Content
App Shell Model
Basics of User Experiences
What Makes a Good Mobile Site?
Introduction to variable fonts on the web
Overview
Introduction to Focus
DOM Order Matters
Using tabindex
Introduction to Semantics
The Accessibility Tree
Text Alternatives for Images
Navigating Content
Introduction to ARIA
ARIA Labels and Relationships
Hiding and Updating Content
Accessible Styles
How To Do an Accessibility Review
Accessibility for Teams
Overview
CSS Versus JavaScript
The Basics of Easing
Custom Easing
Animating Between Views
Choosing the Right Easing
Animating Modal Views
Asymmetric Animation Timing
Animations and Performance
Overview
Patterns
Responsive Images
Multi-Device Content
Add to Home Screen (Web)

App Install Prompt (Native)
Additional Colors and Icons
Handling User Location
Using Device Orientation & Motion
Making Fullscreen Experiences
Click to Call
Search Optimization
Overview
Sign in Users
Save Credentials from Forms
Social Discovery
Create Amazing Forms
Add Touch To Your Site
Intro to the Payment Request API
Deep Dive into the Payment Request API
Payment Request UX considerations
Set up Google Pay API
Overview
How Push Works
Subscribing a User
Permission UX
Sending Messages with Web Push Libraries
Web Push Protocol
Handling Push Events
Displaying a Notification
Notification Behavior
Common Notification Patterns
FAQ
Common Issues and Reporting Bugs
Video: Web Push Notifications (I/O 2016)
WebAPKs on Android
Web App Manifest
Using <video> and <audio></audio></video>

Mobile Web Video Playback
Playing Protected Content with Encrypted Media Extensions
Overview
Seamless Playback
Fast Playback with Video Preload
Capturing Audio
Capturing Images
Capturing Video
Application Primers
From Raw Video to Web Ready
Real Time Effects For Images and Video
Cheat Sheet
Overview
Status
Seeing the Web From a VR Perspective
Getting Started with WebVR
Adding Input to a WebVR Scene
Overview
Measure Performance with the RAIL Model
Overview
Measuring Performance
Text Content
Graphical Content
HTTP Requests
HTTP Caching
Wrap-up and Demo
How to Think About Speed Tools
Assessing Loading Performance in Real Life with Navigation and Resource Timing
User-centric Performance Metrics
Understanding Low Bandwidth and High Latency
Overview
Eliminating Unnecessary Downloads
Optimizing Encoding and Transfer Size of Text-based Assets

Image Optimization
Automating Image Optimization
Replace Animated GIFs with Video
JavaScript Start-up Optimization
Loading Third-Party JavaScript
Web Font Optimization
HTTP Caching
Delivering Fast and Light Applications with Save-Data
Reduce JavaScript Payloads with Tree Shaking
Offline Cookbook
Overview
Offline Storage for Progressive Web Apps
Using the Cache API
IndexedDB Best Practices
Offline UX Considerations
Images and Video
Overview
Constructing the Object Model
Render-Tree Construction, Layout, and Paint
Render-Blocking CSS
Adding Interactivity with JavaScript
Measuring the Critical Rendering Path
Analyzing Critical Rendering Path Performance
Optimizing the Critical Rendering Path
PageSpeed Rules and Recommendations
Introduction to HTTP/2
PRPL Pattern
Resource Prioritization
Introduction
Decrease Front-end Size
Make Use of Long-term Caching
Monitor and analyze the app
Conclusion

Overview
Optimizing JavaScript Execution
Reduce the Scope and Complexity of Style Calculations
Avoid Large, Complex Layouts and Layout Thrashing
Simplify Paint Complexity and Reduce Paint Areas
Stick to Compositor-Only Properties and Manage Layer Count
Debounce Your Input Handlers
Overview
Content Security Policy
Why HTTPS
Important Security Terminology
Enabling HTTPS on Your Servers
What Is Mixed Content?
Preventing Mixed Content
Overview
How do I know if my site is hacked?
Top ways websites get hacked by spammers
Build a support team
Quarantine your site
Use Search Console
Overview
Fixing the Japanese keyword hack
Fixing the gibberish hack
Fixing the cloaked keywords and links hack
Assess malware damage
Identify the vulnerability
Clean and maintain your site
Request a review
Glossary for hacked sites
FAQs for hacked sites
Overview
Custom Elements v1: Reusable Web Components
Shadow DOM v1: Self-Contained Web Components

Best Practices
Overview
<howto-checkbox></howto-checkbox>
<howto-tabs></howto-tabs>
<howto-tooltip></howto-tooltip>
Async Functions
Promises
Overview
Life Cycle
Registration
High Performance Loading
App Shell Model
Basics of User Experiences
What Makes a Good Mobile Site?
Introduction to variable fonts on the web
Overview
Introduction to Focus
DOM Order Matters
Using tabindex
Introduction to Semantics
The Accessibility Tree
Text Alternatives for Images
Navigating Content
Introduction to ARIA
ARIA Labels and Relationships
Hiding and Updating Content
Accessible Styles
How To Do an Accessibility Review
Accessibility for Teams
Overview
CSS Versus JavaScript
The Basics of Easing
Custom Easing

Animating Between Views
Choosing the Right Easing
Animating Modal Views
Asymmetric Animation Timing
Animations and Performance
Overview
Patterns
Responsive Images
Multi-Device Content
Add to Home Screen (Web)
App Install Prompt (Native)
Additional Colors and Icons
Handling User Location
Using Device Orientation & Motion
Making Fullscreen Experiences
Click to Call
Search Optimization
Overview
Sign in Users
Save Credentials from Forms
Social Discovery
Create Amazing Forms
Add Touch To Your Site
Intro to the Payment Request API
Deep Dive into the Payment Request API
Payment Request UX considerations
Set up Google Pay API
Overview
How Push Works
Subscribing a User
Permission UX
Sending Messages with Web Push Libraries
Web Push Protocol

Handling Push Events
Displaying a Notification
Notification Behavior
Common Notification Patterns
FAQ
Common Issues and Reporting Bugs
Video: Web Push Notifications (I/O 2016)
WebAPKs on Android
Web App Manifest
Using <video> and <audio></audio></video>
Mobile Web Video Playback
Playing Protected Content with Encrypted Media Extensions
Overview
Seamless Playback
Fast Playback with Video Preload
Capturing Audio
Capturing Images
Capturing Video
Application Primers
From Raw Video to Web Ready
Real Time Effects For Images and Video
Cheat Sheet
Overview
Status
Seeing the Web From a VR Perspective
Getting Started with WebVR
Adding Input to a WebVR Scene
Overview
Measure Performance with the RAIL Model
Overview
Measuring Performance
Text Content
Graphical Content

HTTP Requests
HTTP Caching
Wrap-up and Demo
How to Think About Speed Tools
Assessing Loading Performance in Real Life with Navigation and Resource Timing
User-centric Performance Metrics
Understanding Low Bandwidth and High Latency
Overview
Eliminating Unnecessary Downloads
Optimizing Encoding and Transfer Size of Text-based Assets
Image Optimization
Automating Image Optimization
Replace Animated GIFs with Video
JavaScript Start-up Optimization
Loading Third-Party JavaScript
Web Font Optimization
HTTP Caching
Delivering Fast and Light Applications with Save-Data
Reduce JavaScript Payloads with Tree Shaking
Offline Cookbook
Overview
Offline Storage for Progressive Web Apps
Using the Cache API
IndexedDB Best Practices
Offline UX Considerations
Images and Video
Overview
Constructing the Object Model
Render-Tree Construction, Layout, and Paint
Render-Blocking CSS
Adding Interactivity with JavaScript
Measuring the Critical Rendering Path
Analyzing Critical Rendering Path Performance

Optimizing the Critical Rendering Path
PageSpeed Rules and Recommendations
Introduction to HTTP/2
PRPL Pattern
Resource Prioritization
Introduction
Decrease Front-end Size
Make Use of Long-term Caching
Monitor and analyze the app
Conclusion
Overview
Optimizing JavaScript Execution
Reduce the Scope and Complexity of Style Calculations
Avoid Large, Complex Layouts and Layout Thrashing
Simplify Paint Complexity and Reduce Paint Areas
Stick to Compositor-Only Properties and Manage Layer Count
Debounce Your Input Handlers
Overview
Content Security Policy
Why HTTPS
Important Security Terminology
Enabling HTTPS on Your Servers
What Is Mixed Content?
Preventing Mixed Content
Overview
How do I know if my site is hacked?
Top ways websites get hacked by spammers
Build a support team
Quarantine your site
Use Search Console
Overview
Fixing the Japanese keyword hack
Fixing the gibberish hack

Fixing the cloaked keywords and links hack
Assess malware damage
Identify the vulnerability
Clean and maintain your site
Request a review
Glossary for hacked sites
FAQs for hacked sites
Overview
Custom Elements v1: Reusable Web Components
Shadow DOM v1: Self-Contained Web Components
Best Practices
Overview
<howto-checkbox></howto-checkbox>
<howto-tabs></howto-tabs>
<howto-tooltip></howto-tooltip>
Async Functions
Promises
Overview
Life Cycle
Registration
High Performance Loading