

# Progressive Web Apps (PWA)

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# Progressive Web Apps

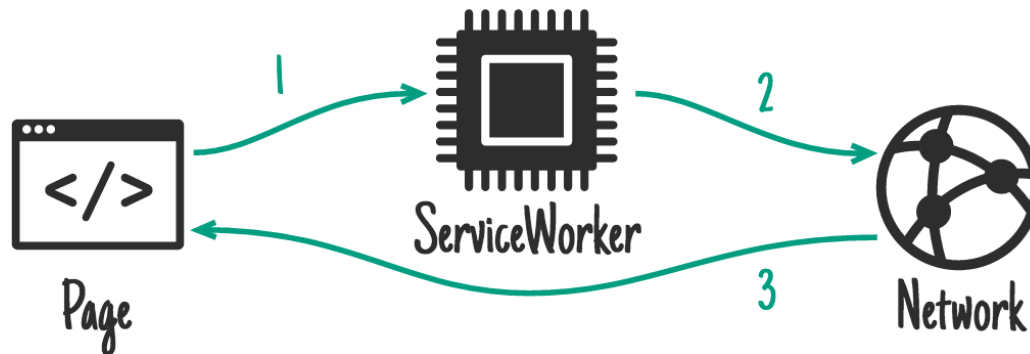
- Native experience
- Easy installation
- Faster service
- Native device features
- Updates without Store
- Discoverability

# Web App Manifest

- Metadata of your application
- `<link rel="manifest" href="/manifest.json">`
- Properties
  - short\_name and/or name
  - icons
  - start\_url
  - background\_color
  - theme\_color
  - display
  - orientation
  - scope
  - lang

# Service Worker

- Separate script from web
- Runs in background
- Interferes requests



# Service Worker

- Caching
- Background sync
- Push notifications
- Cannot access DOM
- Reacts to events
- You need HTTPS

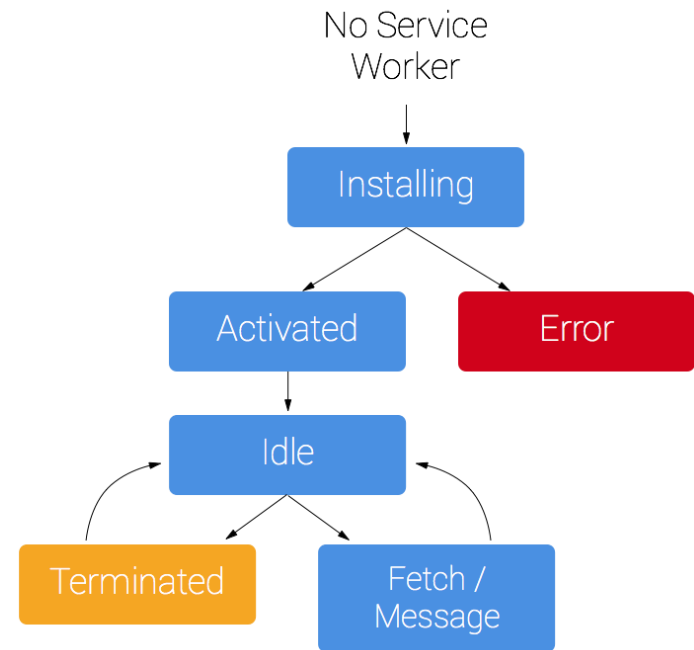
# Service Worker registration

- Check if service worker is supported  
`if ("serviceWorker" in navigator)`
- Check if service worker is already registered  
`if (navigator.serviceWorker.controller)`
- Register  

```
navigator.serviceWorker  
.register("pwabuilder-sw.js", {  
scope: "./"  
});
```

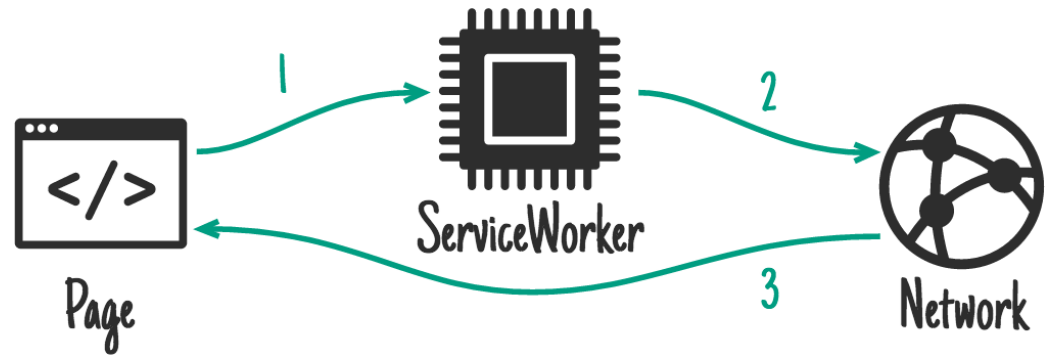
# Service Worker Lifecycle

- Installing
  - Cache static assets
- Activated
  - Manage old caches
- Idle
- Fetch/Message
  - Process request

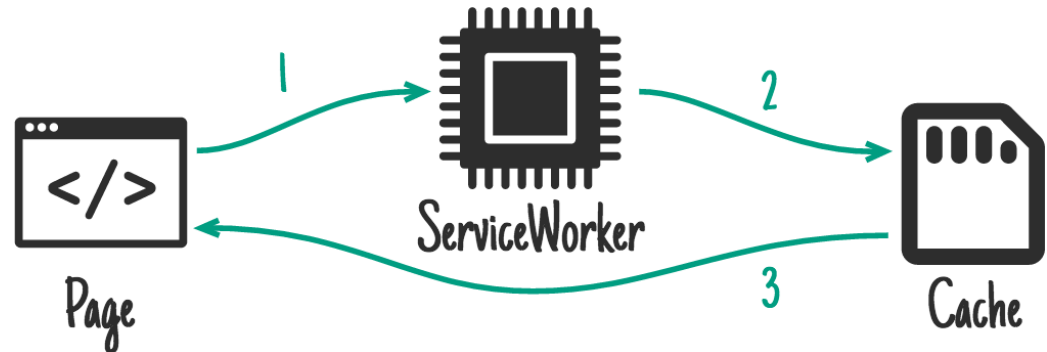


# Caching strategies

Network Only



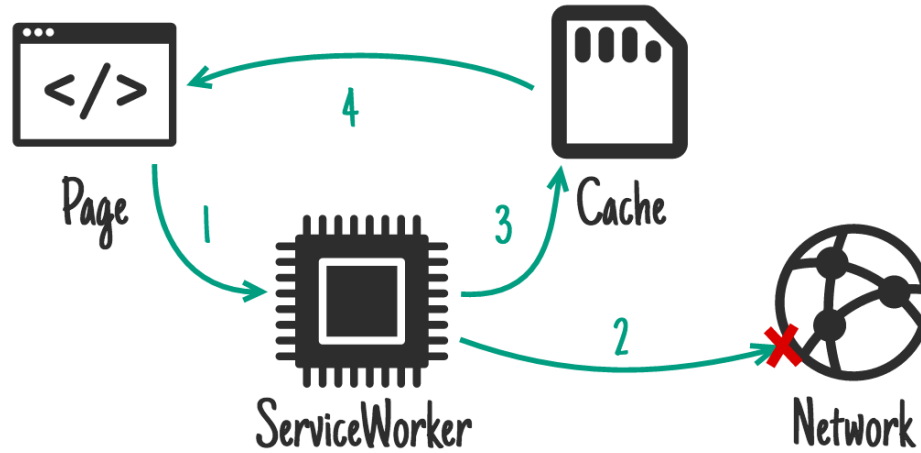
Cache Only



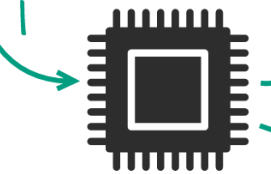


# Caching strategies

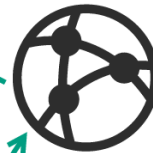
Network First



Page



ServiceWorker



Network

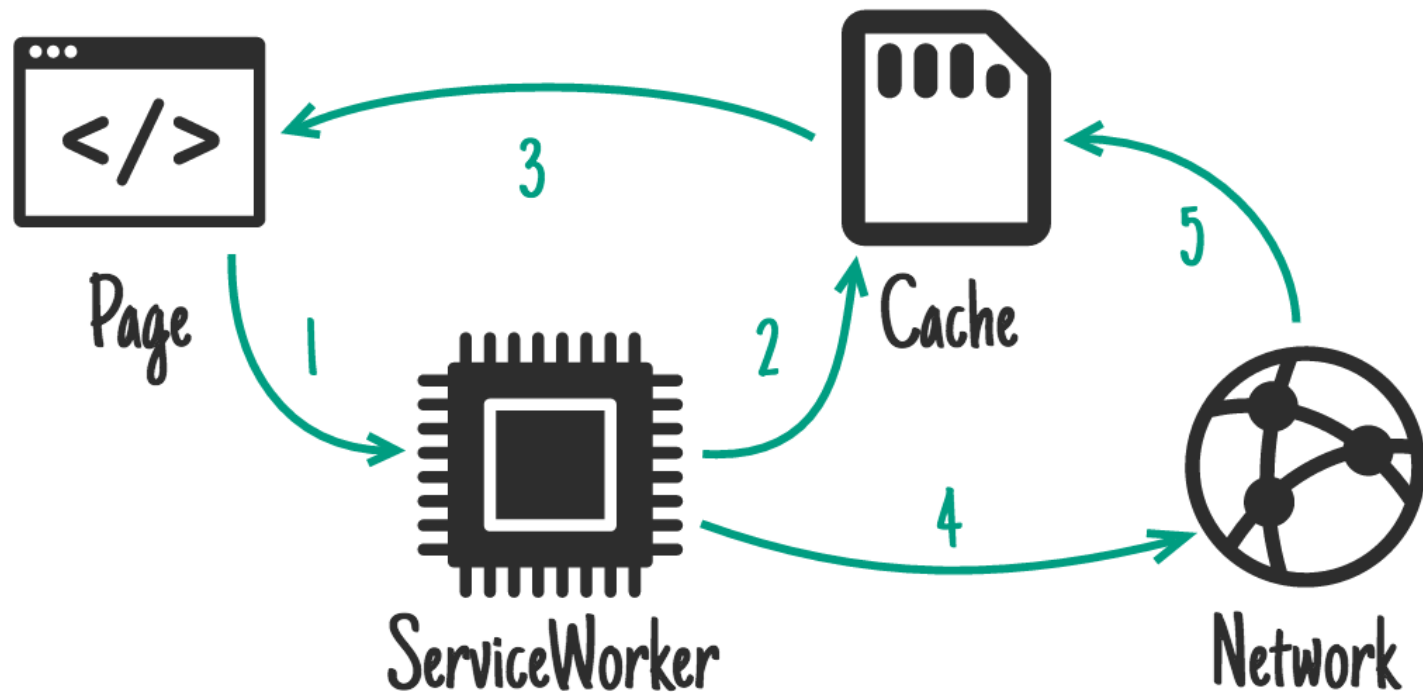


Cache

Cache First

# Caching Strategies

## Stale-While-Revalidate



# Storage – Web & Service Worker

- Cookies
- Local Storage
- Session Storage
- ~~Web SQL~~
- Cache Storage
- IndexedDB

# Chrome Developer Tools

- Application
  - Manifest
  - Service Workers
  - Storage
- Audits
  - Progressive Web App

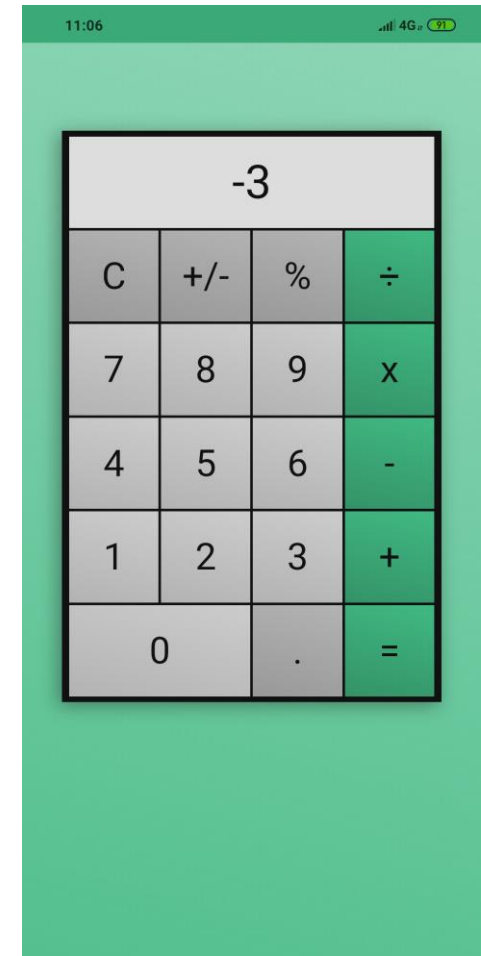
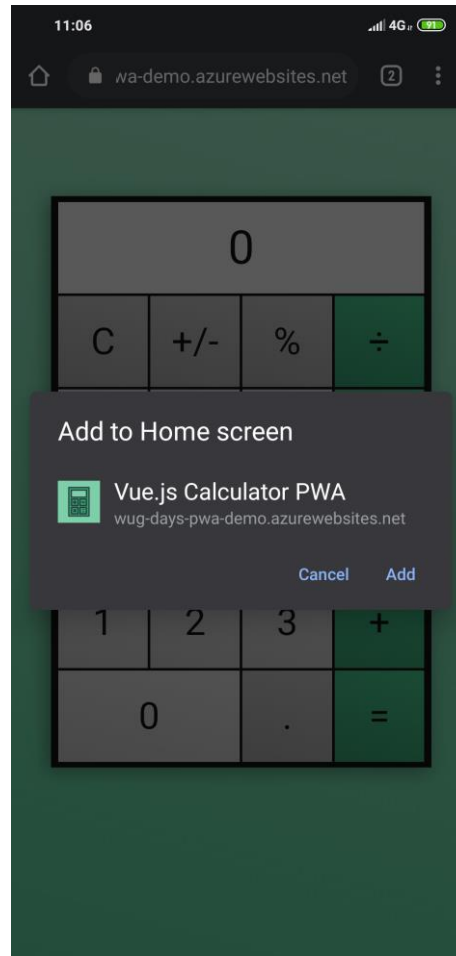
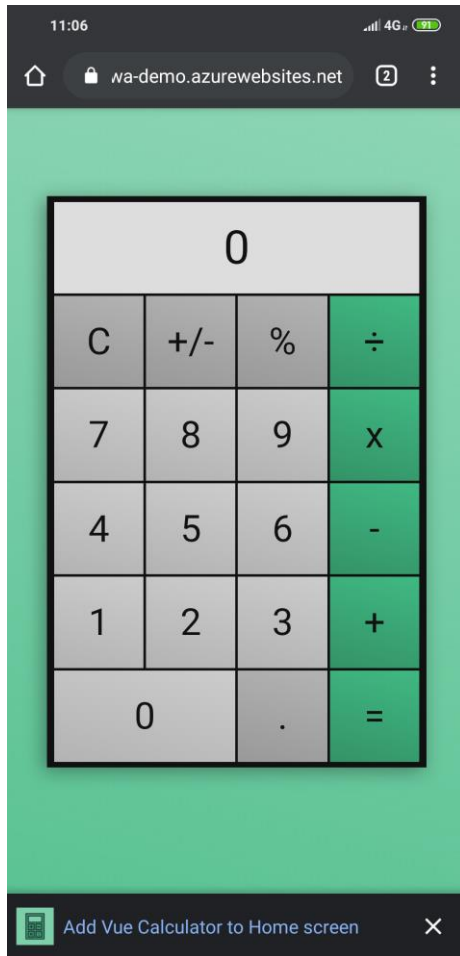
# PWA Builder

- Helper tool for PWAs from Microsoft
- Checks manifest
- Checks service worker
- Checks security
- Download predefined service workers
- Generate applications for Android and iOS
- Snippets for features:
  - Geolocation
  - Installation button
  - ...
- <https://www.pwabuilder.com>

# Trusted Web Activities – TWA

- Android only
- The app and web are from the same developer
- Digital Asset Links file
- Rendered in user's browser
- Fullscreen
- <https://developers.google.com/web/updates/2019/02/using-twa>

# Demo – Vue Calculator



# Demo – Vue Calculator

- Original Vue application repository (Kyle Butler):
- <https://github.com/kylbutlr/vue-calculator>
- Repository with my modifications for PWA:
- <https://github.com/jasho/vue-calculator>