Content	Page
App Shell Model	0
Basics of User Experiences	1
What Makes a Good Mobile Site?	2
Introduction to variable fonts on the web	3
Overview	4
Introduction to Focus	5
DOM Order Matters	6
Using tabindex	7
Introduction to Semantics	8
The Accessibility Tree	9
Text Alternatives for Images	10
Navigating Content	11
Introduction to ARIA	12
ARIA Labels and Relationships	13
Hiding and Updating Content	14
Accessible Styles	15
How To Do an Accessibility Review	16
Accessibility for Teams	17
Overview	18
CSS Versus JavaScript	19
The Basics of Easing	20
Custom Easing	21
Animating Between Views	22
Choosing the Right Easing	23
Animating Modal Views	24
Asymmetric Animation Timing	25
Animations and Performance	26
Overview	27
Patterns	28
Responsive Images	29
Multi-Device Content	30
Add to Home Screen (Web)	31

App Install Prompt (Native)	32
Additional Colors and Icons	33
Handling User Location	34
Using Device Orientation & Motion	35
Making Fullscreen Experiences	36
Click to Call	37
Search Optimization	38
Overview	39
Sign in Users	40
Save Credentials from Forms	41
Social Discovery	42
Create Amazing Forms	43
Add Touch To Your Site	44
Intro to the Payment Request API	45
Deep Dive into the Payment Request API	46
Payment Request UX considerations	47
Set up Google Pay API	48
Overview	49
How Push Works	50
Subscribing a User	51
Permission UX	52
Sending Messages with Web Push Libraries	53
Web Push Protocol	54
Handling Push Events	55
Displaying a Notification	56
Notification Behavior	57
Common Notification Patterns	58
FAQ	59
Common Issues and Reporting Bugs	60
Video: Web Push Notifications (I/O 2016)	61
WebAPKs on Android	62
Web App Manifest	63
Using <video> and <audio></audio></video>	64

Mobile Web Video Playback	65
Playing Protected Content with Encrypted Media Extensions	66
Overview	67
Seamless Playback	68
Fast Playback with Video Preload	69
Capturing Audio	70
Capturing Images	71
Capturing Video	72
Application Primers	73
From Raw Video to Web Ready	74
Real Time Effects For Images and Video	75
Cheat Sheet	76
Overview	77
Status	78
Seeing the Web From a VR Perspective	79
Getting Started with WebVR	80
Adding Input to a WebVR Scene	81
Overview	82
Measure Performance with the RAIL Model	83
Overview	84
Measuring Performance	85
Text Content	86
Graphical Content	87
HTTP Requests	88
HTTP Caching	89
Wrap-up and Demo	90
How to Think About Speed Tools	91
Assessing Loading Performance in Real Life with Navigation and Resource Timing	92
User-centric Performance Metrics	93
Understanding Low Bandwidth and High Latency	94
Overview	95
Eliminating Unnecessary Downloads	96
Optimizing Encoding and Transfer Size of Text-based Assets	97

Image Optimization	98
Automating Image Optimization	99
Replace Animated GIFs with Video	100
JavaScript Start-up Optimization	101
Loading Third-Party JavaScript	102
Web Font Optimization	103
HTTP Caching	104
Delivering Fast and Light Applications with Save-Data	105
Reduce JavaScript Payloads with Tree Shaking	106
Offline Cookbook	107
Overview	108
Offline Storage for Progressive Web Apps	109
Using the Cache API	110
IndexedDB Best Practices	111
Offline UX Considerations	112
Images and Video	113
Overview	114
Constructing the Object Model	115
Render-Tree Construction, Layout, and Paint	116
Render-Blocking CSS	117
Adding Interactivity with JavaScript	118
Measuring the Critical Rendering Path	119
Analyzing Critical Rendering Path Performance	120
Optimizing the Critical Rendering Path	121
PageSpeed Rules and Recommendations	122
Introduction to HTTP/2	123
PRPL Pattern	124
Resource Prioritization	125
Introduction	126
Decrease Front-end Size	127
Make Use of Long-term Caching	128
Monitor and analyze the app	129
Conclusion	130

Overview	131
Optimizing JavaScript Execution	132
Reduce the Scope and Complexity of Style Calculations	133
Avoid Large, Complex Layouts and Layout Thrashing	134
Simplify Paint Complexity and Reduce Paint Areas	135
Stick to Compositor-Only Properties and Manage Layer Count	136
Debounce Your Input Handlers	137
Overview	138
Content Security Policy	139
Why HTTPS	140
Important Security Terminology	141
Enabling HTTPS on Your Servers	142
What Is Mixed Content?	143
Preventing Mixed Content	144
Overview	145
How do I know if my site is hacked?	146
Top ways websites get hacked by spammers	147
Build a support team	148
Quarantine your site	149
Use Search Console	150
Overview	151
Fixing the Japanese keyword hack	152
Fixing the gibberish hack	153
Fixing the cloaked keywords and links hack	154
Assess malware damage	155
Identify the vulnerability	156
Clean and maintain your site	157
Request a review	158
Glossary for hacked sites	159
FAQs for hacked sites	160
Overview	161
Custom Elements v1: Reusable Web Components	162
Shadow DOM v1: Self-Contained Web Components	163

Best Practices	164
Overview	165
<howto-checkbox></howto-checkbox>	166
<howto-tabs></howto-tabs>	167
<howto-tooltip></howto-tooltip>	168
Async Functions	169
Promises	170
Overview	171
Life Cycle	172
Registration	173
High Performance Loading	174
App Shell Model	175
Basics of User Experiences	176
What Makes a Good Mobile Site?	177
Introduction to variable fonts on the web	178
Overview	179
Introduction to Focus	180
DOM Order Matters	181
Using tabindex	182
Introduction to Semantics	183
The Accessibility Tree	184
Text Alternatives for Images	185
Navigating Content	186
Introduction to ARIA	187
ARIA Labels and Relationships	188
Hiding and Updating Content	189
Accessible Styles	190
How To Do an Accessibility Review	191
Accessibility for Teams	192
Overview	193
CSS Versus JavaScript	194
The Basics of Easing	195
Custom Easing	196

Animating Between Views	197
Choosing the Right Easing	198
Animating Modal Views	199
Asymmetric Animation Timing	200
Animations and Performance	201
Overview	202
Patterns	203
Responsive Images	204
Multi-Device Content	205
Add to Home Screen (Web)	206
App Install Prompt (Native)	207
Additional Colors and Icons	208
Handling User Location	209
Using Device Orientation & Motion	210
Making Fullscreen Experiences	211
Click to Call	212
Search Optimization	213
Overview	214
Sign in Users	215
Save Credentials from Forms	216
Social Discovery	217
Create Amazing Forms	218
Add Touch To Your Site	219
Intro to the Payment Request API	220
Deep Dive into the Payment Request API	221
Payment Request UX considerations	222
Set up Google Pay API	223
Overview	224
How Push Works	225
Subscribing a User	226
Permission UX	227
Sending Messages with Web Push Libraries	228
Web Push Protocol	229

Handling Push Events	230
Displaying a Notification	231
Notification Behavior	232
Common Notification Patterns	233
FAQ	234
Common Issues and Reporting Bugs	235
Video: Web Push Notifications (I/O 2016)	236
WebAPKs on Android	237
Web App Manifest	238
Using <video> and <audio></audio></video>	239
Mobile Web Video Playback	240
Playing Protected Content with Encrypted Media Extensions	241
Overview	242
Seamless Playback	243
Fast Playback with Video Preload	244
Capturing Audio	245
Capturing Images	246
Capturing Video	247
Application Primers	248
From Raw Video to Web Ready	249
Real Time Effects For Images and Video	250
Cheat Sheet	251
Overview	252
Status	253
Seeing the Web From a VR Perspective	254
Getting Started with WebVR	255
Adding Input to a WebVR Scene	256
Overview	257
Measure Performance with the RAIL Model	258
Overview	259
Measuring Performance	260
Text Content	261
Graphical Content	262

HTTP Requests	263
HTTP Caching	264
Wrap-up and Demo	265
How to Think About Speed Tools	266
Assessing Loading Performance in Real Life with Navigation and Resource Timing	267
User-centric Performance Metrics	268
Understanding Low Bandwidth and High Latency	269
Overview	270
Eliminating Unnecessary Downloads	271
Optimizing Encoding and Transfer Size of Text-based Assets	272
Image Optimization	273
Automating Image Optimization	274
Replace Animated GIFs with Video	275
JavaScript Start-up Optimization	276
Loading Third-Party JavaScript	277
Web Font Optimization	278
HTTP Caching	279
Delivering Fast and Light Applications with Save-Data	280
Reduce JavaScript Payloads with Tree Shaking	281
Offline Cookbook	282
Overview	283
Offline Storage for Progressive Web Apps	284
Using the Cache API	285
IndexedDB Best Practices	286
Offline UX Considerations	287
Images and Video	288
Overview	289
Constructing the Object Model	290
Render-Tree Construction, Layout, and Paint	291
Render-Blocking CSS	292
Adding Interactivity with JavaScript	293
Measuring the Critical Rendering Path	294
Analyzing Critical Rendering Path Performance	295

Optimizing the Critical Rendering Path	296
PageSpeed Rules and Recommendations	297
Introduction to HTTP/2	298
PRPL Pattern	299
Resource Prioritization	300
Introduction	301
Decrease Front-end Size	302
Make Use of Long-term Caching	303
Monitor and analyze the app	304
Conclusion	305
Overview	306
Optimizing JavaScript Execution	307
Reduce the Scope and Complexity of Style Calculations	308
Avoid Large, Complex Layouts and Layout Thrashing	309
Simplify Paint Complexity and Reduce Paint Areas	310
Stick to Compositor-Only Properties and Manage Layer Count	311
Debounce Your Input Handlers	312
Overview	313
Content Security Policy	314
Why HTTPS	315
Important Security Terminology	316
Enabling HTTPS on Your Servers	317
What Is Mixed Content?	318
Preventing Mixed Content	319
Overview	320
How do I know if my site is hacked?	321
Top ways websites get hacked by spammers	322
Build a support team	323
Quarantine your site	324
Use Search Console	325
Overview	326
Fixing the Japanese keyword hack	327
Fixing the gibberish hack	328

Fixing the cloaked keywords and links hack	329
Assess malware damage	330
Identify the vulnerability	331
Clean and maintain your site	332
Request a review	333
Glossary for hacked sites	334
FAQs for hacked sites	335
Overview	336
Custom Elements v1: Reusable Web Components	337
Shadow DOM v1: Self-Contained Web Components	338
Best Practices	339
Overview	340
<howto-checkbox></howto-checkbox>	341
<howto-tabs></howto-tabs>	342
<howto-tooltip></howto-tooltip>	343
Async Functions	344
Promises	345
Overview	346
Life Cycle	347
Registration	348
High Performance Loading	349