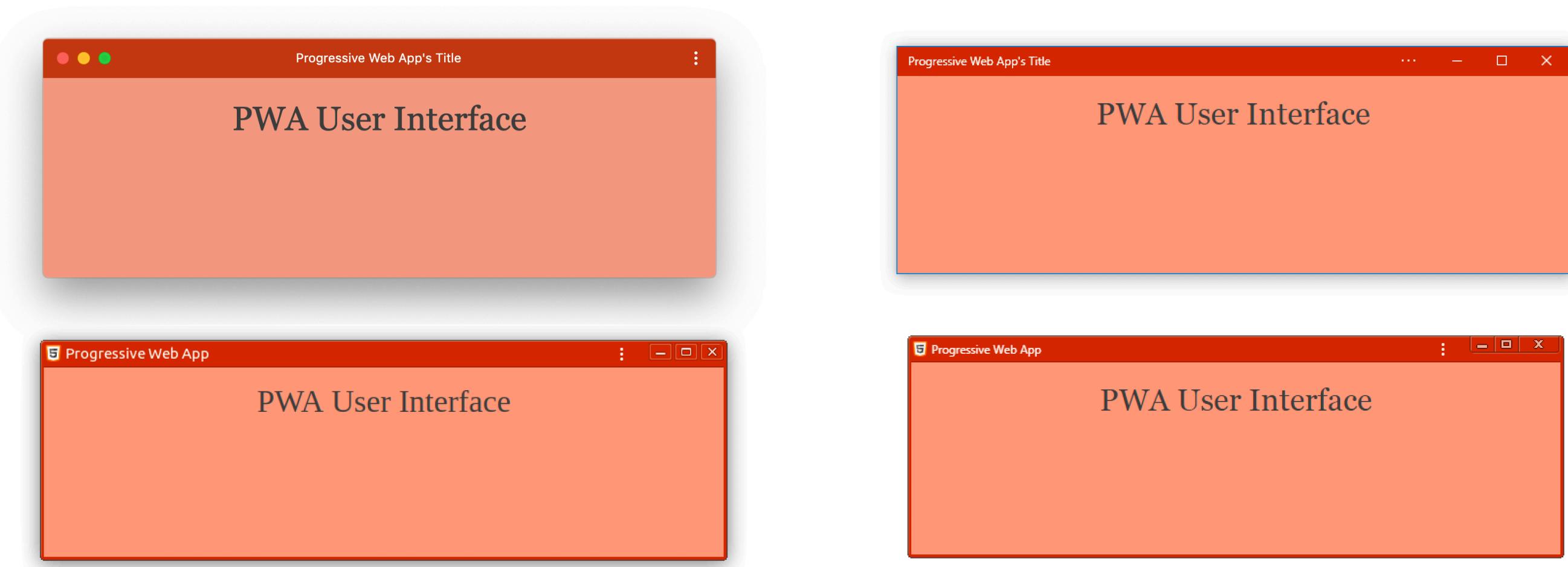
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The app experience differs  
per platform and browser

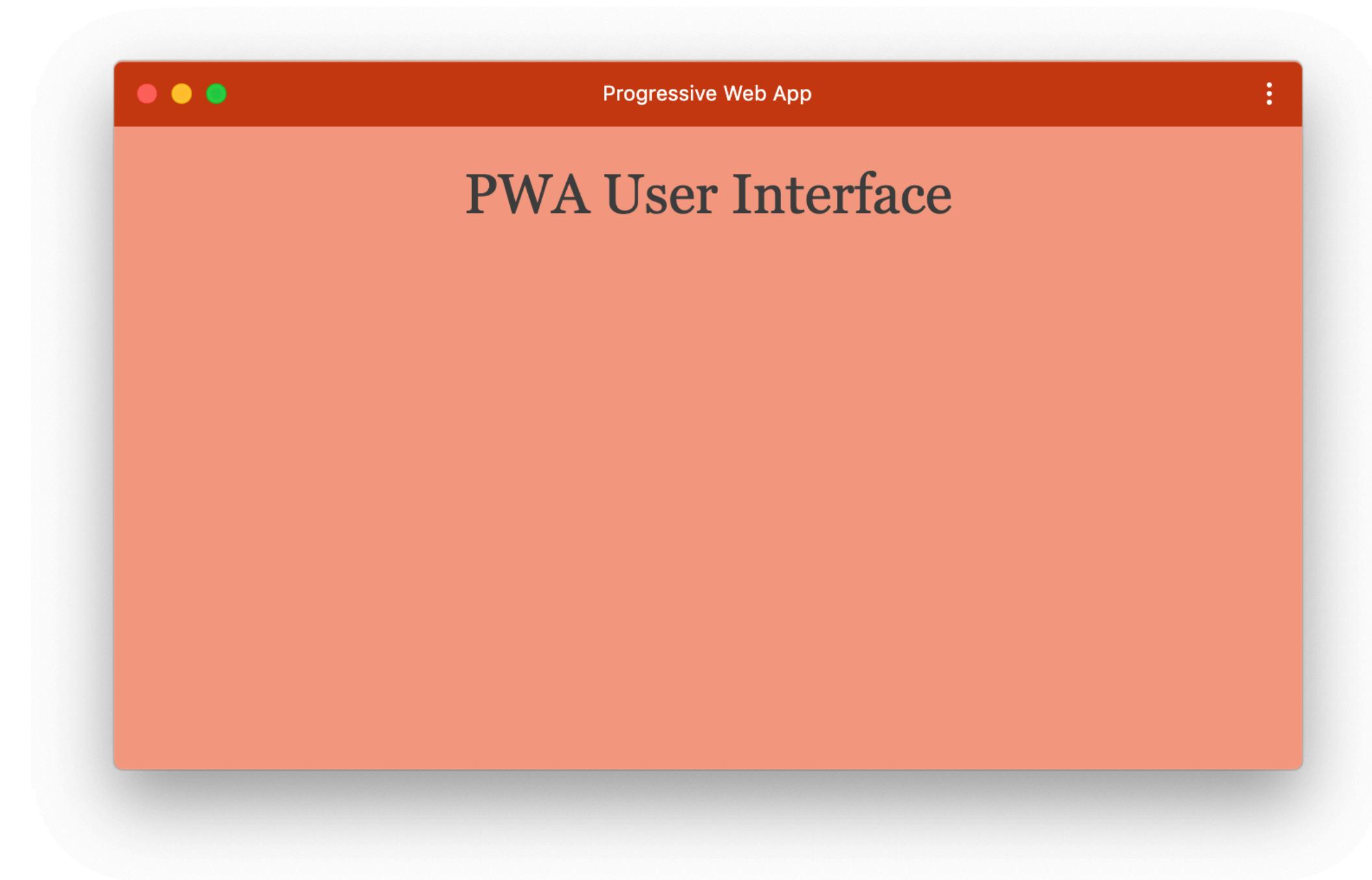
# PWA Theme Color



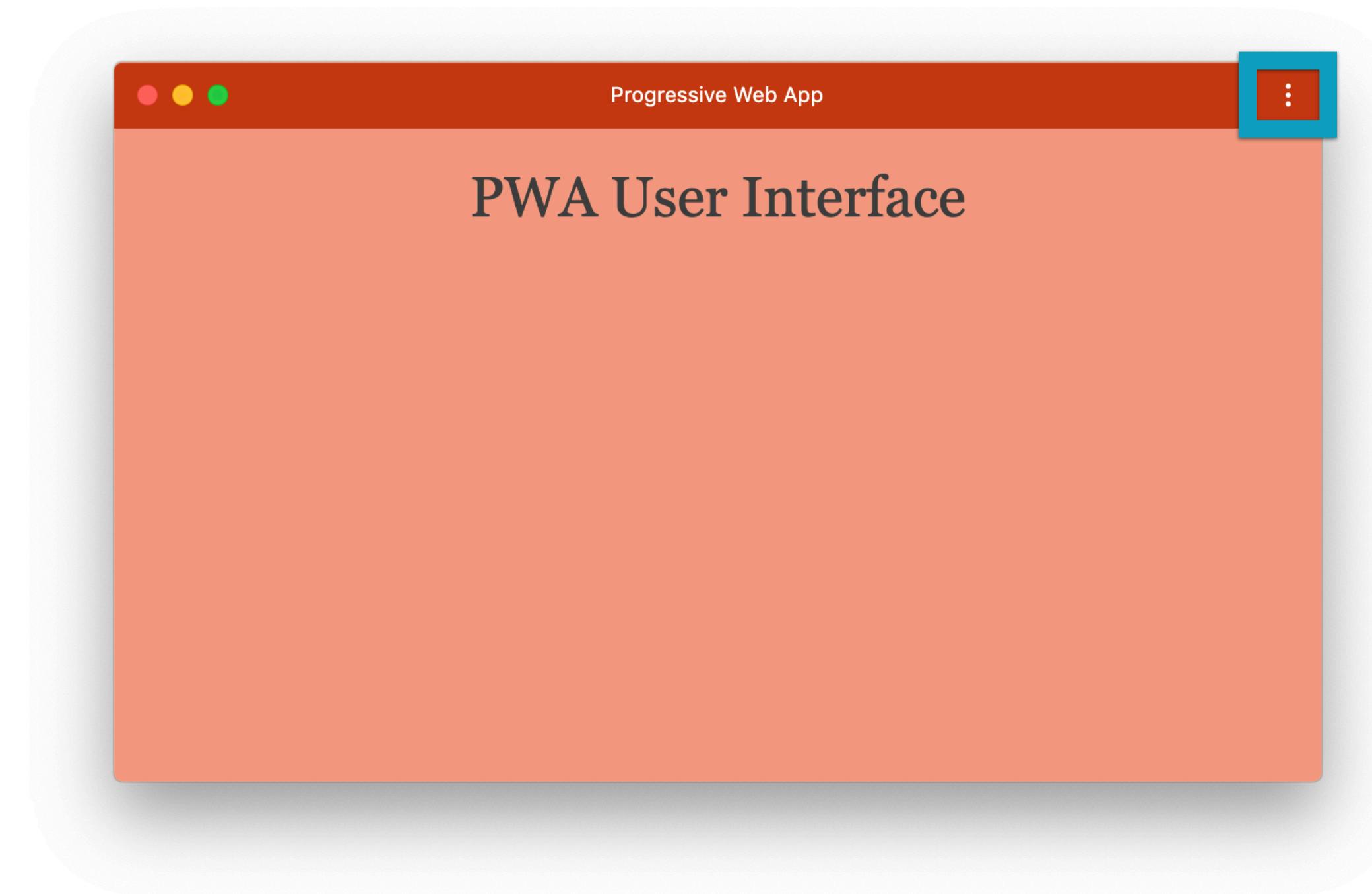
# Desktop Standalone Experience



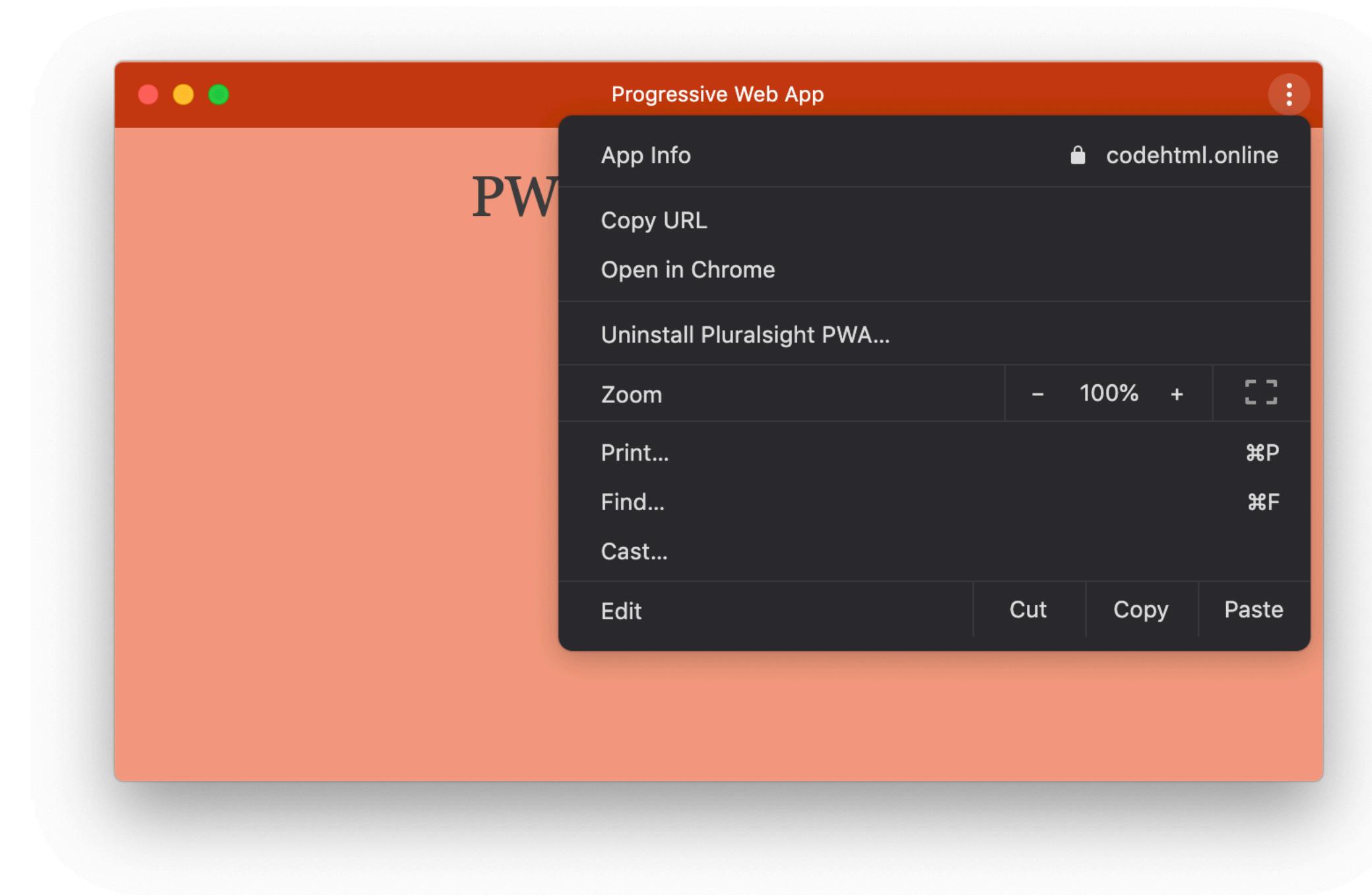
# Desktop Standalone Experience



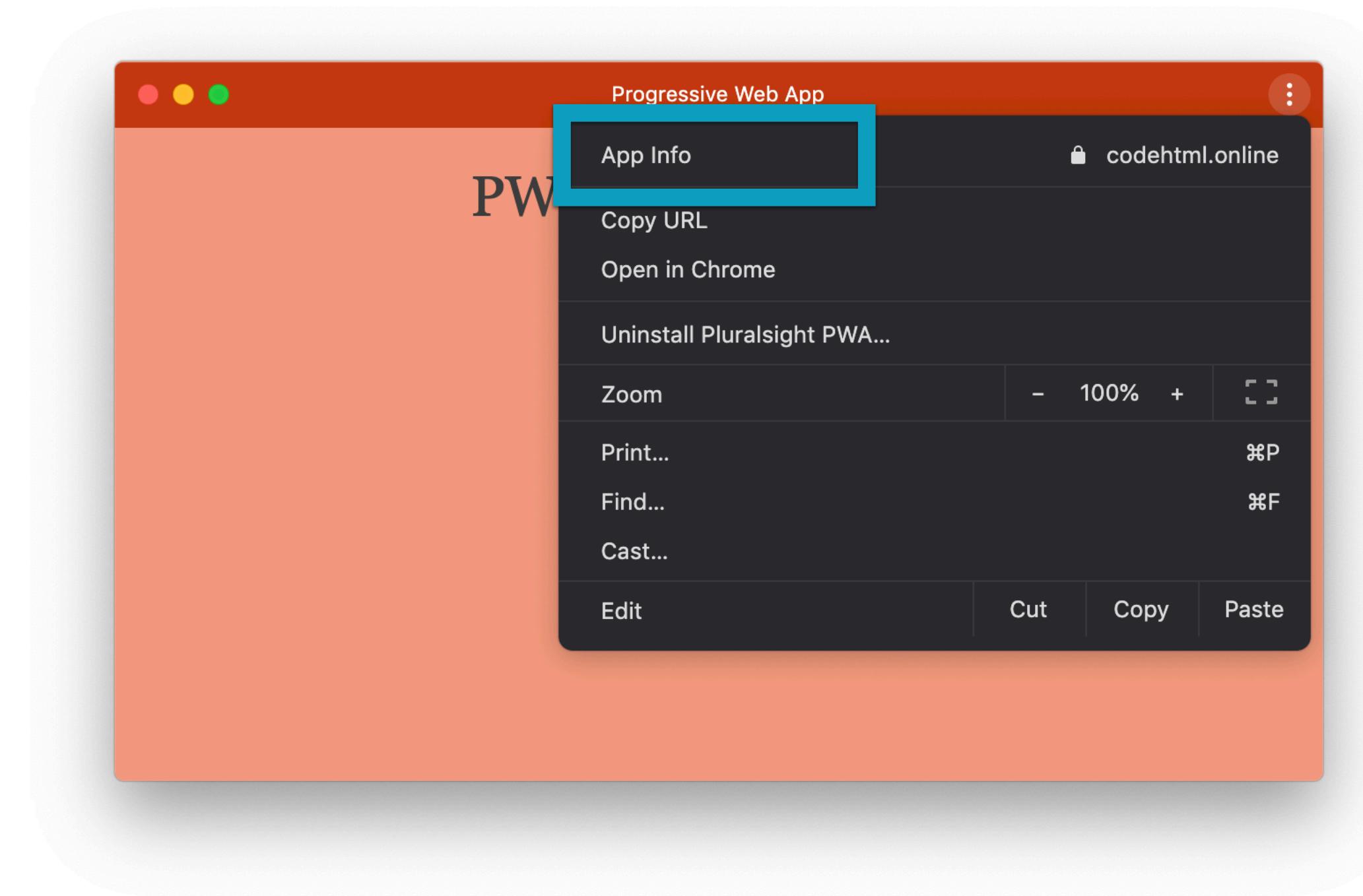
# Desktop Standalone Experience



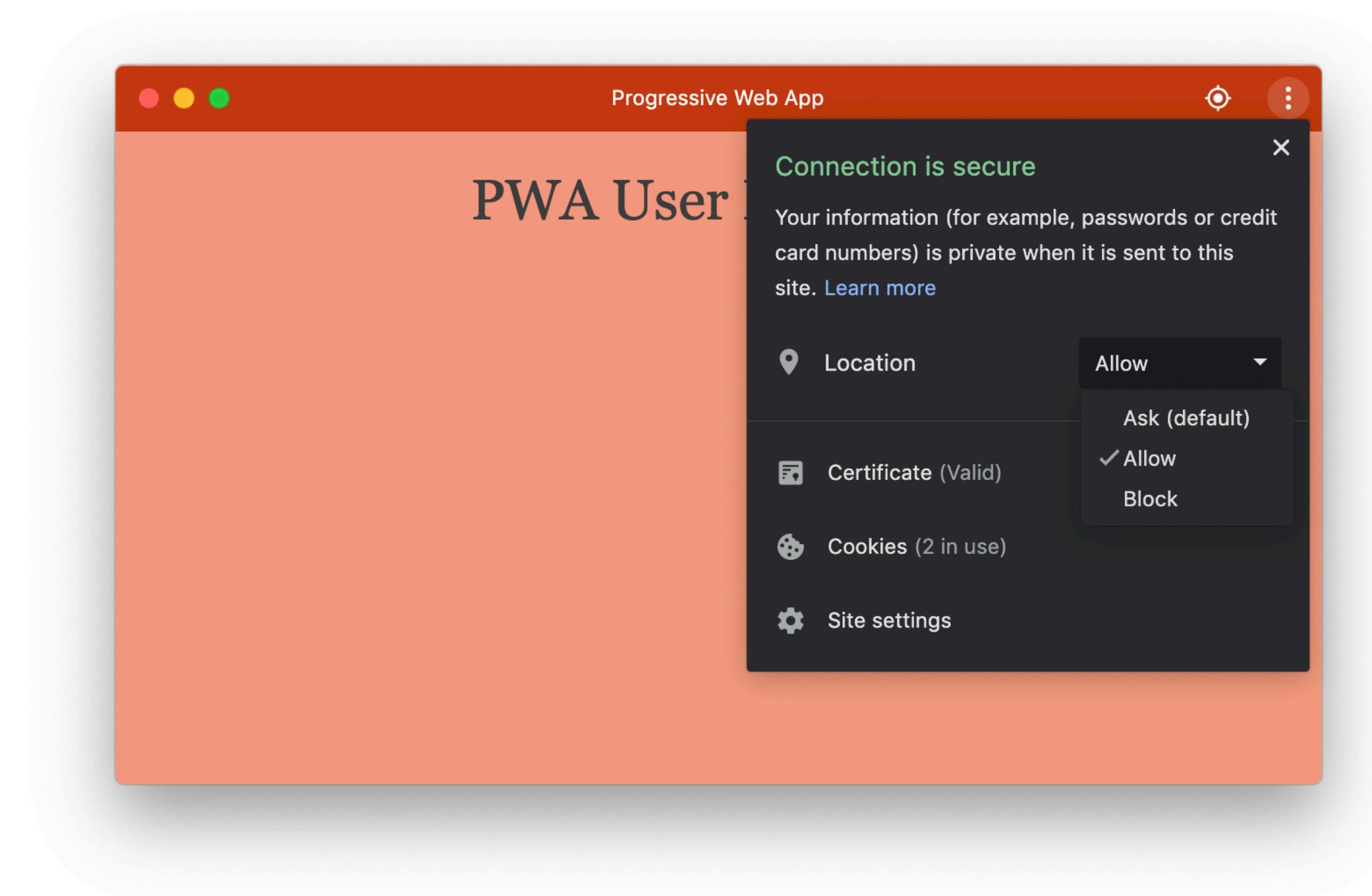
# Desktop Standalone Experience



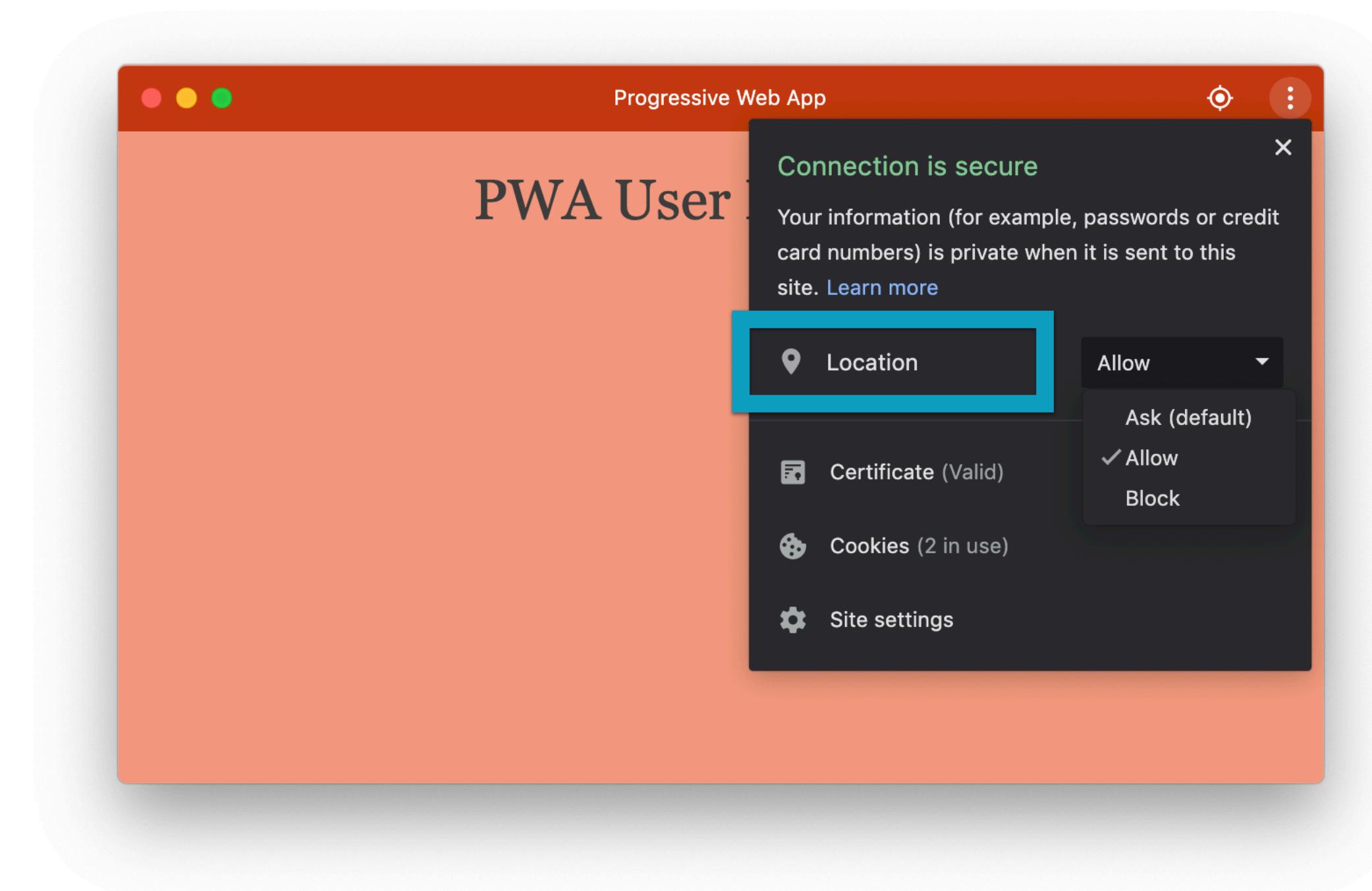
# Desktop Standalone Experience



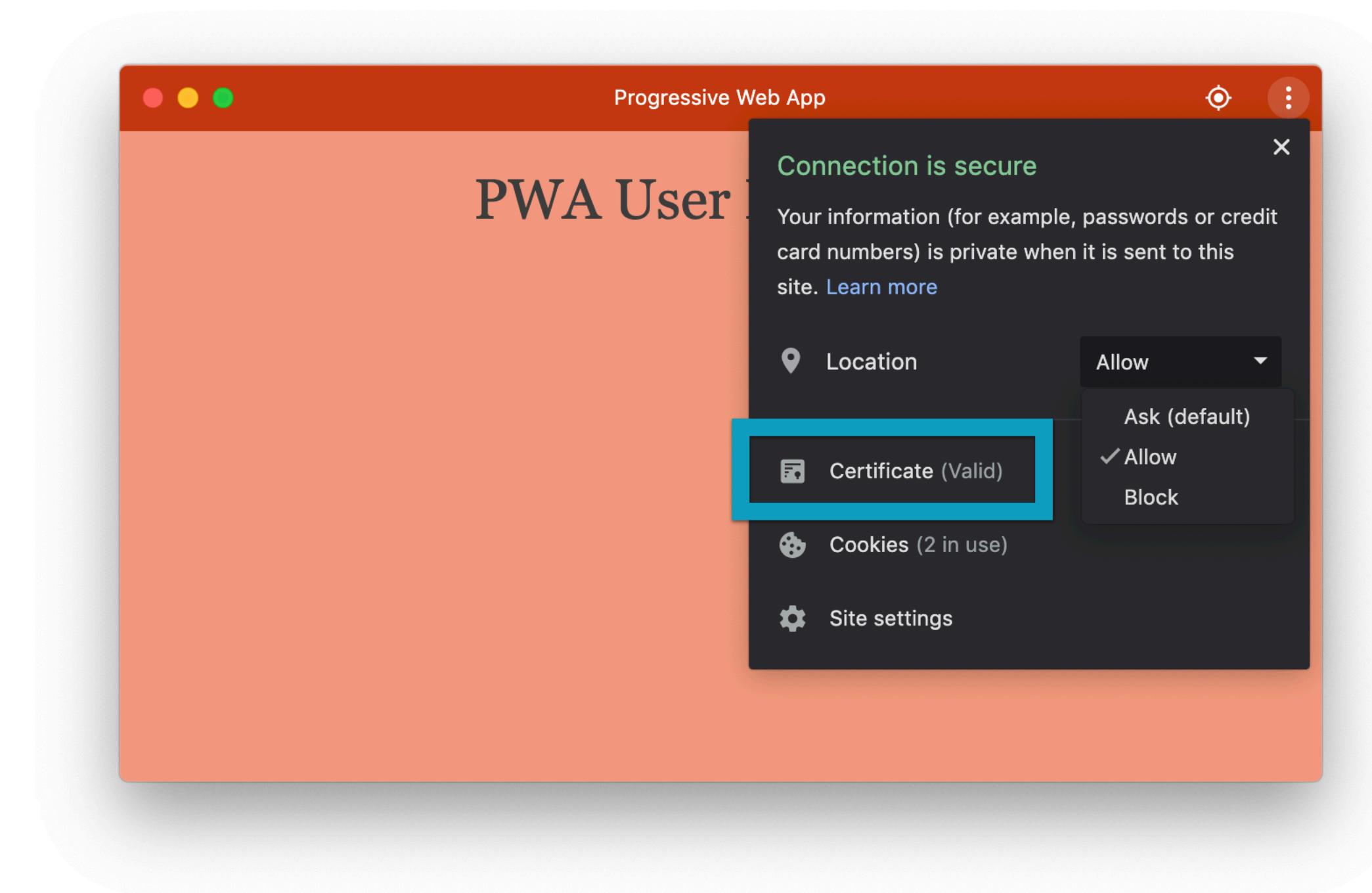
# Desktop Standalone Experience



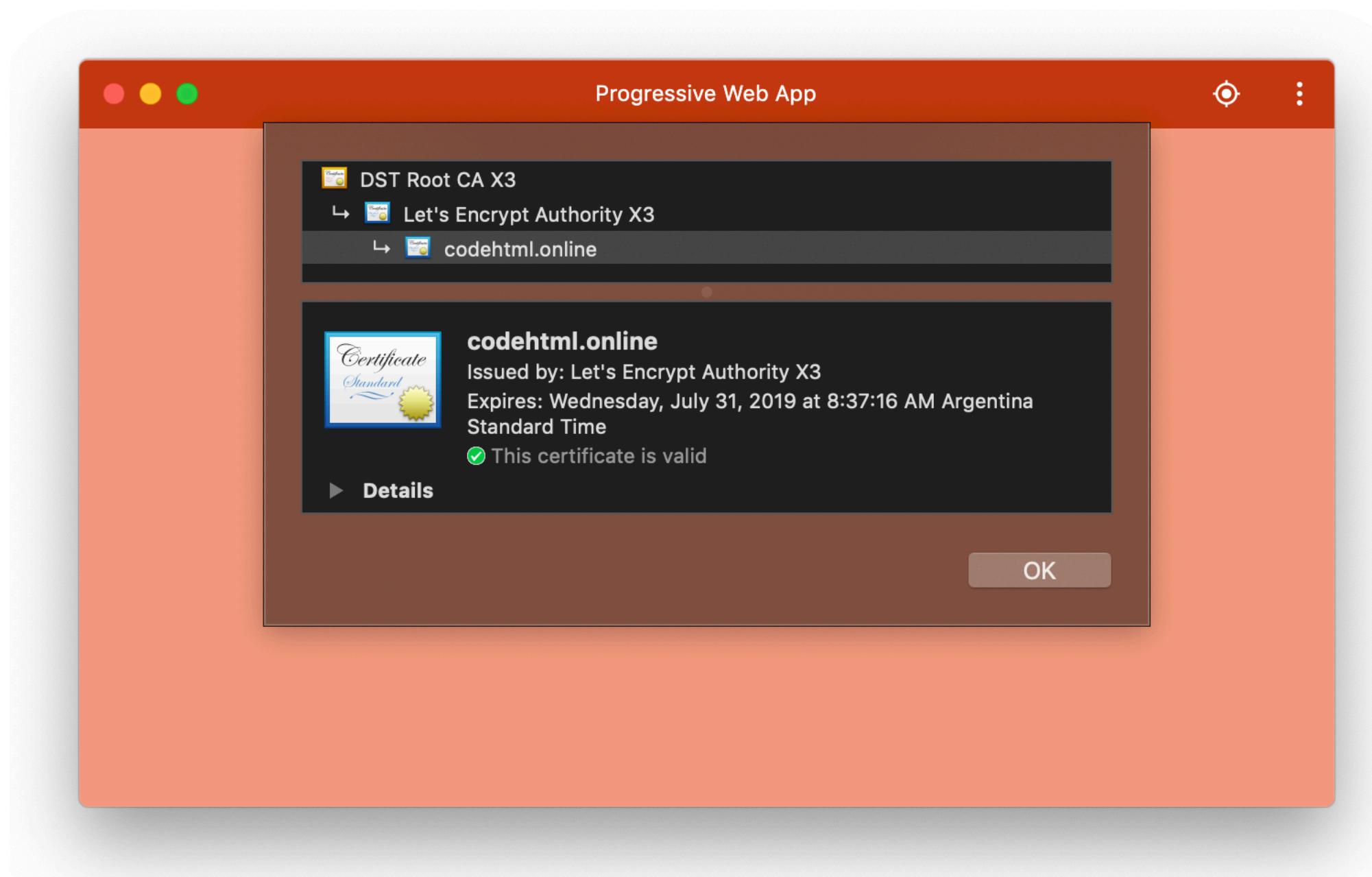
# Desktop Standalone Experience



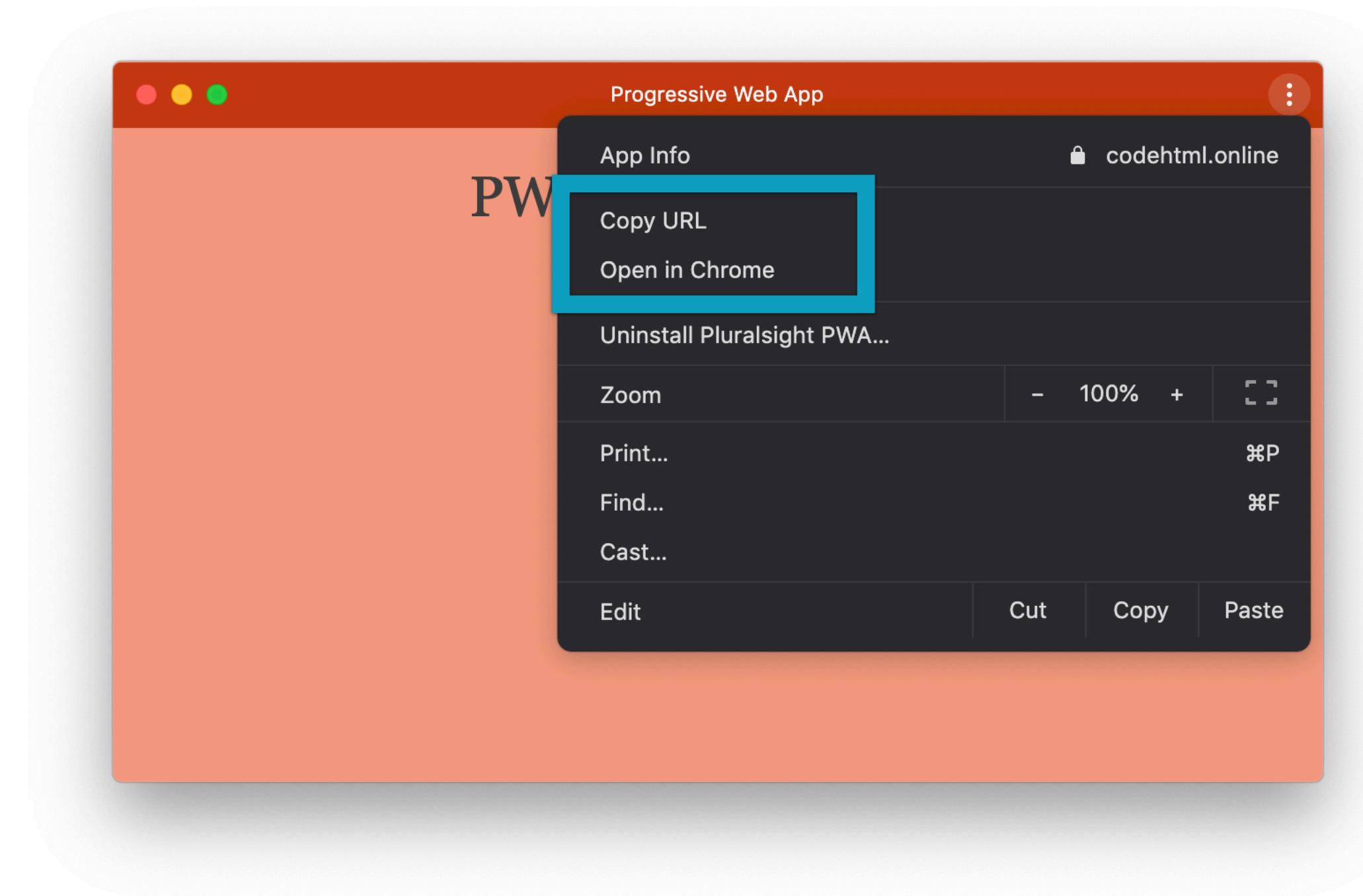
# Desktop Standalone Experience



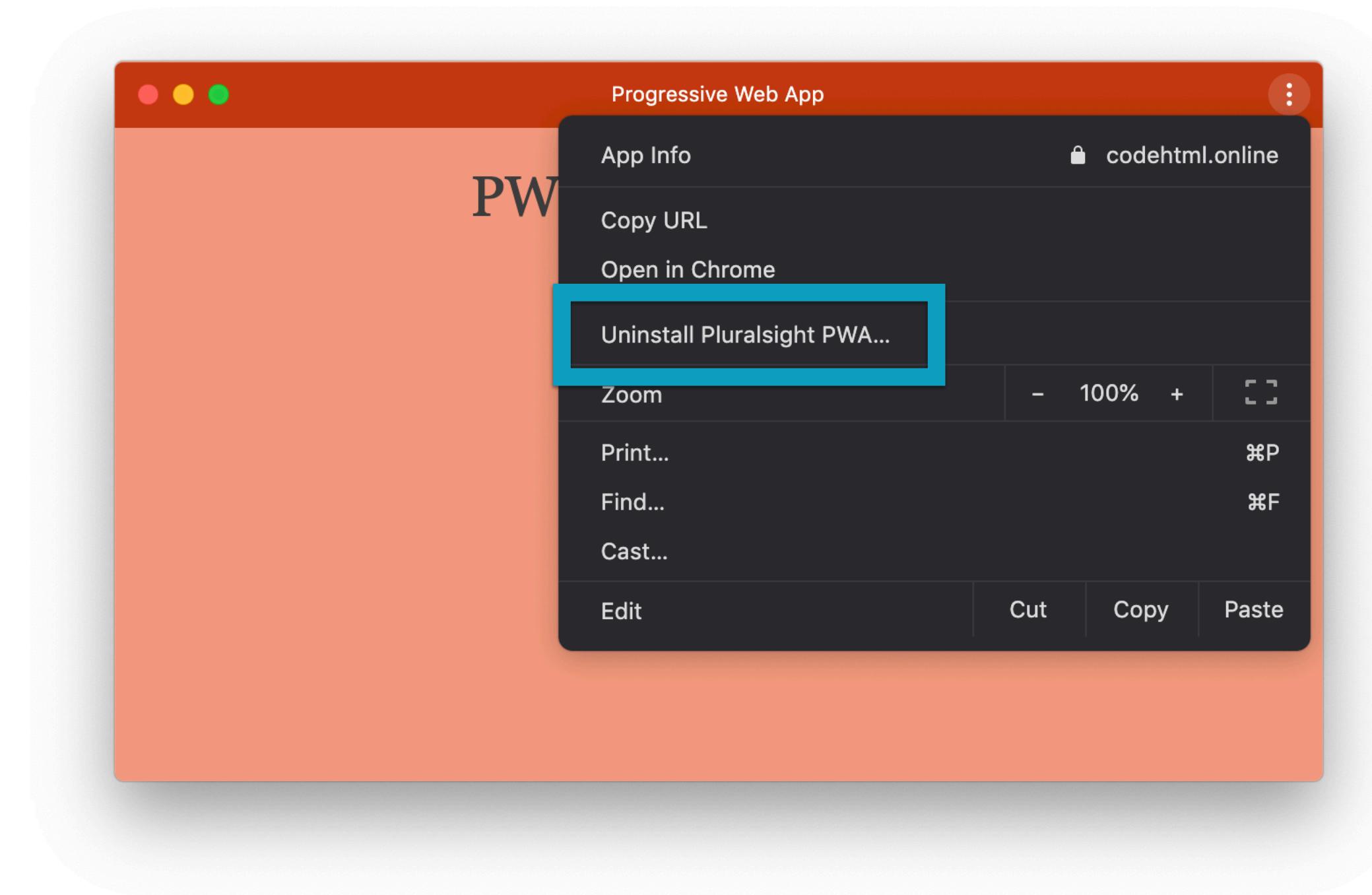
# Desktop Standalone Experience



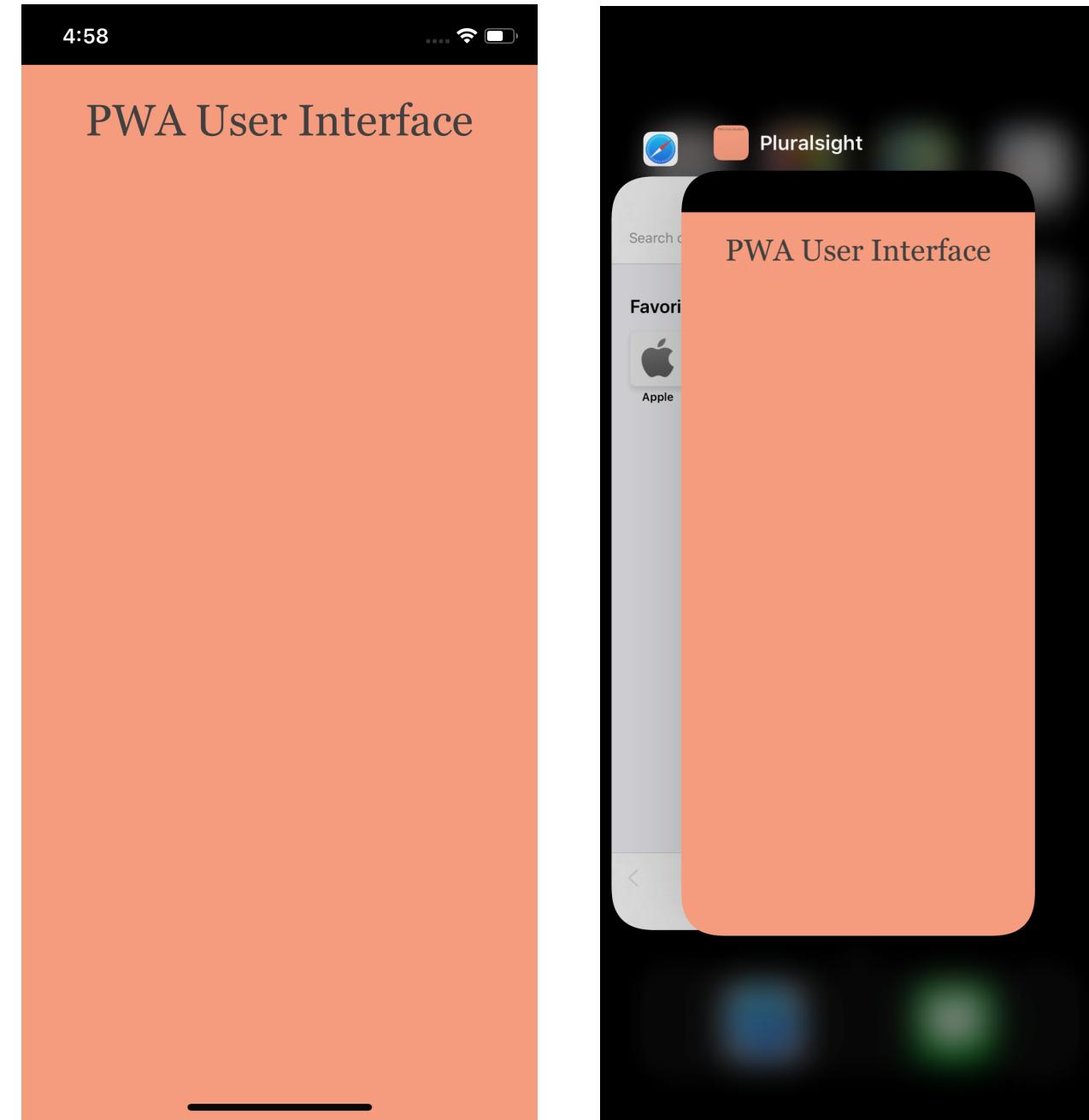
# Desktop Standalone Experience



# Desktop Standalone Experience



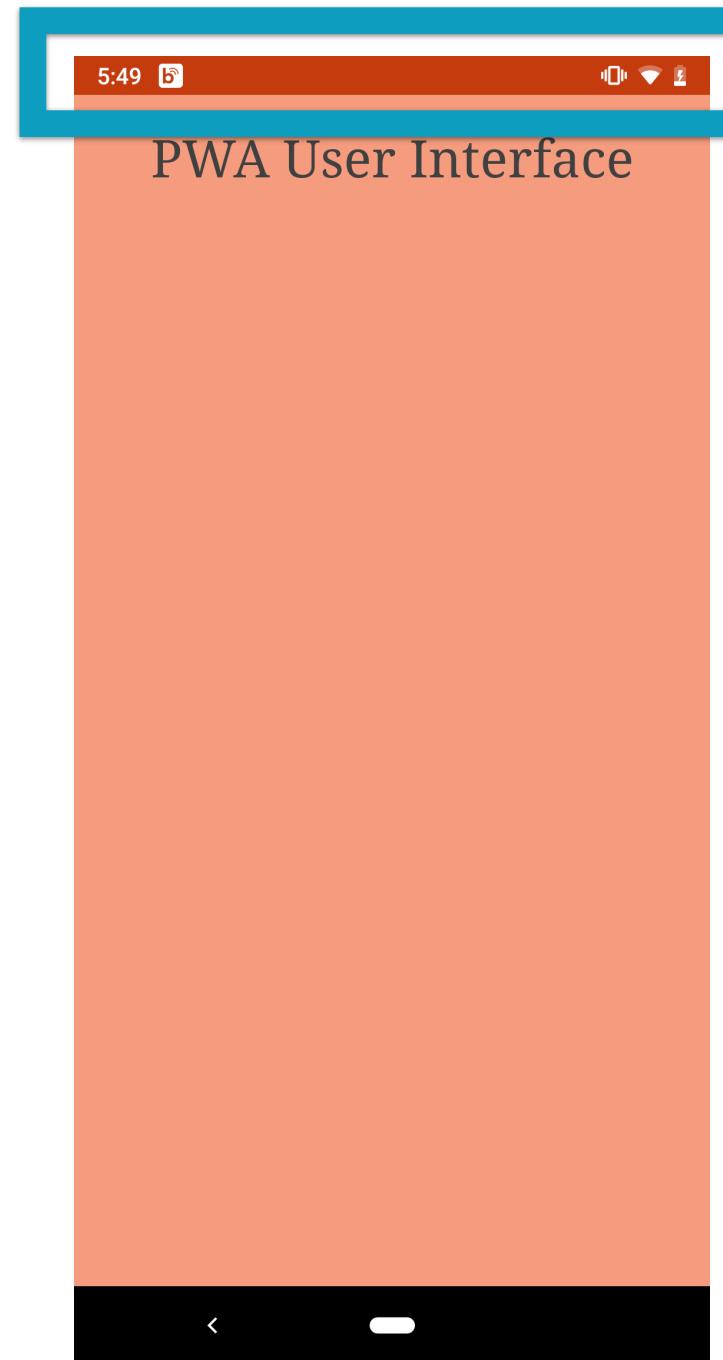
# iOS and iPadOS Standalone Experience



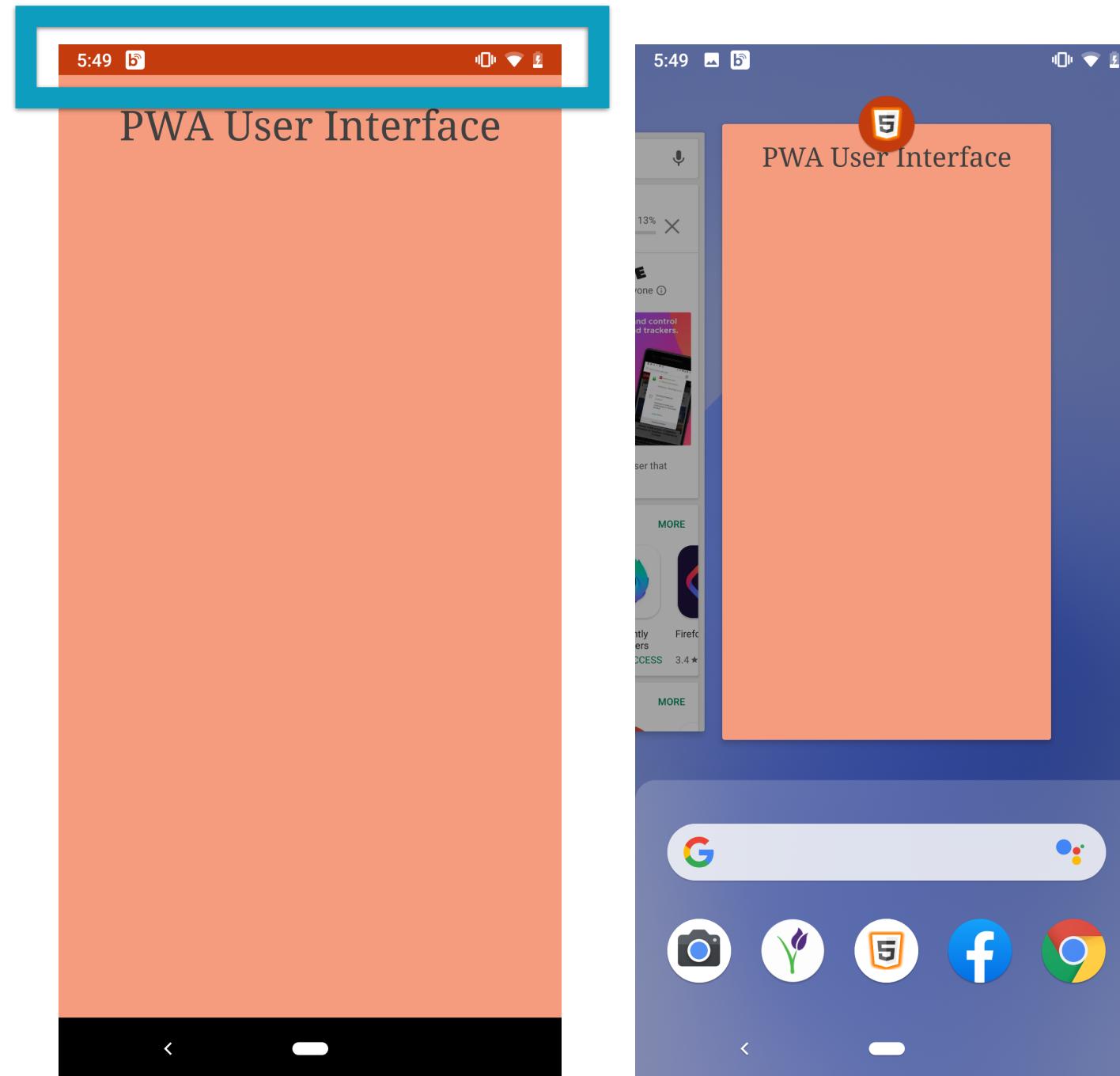
# Android Standalone Experience



# Android Standalone Experience



# Android Standalone Experience



# Android Minimal UI Experience



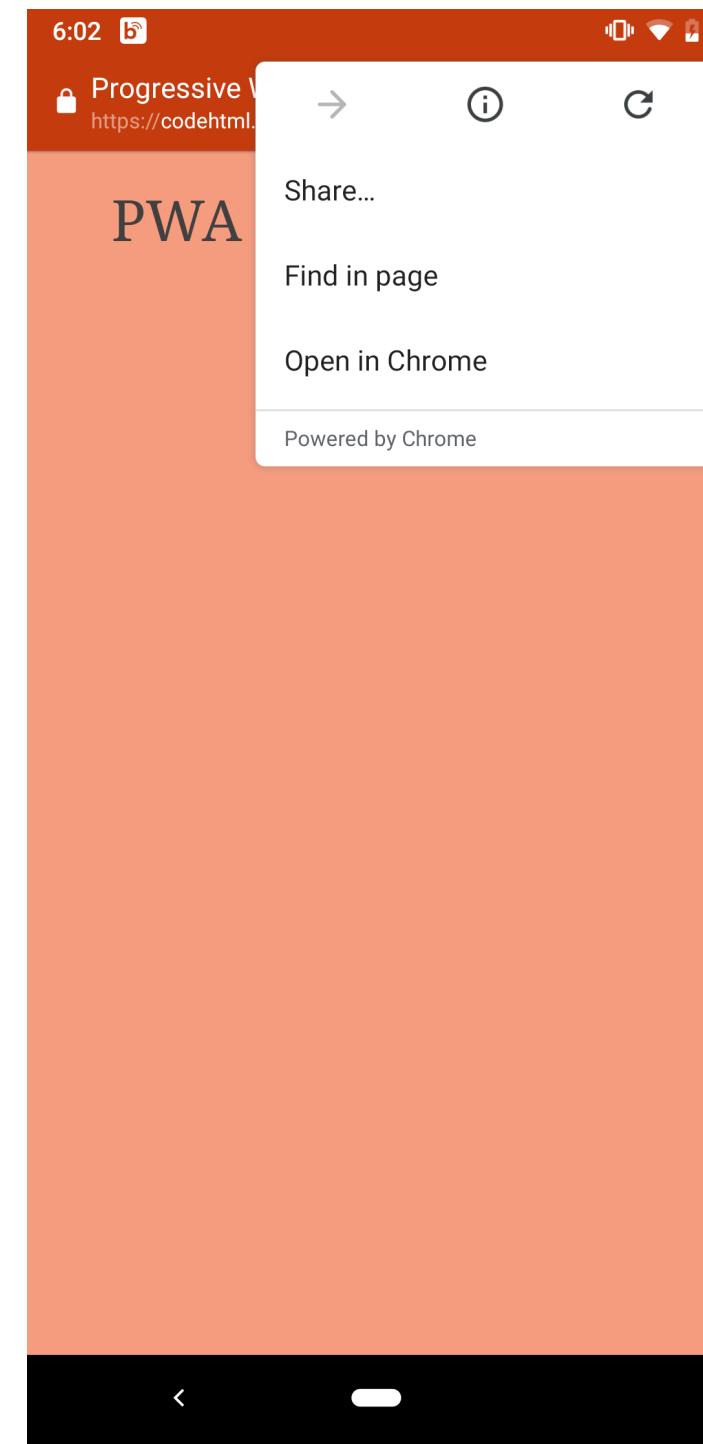
# Android Minimal UI Experience



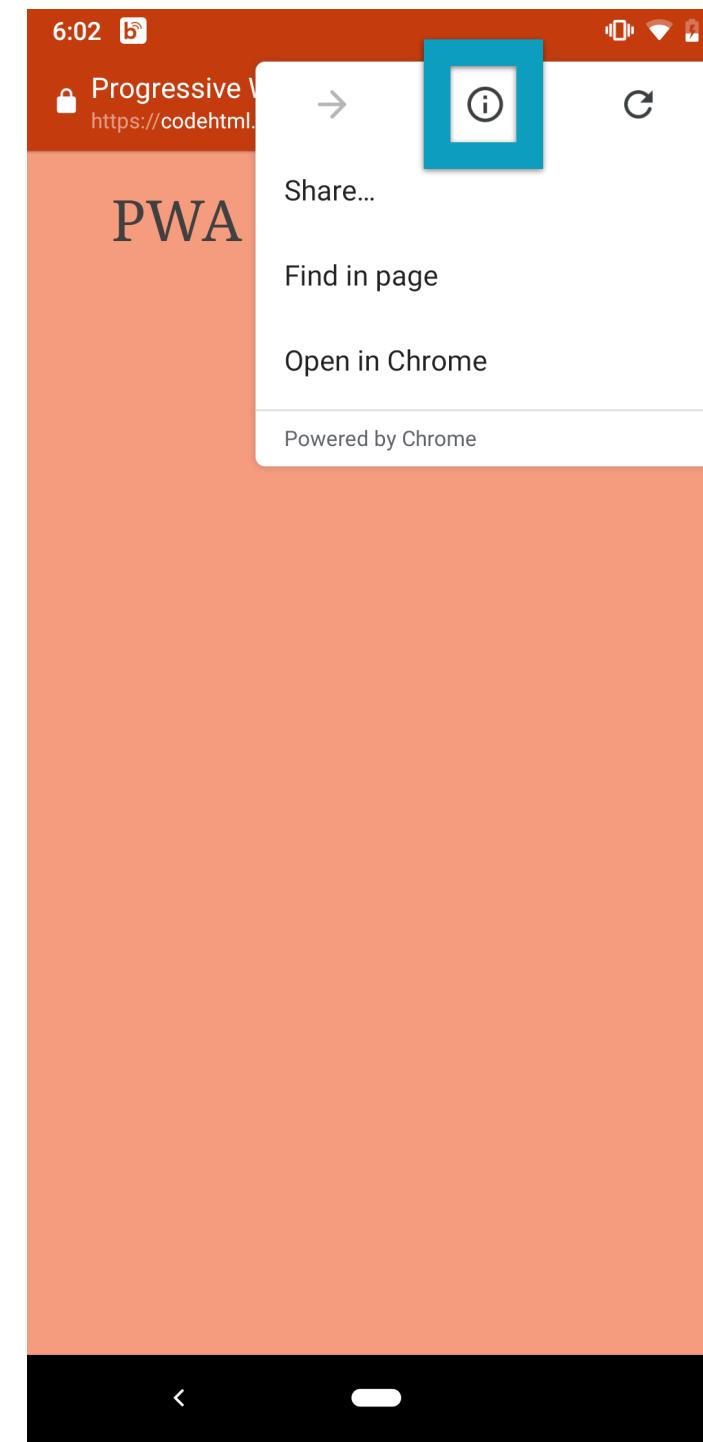
# Android Minimal UI Experience



# Android Minimal UI Experience



# Android Minimal UI Experience



# Android Fullscreen Experience



PWA User Interface

# App Experience Display Modes on Android





# Working with Pages within a PWA

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# PWA Development Mode

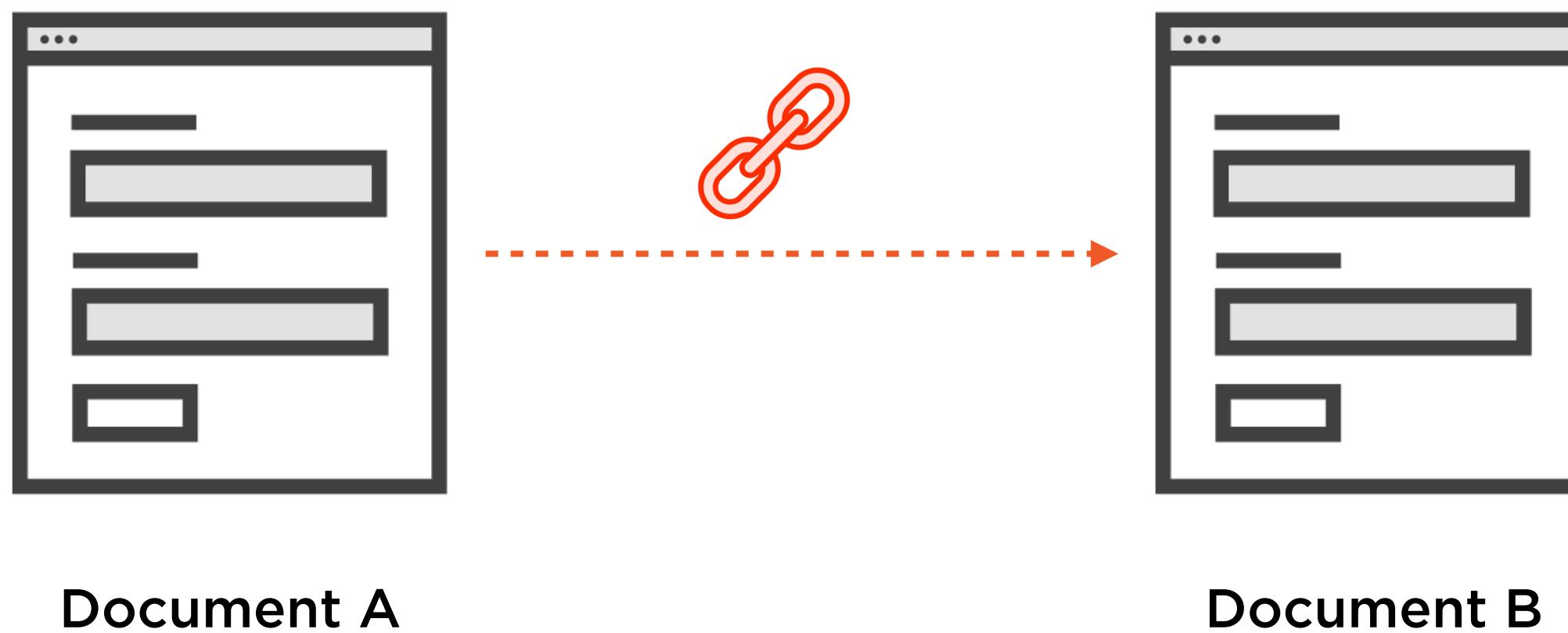


**Single page application**



**Multiple page application**

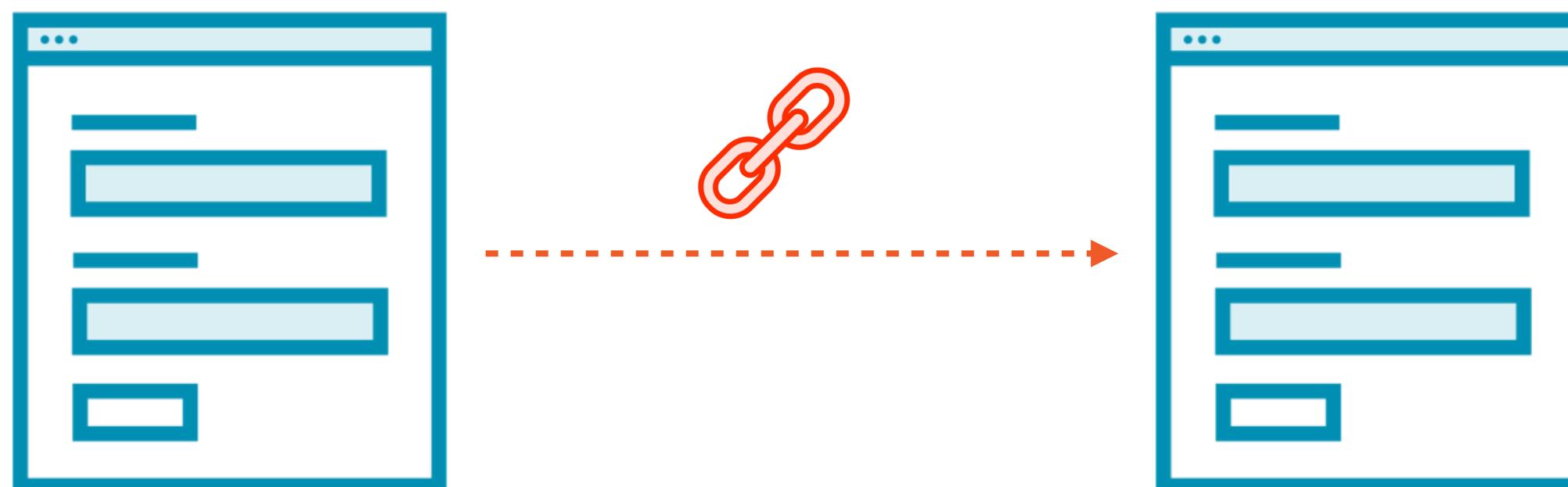
# Links within Your PWA



# PWA Scope

It's an origin and a path that defines where our PWA resides; for example: **domain.app** or **domain.com/app**

# Links within Your PWA



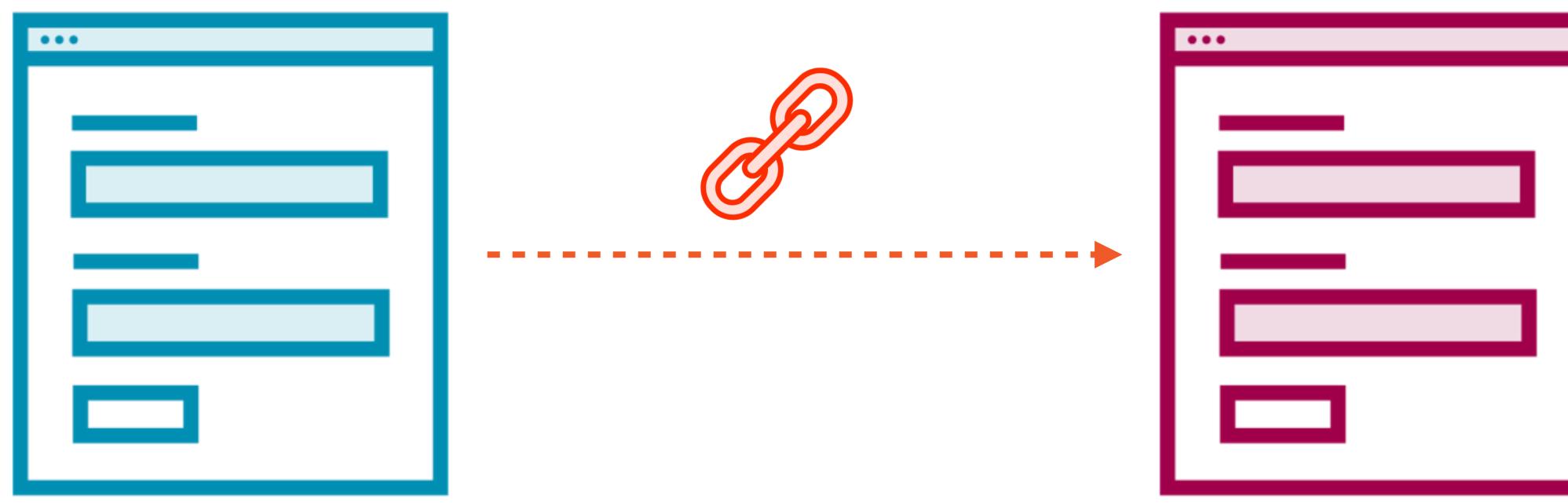
Document A

Document B



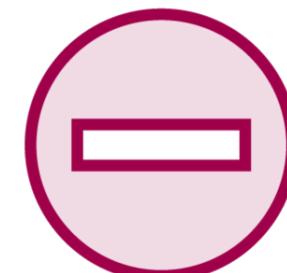
Same scope

# Links within Your PWA



Document A

Document B



Different scope

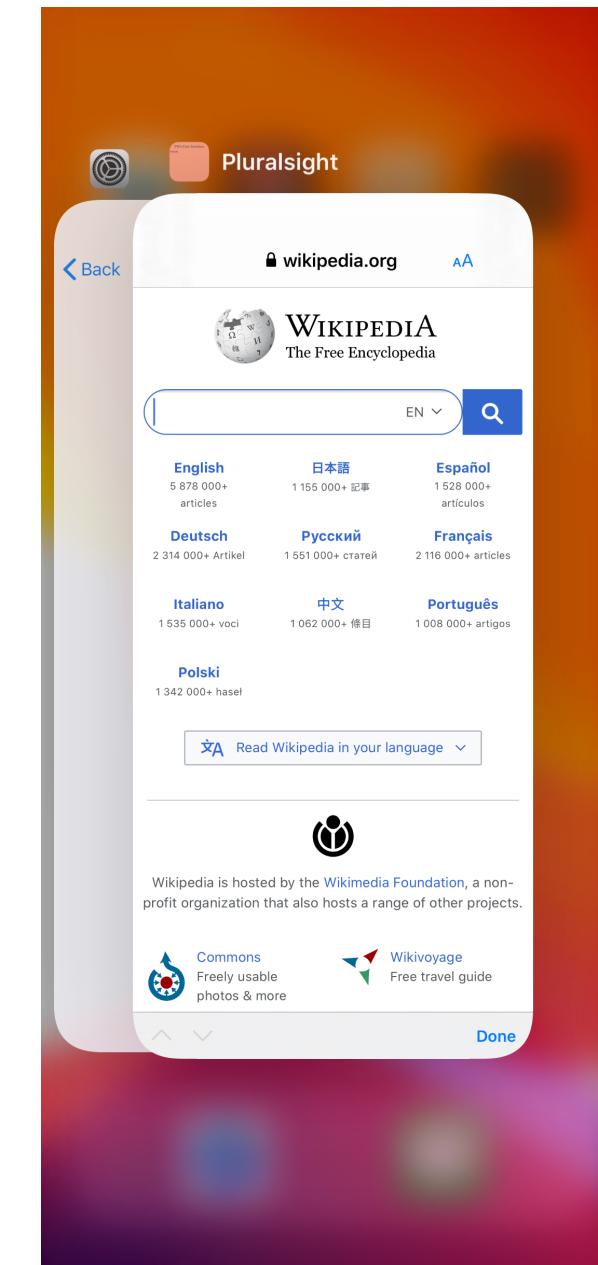
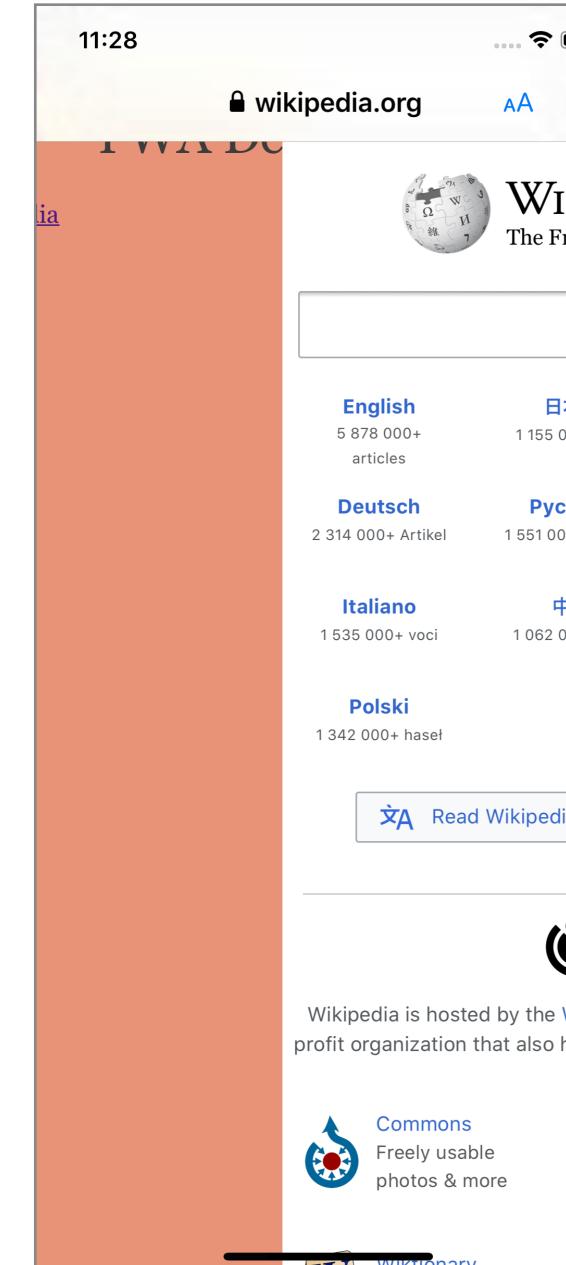
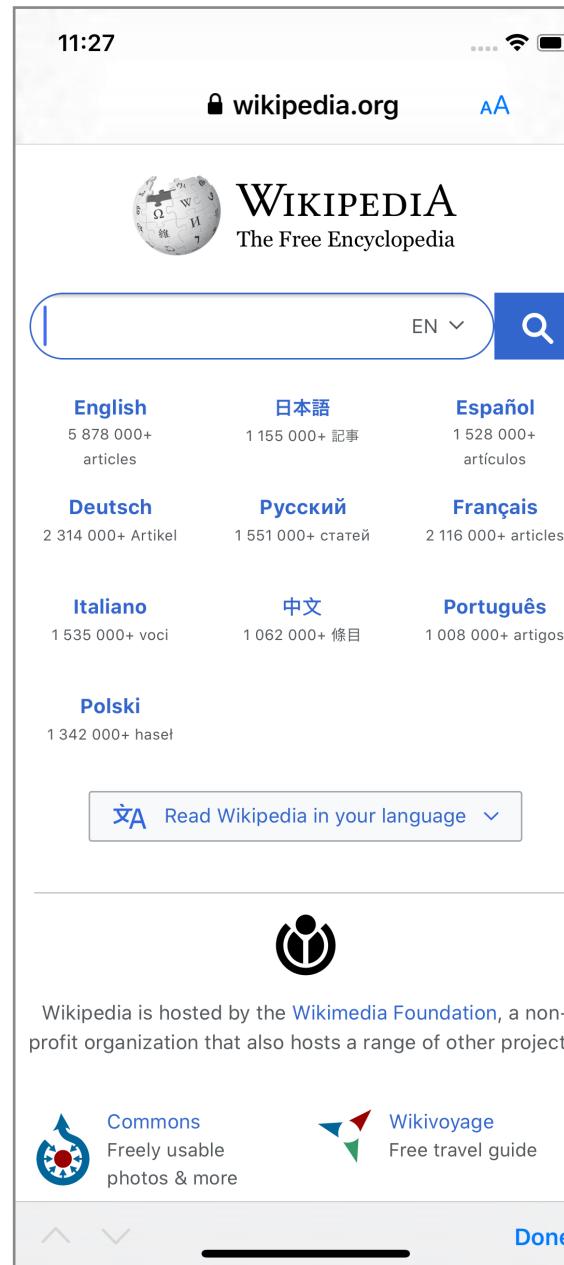
# Browsing Outside of Scope



# Browsing Outside of Scope



# Browsing Outside of Scope





# P for Progressive Enhancement

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# Progressive Enhancement

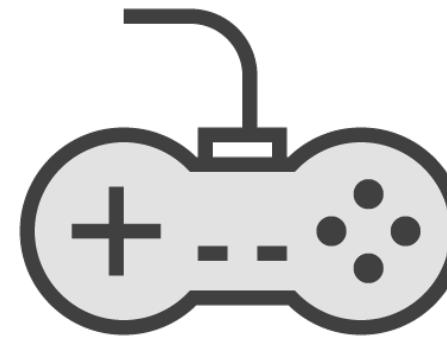
Strategy for web design that emphasizes core webpage content first and then progressively adds layers of features as the end-user's browser/internet connection allow

Your PWA can and should  
work fine everywhere

# PWA Should Work Everywhere



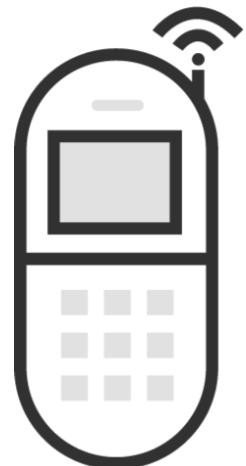
Browser



Game console



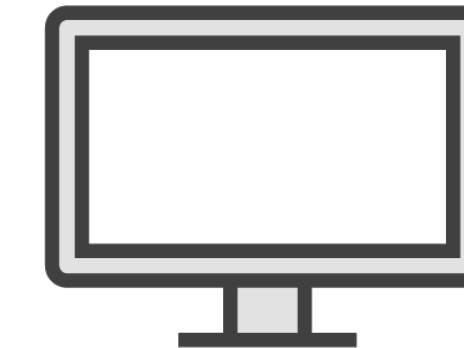
Watch



Feature Phones

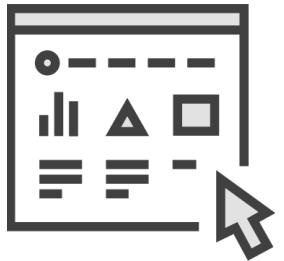


Smartphones

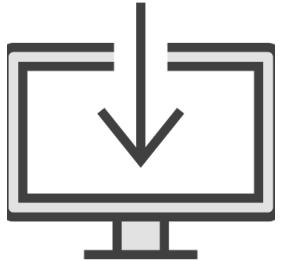


Desktop

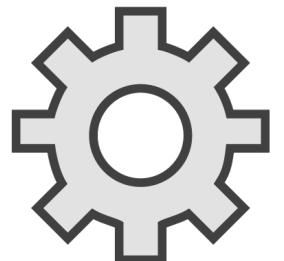
# Progressive Features



**Basic web content**



**Add installation**

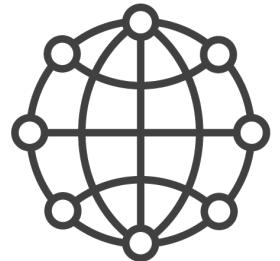


**Add service worker**



**Add hardware usage**

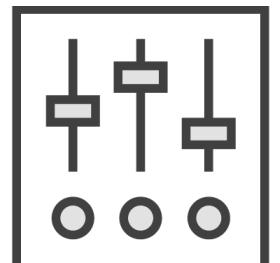
# Progressive Experience



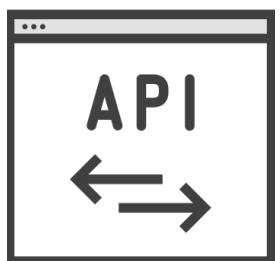
**React to different environments**



**Offer a good experience for all users**



**Same code delivering different levels of quality**



**Use APIs to detect environment and act in consequence**



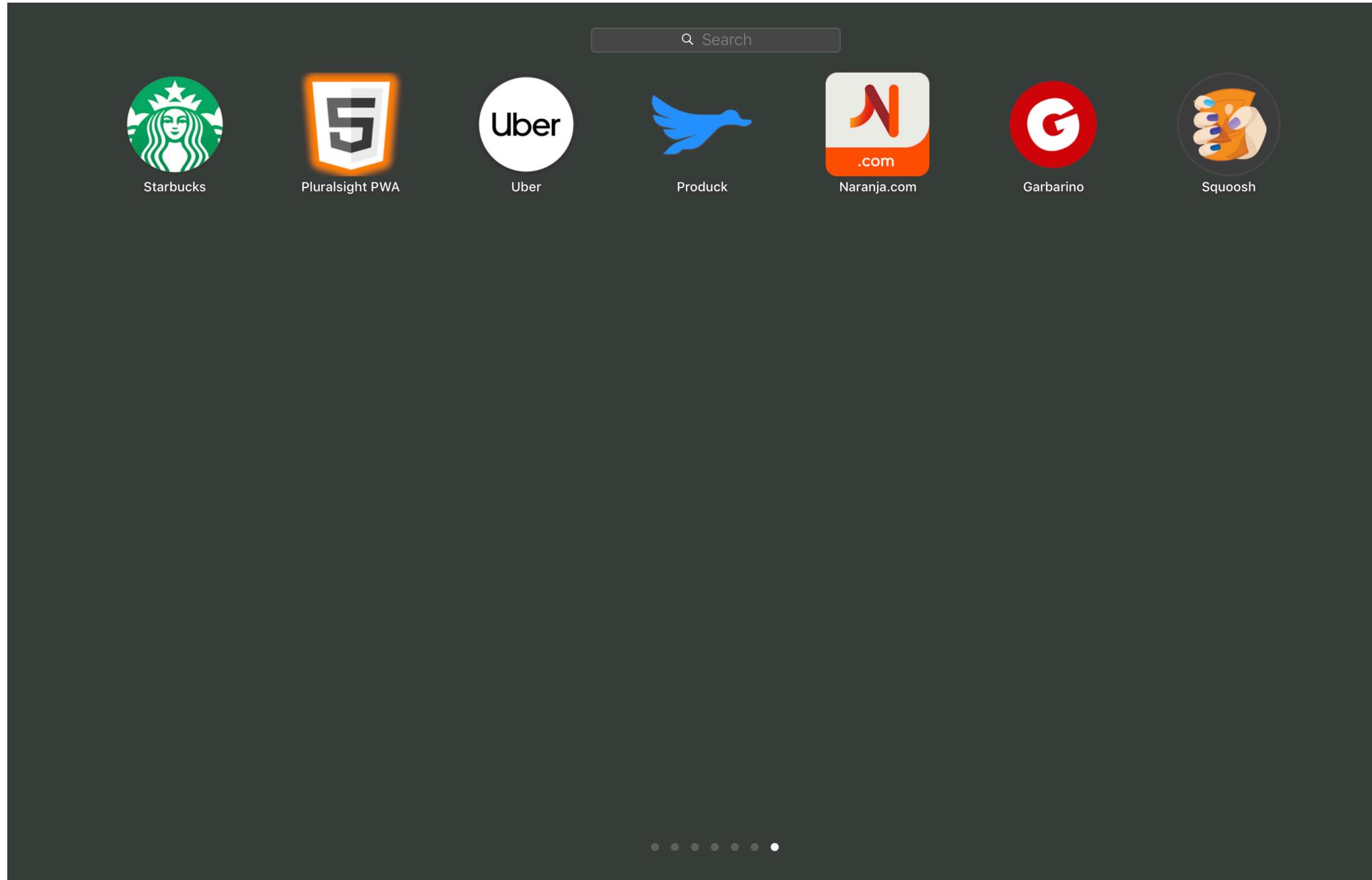
# The Icon

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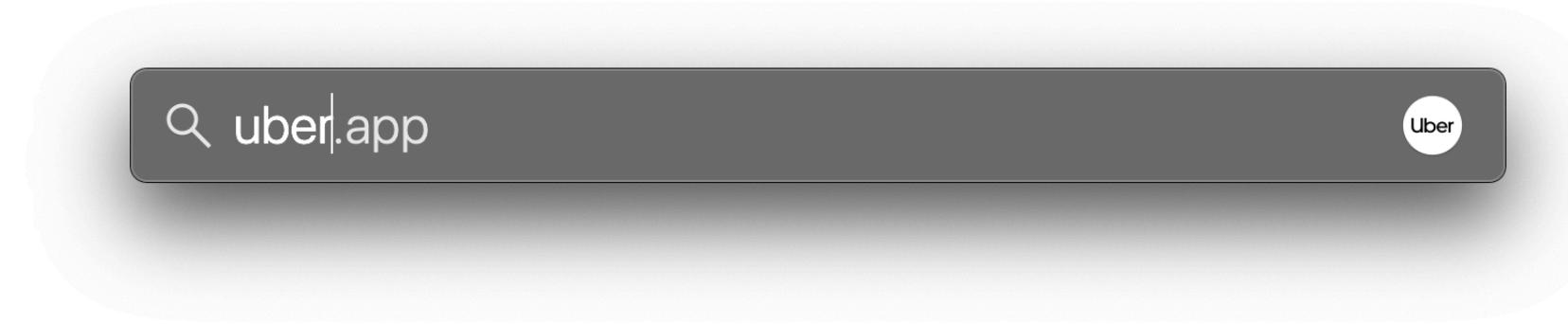
After the PWA is installed,  
the icon will look like the one  
from any app in that OS

# Icons on Desktop

# Icons on Desktop



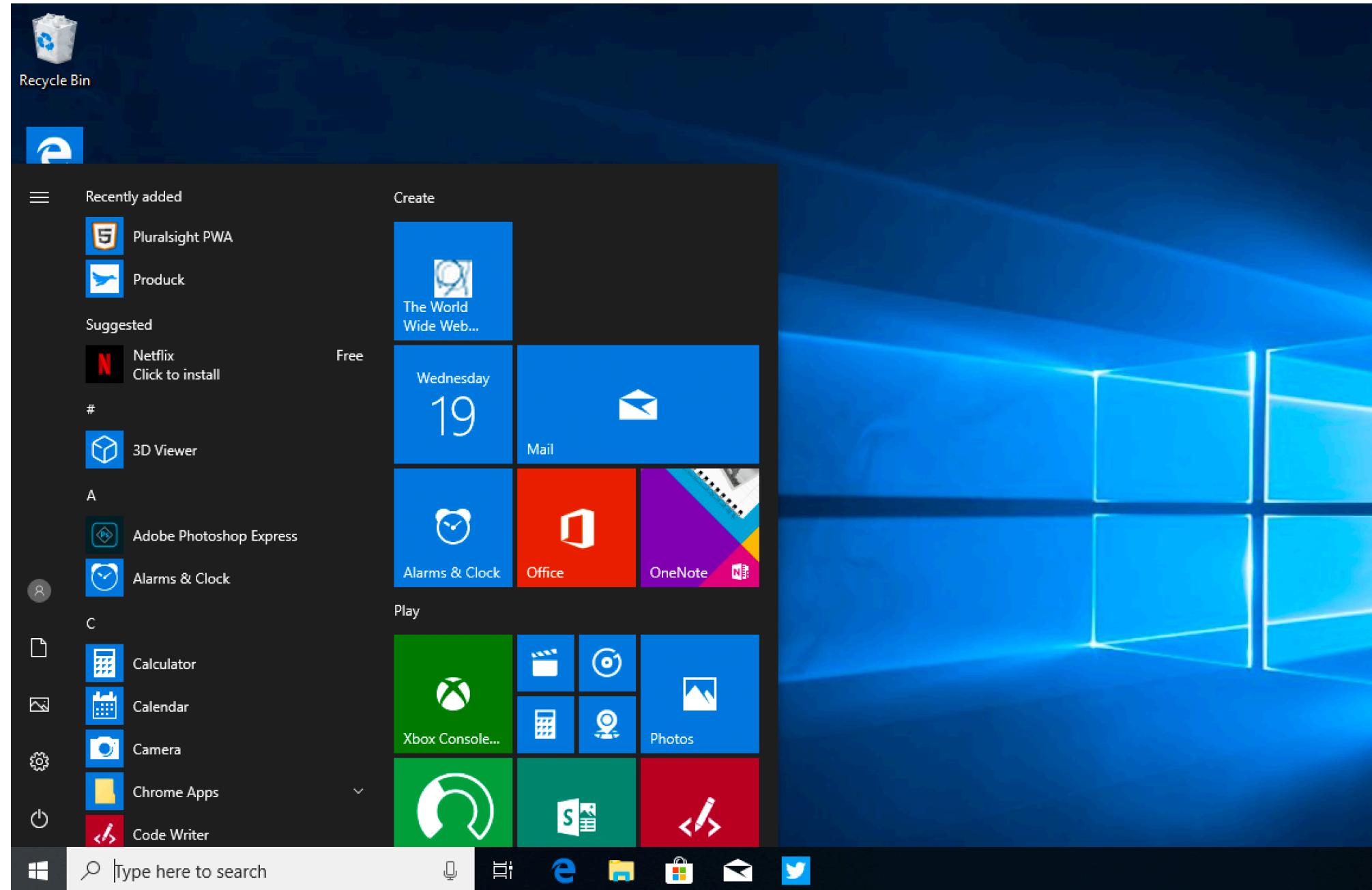
# Icons on Desktop



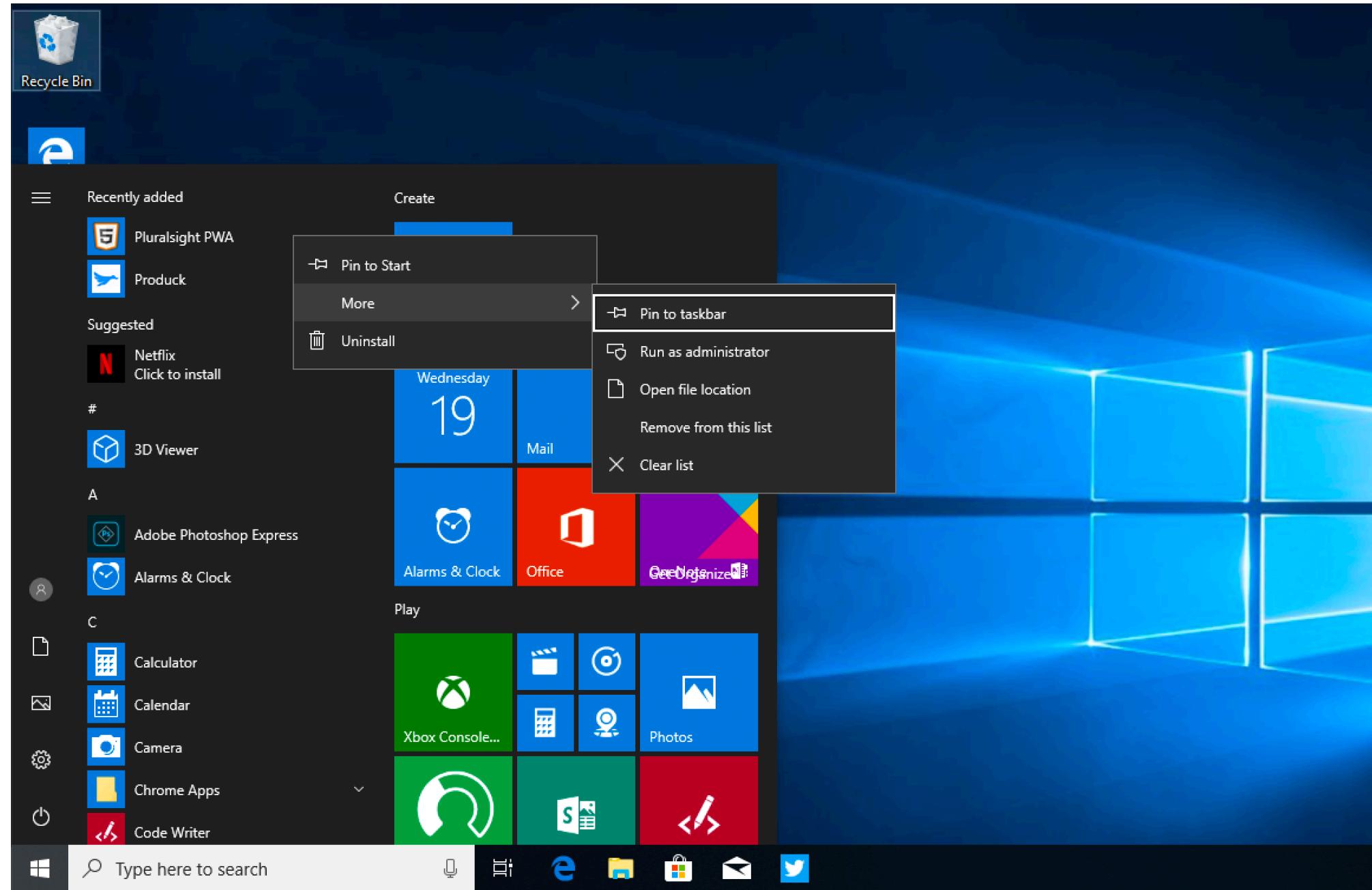
# Icons on Desktop



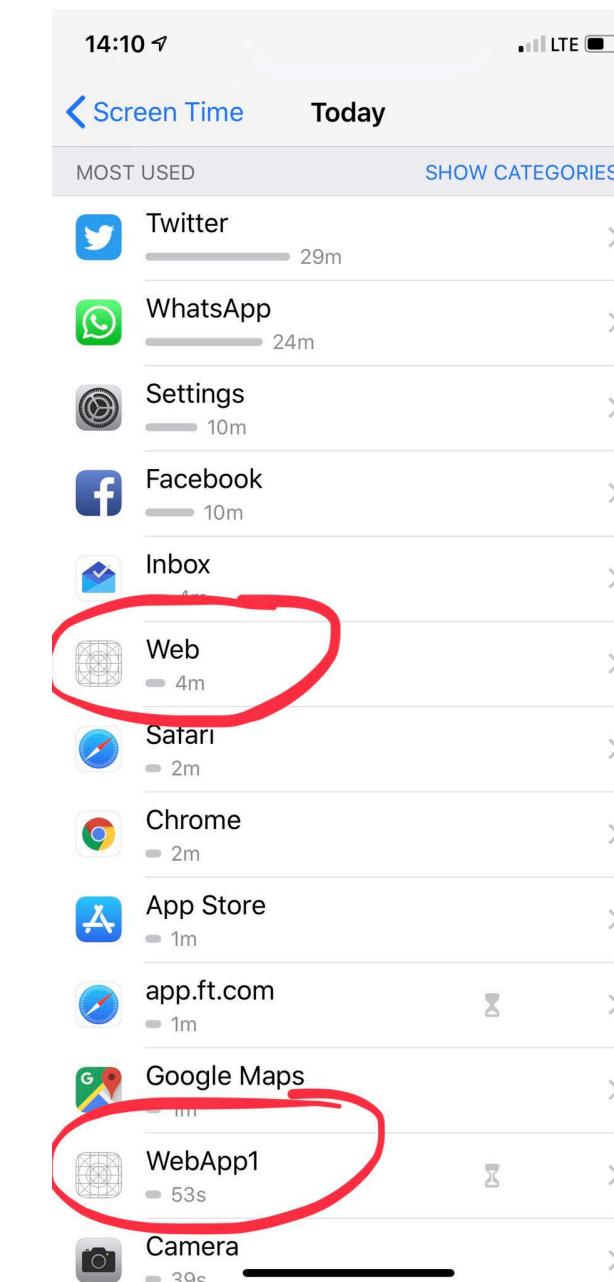
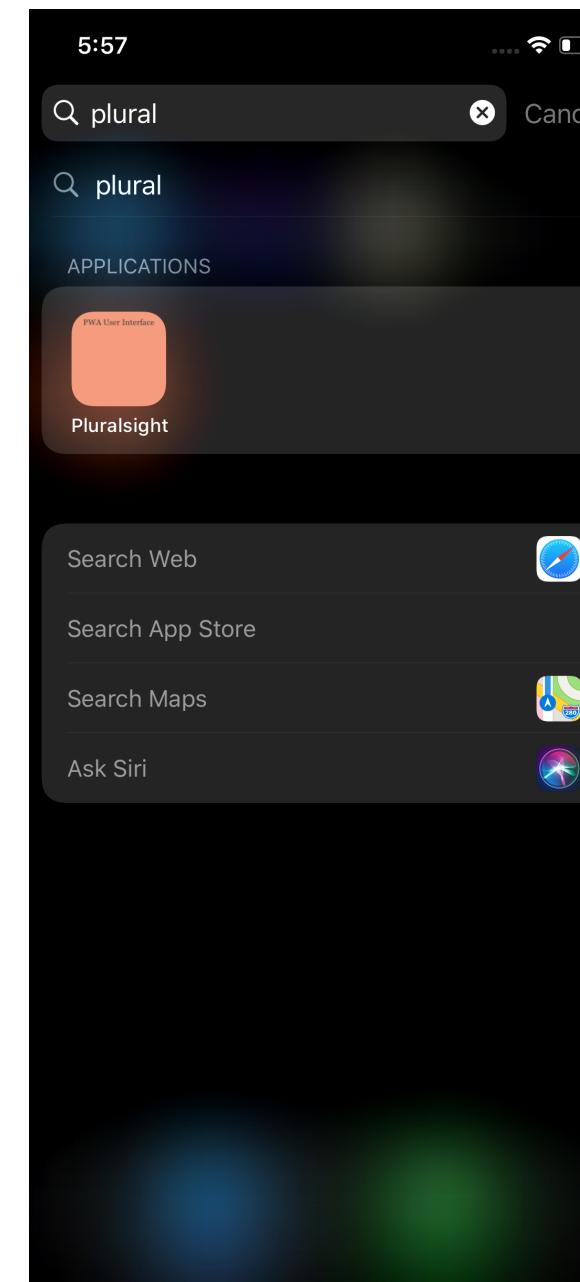
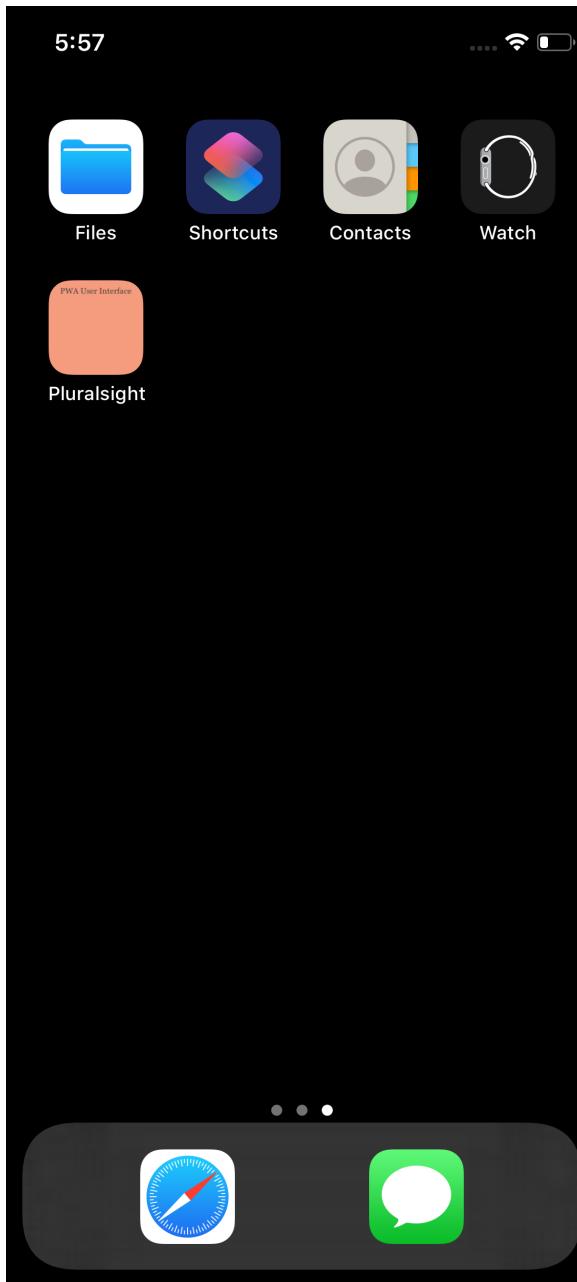
# Icons on Desktop



# Icons on Desktop



# Icons on iOS and iPadOS



# Icons on Android



**Shortcut**

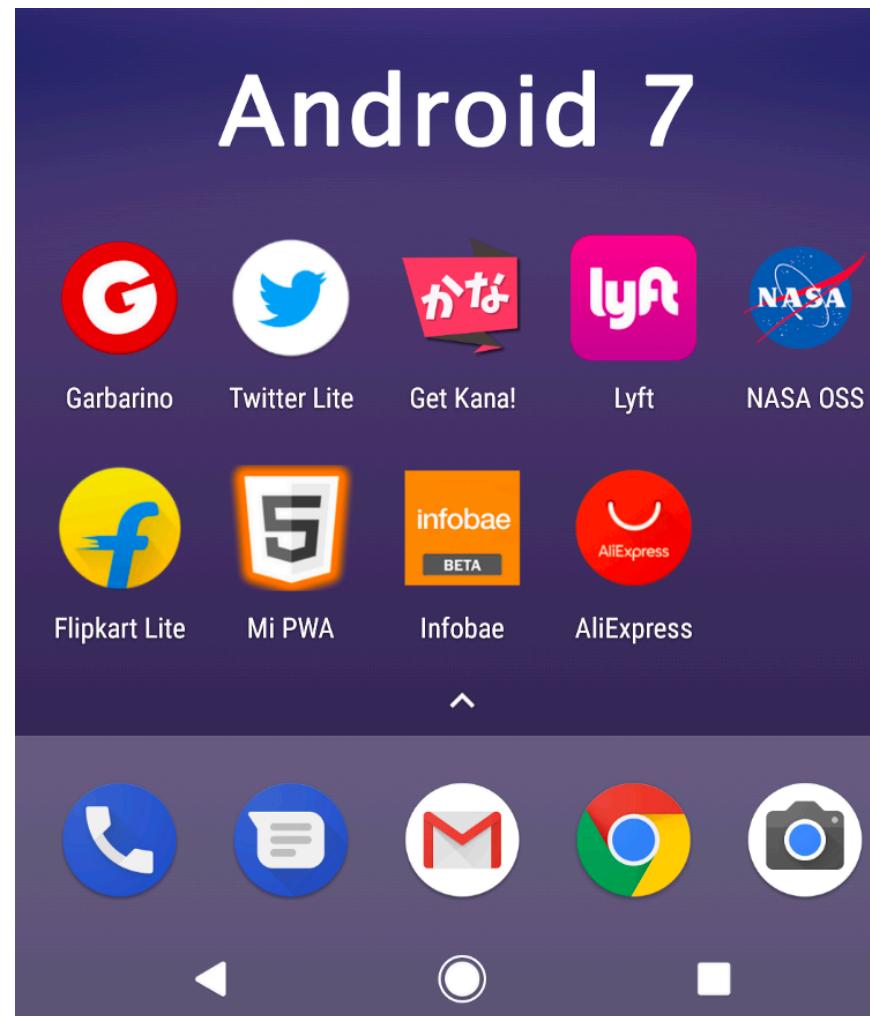


**WebAPK**

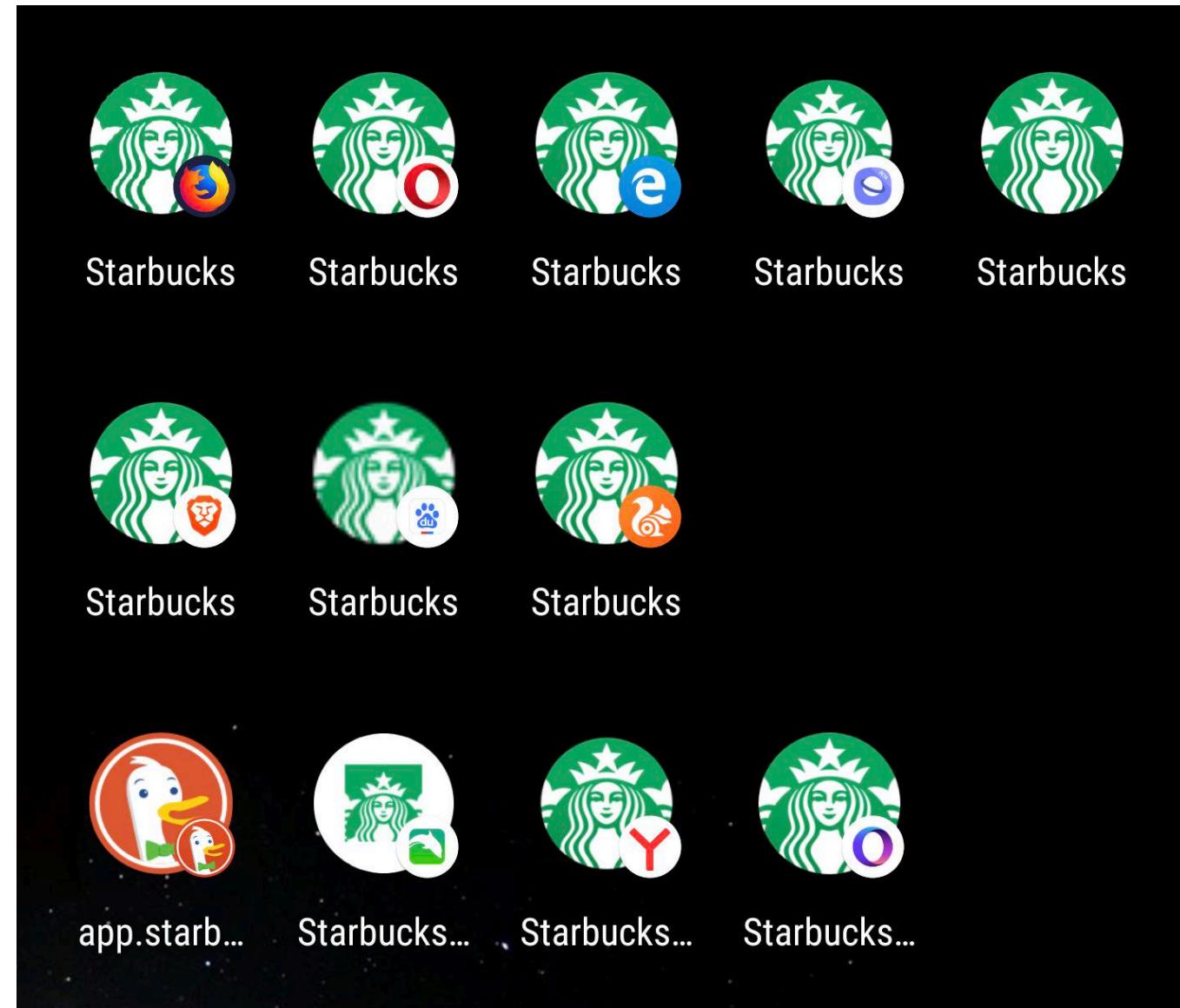
# Shortcuts on Android

- Creates a shortcut to browser's engine**
- Browser's badge (Android 8+)**
- It's installed only at the home screen**
- No icon in the launcher**
- It doesn't appear at app's list**
- All browsers use this method**

# Icons on Android with Shortcuts



# Icons on Android with Shortcuts



# WebAPK on Android

**Only if PWA Criteria passes**

**It's a full Android native package**

**It contains only app's name, icon and URL**

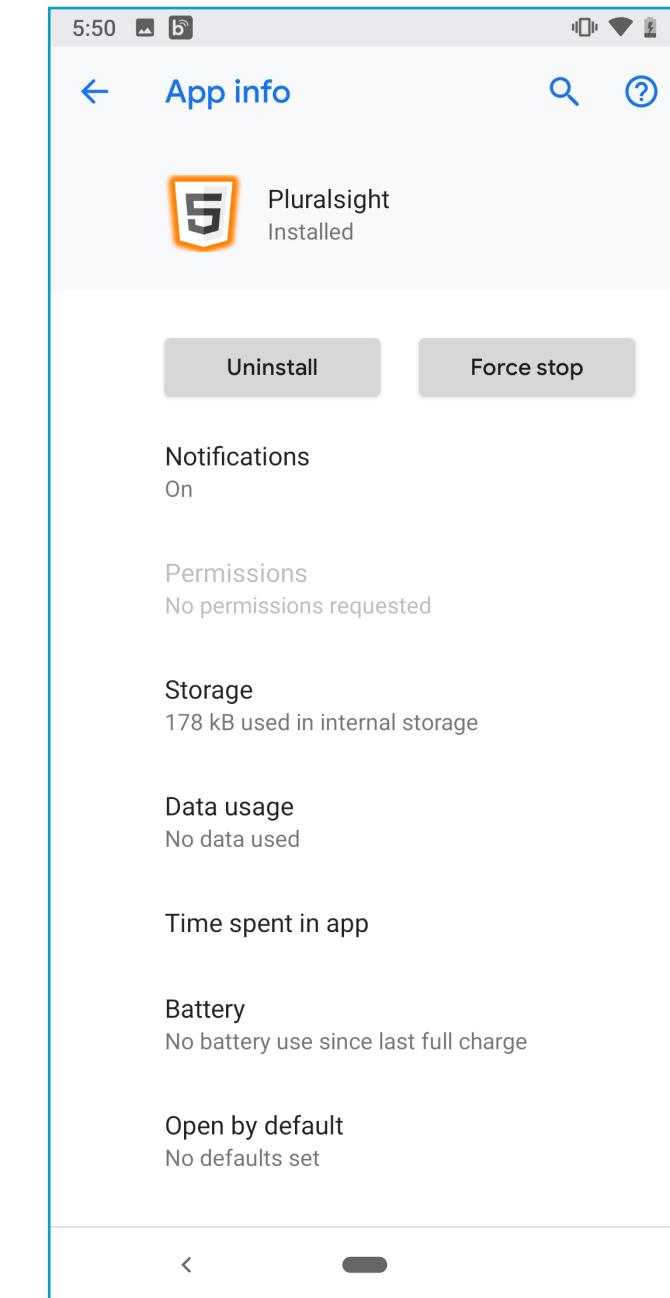
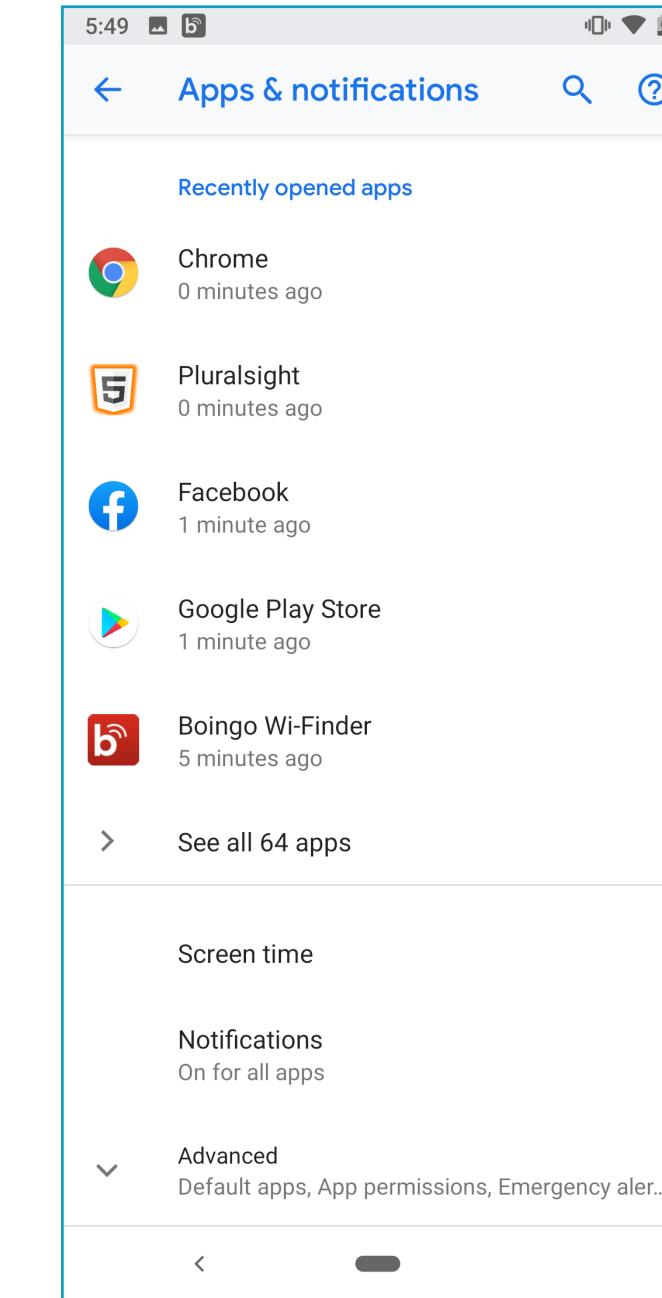
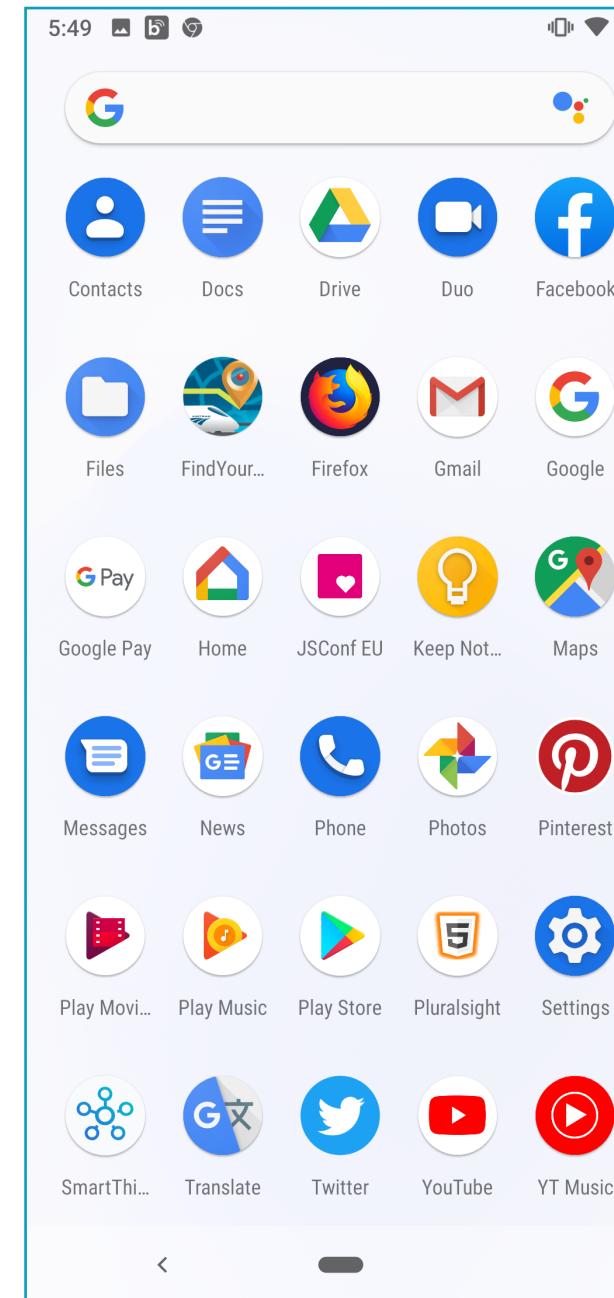
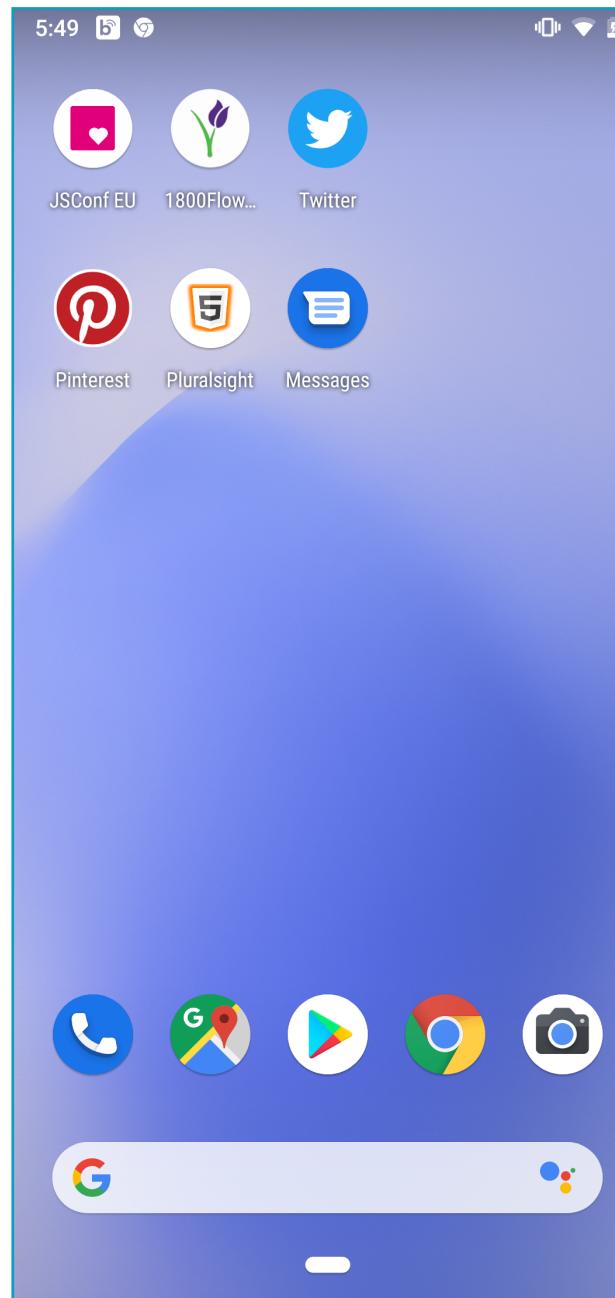
**APK is installed silently**

**Icon goes to home screen and launcher**

**Google Chrome with Play Services**

**Samsung Internet on Samsung devices**

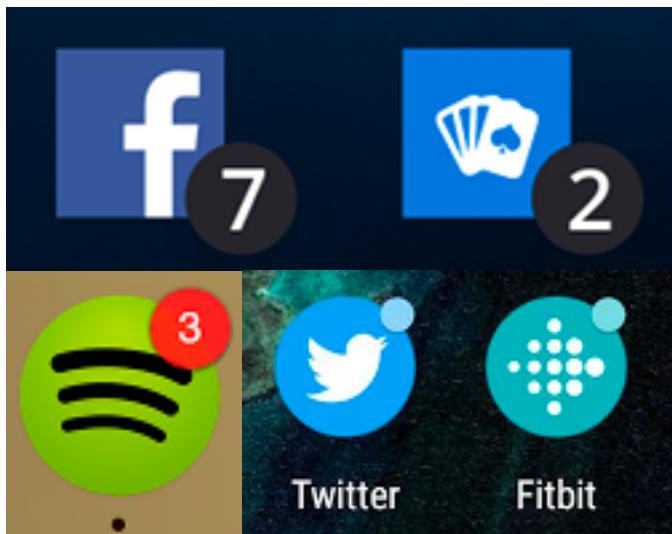
# Icons on Android with WebAPK



## WebAPK Link Capturing

Within the Android OS, your PWA will capture all links pointing to your PWA scope

# Badging



**Available only on some platforms**  
**It can be changed with push messages**  
**Number or just a dot**

Updating icon  
or app's meta  
data

**By default it will need reinstall**  
**WebAPK Chrome on Android**  
**Windows Store**  
**Google Play Store**



# Abilities

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# The Web Platform



- WebAssembly**
- WebGL**
- AR/VR**
- WebPush**
- WebShare**
- WebAuthn**
- Payment request**

# The Web Platform

**GamePad**

**WebRTC**

**WebBluetooth**

**MediaRecorder**

**Machine learning**

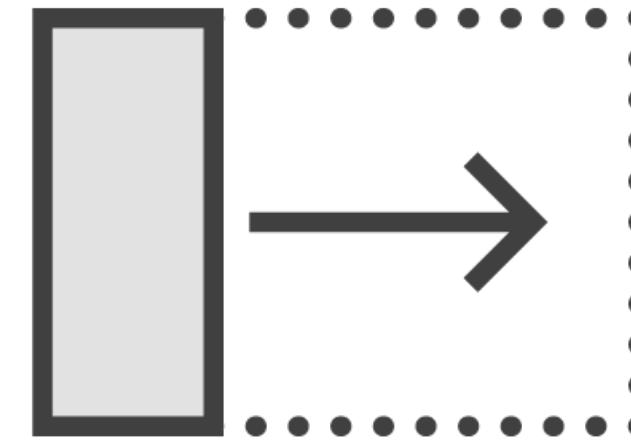
**Sensors and geolocation**

**Communication with other native apps**

# API Support



**Progressive enhancement**



**Extending the web with  
native SDKs**



# Limitations

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# Web Platform

- Not every native API is exposed**
- Background execution**
- Geofencing, BLE beacons**
- Low-level hardware access**
- OS event handling**
- Bugs and lack of documentation**
- HTTPS required for some abilities**

# Web App Manifest spec

- Multi-origin PWAs not allowed**
- Splash screen customization**
- Multi-platform icons**
- Multi installation detection**

# Platform Awareness

**Users might now know about PWAs**

**Business owners don't understand**

**Sometimes PWAs live with native apps**

**We need to do extra effort to educate**



# Summary

## Creating an app experience for mobile and desktop

- The PWA criteria
- The app experience
- Working with pages within a PWA
- Progressive enhancement
- The icon
- Abilities
- Limitations

**Next up: Programming the PWA with web tools**