
Table of Contents

Preface.....	xxiii
1. Introduction to Dynamic Web Content.....	1
HTTP and HTML: Berners-Lee's Basics	2
The Request/Response Procedure	2
The Benefits of PHP, MySQL, JavaScript, CSS, and HTML5	5
MariaDB: The MySQL Clone	6
Using PHP	6
Using MySQL	7
Using JavaScript	8
Using CSS	10
And Then There's HTML5	10
The Apache Web Server	11
Handling Mobile Devices	12
About Open Source	12
Bringing It All Together	13
Questions	15
2. Setting Up a Development Server.....	17
What Is a WAMP, MAMP, or LAMP?	18
Installing AMPPS on Windows	18
Testing the Installation	23
Accessing the Document Root (Windows)	25
Alternative WAMPs	26
Installing AMPPS on macOS	27
Accessing the Document Root (macOS)	28
Installing a LAMP on Linux	29
Working Remotely	29

Logging In	30
Using SFTP or FTPS	30
Using a Code Editor	31
Using an IDE	32
Questions	34
3. Introduction to PHP.....	35
Incorporating PHP Within HTML	35
This Book's Examples	37
The Structure of PHP	37
Using Comments	37
Basic Syntax	38
Variables	39
Operators	44
Variable Assignment	48
Multiline Commands	50
Variable Typing	52
Constants	53
Predefined Constants	54
The Difference Between the echo and print Commands	55
Functions	55
Variable Scope	56
Questions	62
4. Expressions and Control Flow in PHP.....	63
Expressions	63
TRUE or FALSE?	64
Literals and Variables	65
Operators	66
Operator Precedence	67
Associativity	69
Relational Operators	70
Conditionals	74
The if Statement	75
The else Statement	76
The elseif Statement	78
The switch Statement	79
The ? (or ternary) Operator	82
Looping	83
while Loops	84
do...while Loops	86
for Loops	86

Breaking Out of a Loop	88
The continue Statement	89
Implicit and Explicit Casting	90
PHP Dynamic Linking	91
Dynamic Linking in Action	92
Questions	93
5. PHP Functions and Objects.....	95
PHP Functions	96
Defining a Function	97
Returning a Value	98
Returning an Array	99
Passing Arguments by Reference	100
Returning Global Variables	102
Recap of Variable Scope	102
Including and Requiring Files	103
The include Statement	103
Using include_once	103
Using require and require_once	104
PHP Version Compatibility	104
PHP Objects	105
Terminology	106
Declaring a Class	107
Creating an Object	108
Accessing Objects	108
Cloning Objects	110
Constructors	111
Destructors	111
Writing Methods	112
Declaring Properties	113
Declaring Constants	114
Property and Method Scope	114
Static Methods	115
Static Properties	116
Inheritance	117
Questions	121
6. PHP Arrays.....	123
Basic Access	123
Numerically Indexed Arrays	123
Associative Arrays	125
Assignment Using the array Keyword	126

The foreach...as Loop	127
Multidimensional Arrays	129
Using Array Functions	132
is_array	132
count	133
sort	133
shuffle	133
explode	134
extract	135
compact	135
reset	137
end	137
Questions	137
7. Practical PHP.....	139
Using printf	139
Precision Setting	140
String Padding	142
Using sprintf	143
Date and Time Functions	143
Date Constants	146
Using checkdate	146
File Handling	147
Checking Whether a File Exists	147
Creating a File	147
Reading from Files	149
Copying Files	150
Moving a File	150
Deleting a File	151
Updating Files	151
Locking Files for Multiple Accesses	152
Reading an Entire File	154
Uploading Files	155
System Calls	160
XHTML or HTML5?	162
Questions	163
8. Introduction to MySQL.....	165
MySQL Basics	165
Summary of Database Terms	166
Accessing MySQL via the Command Line	166
Starting the Command-Line Interface	167

Using the Command-Line Interface	171
MySQL Commands	172
Data Types	177
Indexes	187
Creating an Index	187
Querying a MySQL Database	193
Joining Tables Together	203
Using Logical Operators	205
MySQL Functions	206
Accessing MySQL via phpMyAdmin	206
Questions	207
9. Mastering MySQL.....	209
Database Design	209
Primary Keys: The Keys to Relational Databases	210
Normalization	211
First Normal Form	212
Second Normal Form	214
Third Normal Form	216
When Not to Use Normalization	218
Relationships	219
One-to-One	219
One-to-Many	220
Many-to-Many	221
Databases and Anonymity	222
Transactions	223
Transaction Storage Engines	223
Using BEGIN	224
Using COMMIT	225
Using ROLLBACK	225
Using EXPLAIN	226
Backing Up and Restoring	227
Using mysqldump	227
Creating a Backup File	229
Restoring from a Backup File	231
Dumping Data in CSV Format	231
Planning Your Backups	232
Questions	232
10. What's New in PHP 8 and MySQL 8.....	235
About This Chapter	235
PHP 8	236

Named Parameters	236
Attributes	237
Constructor Properties	237
Just-In-Time Compilation	238
Union Types	238
Null-safe Operator	238
match Expressions	238
New Functions	239
MySQL 8	243
Updates to SQL	243
JSON (JavaScript Object Notation)	244
Geography Support	244
Reliability	244
Speed and Performance	244
Management	245
Security	245
Questions	246
11. Accessing MySQL Using PHP.....	247
Querying a MySQL Database with PHP	247
The Process	247
Creating a Login File	248
Connecting to a MySQL Database	249
A Practical Example	254
The \$_POST Array	257
Deleting a Record	258
Displaying the Form	258
Querying the Database	259
Running the Program	260
Practical MySQL	261
Creating a Table	262
Describing a Table	263
Dropping a Table	264
Adding Data	264
Retrieving Data	265
Updating Data	266
Deleting Data	267
Using AUTO_INCREMENT	267
Performing Additional Queries	269
Preventing Hacking Attempts	270
Steps You Can Take	271
Using Placeholders	273

Preventing JavaScript Injection into HTML	275
Questions	277
12. Form Handling.....	279
Building Forms	279
Retrieving Submitted Data	281
Default Values	282
Input Types	283
Sanitizing Input	290
An Example Program	292
HTML5 Enhancements	294
The autocomplete Attribute	295
The autofocus Attribute	295
The placeholder Attribute	295
The required Attribute	296
Override Attributes	296
The width and height Attributes	296
The min and max Attributes	296
The step Attribute	296
The form Attribute	297
The list Attribute	297
The color Input Type	297
The number and range Input Types	297
Date and Time Pickers	298
Questions	298
13. Cookies, Sessions, and Authentication.....	299
Using Cookies in PHP	299
Setting a Cookie	301
Accessing a Cookie	302
Destroying a Cookie	302
HTTP Authentication	302
Storing Usernames and Passwords	306
An Example Program	308
Using Sessions	311
Starting a Session	312
Ending a Session	315
Setting a Timeout	316
Session Security	317
Questions	320

14. Exploring JavaScript.....	321
JavaScript and HTML Text	322
Using Scripts Within a Document Head	323
Older and Nonstandard Browsers	324
Including JavaScript Files	324
Debugging JavaScript Errors	325
Using Comments	325
Semicolons	326
Variables	326
String Variables	327
Numeric Variables	327
Arrays	327
Operators	328
Arithmetic Operators	328
Assignment Operators	329
Comparison Operators	329
Logical Operators	330
Incrementing, Decrementing, and Shorthand Assignment	330
String Concatenation	330
Escape Characters	331
Variable Typing	331
Functions	333
Global Variables	333
Local Variables	333
Using let and const	334
The Document Object Model	337
Another Use for the \$ Symbol	339
Using the DOM	340
About document.write	341
Using console.log	341
Using alert	341
Writing into Elements	341
Using document.write	341
Questions	342
15. Expressions and Control Flow in JavaScript.....	343
Expressions	343
Literals and Variables	344
Operators	345
Operator Precedence	346
Associativity	346
Relational Operators	347

The with Statement	350
Using onerror	351
Using try...catch	352
Conditionals	353
The if Statement	353
The else Statement	353
The switch Statement	354
The ? Operator	356
Looping	357
while Loops	357
do...while Loops	357
for Loops	358
Breaking Out of a Loop	359
The continue Statement	359
Explicit Casting	360
Questions	361
16. JavaScript Functions, Objects, and Arrays.....	363
JavaScript Functions	363
Defining a Function	363
Returning a Value	365
Returning an Array	367
JavaScript Objects	368
Declaring a Class	368
Creating an Object	370
Accessing Objects	370
The prototype Keyword	370
JavaScript Arrays	373
Numeric Arrays	374
Associative Arrays	375
Multidimensional Arrays	376
Using Array Methods	377
Questions	382
17. JavaScript and PHP Validation and Error Handling.....	385
Validating User Input with JavaScript	385
The validate.html Document (Part 1)	386
The validate.html Document (Part 2)	388
Regular Expressions	391
Matching Through Metacharacters	392
Fuzzy Character Matching	392
Grouping Through Parentheses	393

Character Classes	394
Indicating a Range	394
Negation	394
Some More Complicated Examples	395
Summary of Metacharacters	399
General Modifiers	400
Using Regular Expressions in JavaScript	401
Using Regular Expressions in PHP	401
Redisplaying a Form After PHP Validation	402
Questions	408
18. Using Asynchronous Communication.....	409
What Is Asynchronous Communication?	410
Using XMLHttpRequest	410
Your First Asynchronous Program	411
Using GET Instead of POST	415
Sending XML Requests	417
Using Frameworks for Asynchronous Communication	421
Questions	421
19. Introduction to CSS.....	423
Importing a Stylesheet	424
Importing CSS from Within HTML	424
Embedded Style Settings	425
Using IDs	425
Using Classes	425
Using Semicolons	426
CSS Rules	426
Multiple Assignments	426
Using Comments	427
Style Types	428
Default Styles	428
User Styles	428
External Stylesheets	429
Internal Styles	429
Inline Styles	430
CSS Selectors	430
The Type Selector	430
The Descendant Selector	430
The Child Selector	431
The ID Selector	432
The Class Selector	433

The Attribute Selector	434
The Universal Selector	434
Selecting by Group	435
The CSS Cascade	436
Stylesheet Creators	436
Stylesheet Methods	436
Stylesheet Selectors	437
The Difference Between div and span Elements	439
Measurements	441
Fonts and Typography	443
font-family	443
font-style	444
font-size	444
font-weight	445
Managing Text Styles	445
Decoration	446
Spacing	446
Alignment	447
Transformation	447
Indenting	447
CSS Colors	448
Short Color Strings	448
Gradients	449
Positioning Elements	450
Absolute Positioning	450
Relative Positioning	451
Fixed Positioning	451
Pseudoclasses	453
Shorthand Rules	455
The Box Model and Layout	456
Setting Margins	456
Applying Borders	458
Adjusting Padding	459
Object Contents	461
Questions	461
20. Advanced CSS with CSS3.....	463
Attribute Selectors	464
Matching Parts of Strings	464
The box-sizing Property	465
CSS3 Backgrounds	466
The background-clip Property	466

The background-origin Property	468
The background-size Property	468
Using the auto Value	469
Multiple Backgrounds	469
CSS3 Borders	471
The border-color Property	471
The border-radius Property	471
Box Shadows	474
Element Overflow	475
Multicolumn Layout	475
Colors and Opacity	477
HSL Colors	477
HSLA Colors	478
RGB Colors	478
RGBA Colors	479
The opacity Property	479
Text Effects	479
The text-shadow Property	479
The text-overflow Property	479
The word-wrap Property	480
Web Fonts	481
Google Web Fonts	482
Transformations	483
3D Transformations	484
Transitions	485
Properties to Transition	485
Transition Duration	486
Transition Delay	486
Transition Timing	486
Shorthand Syntax	487
Questions	488
21. Accessing CSS from JavaScript.....	491
Revisiting the getElementById Function	491
The O Function	491
The S Function	492
The C Function	493
Including the Functions	494
Accessing CSS Properties from JavaScript	494
Some Common Properties	495
Other Properties	496
Inline JavaScript	498

The this Keyword	498
Attaching Events to Objects in a Script	499
Attaching to Other Events	499
Adding New Elements	500
Removing Elements	502
Alternatives to Adding and Removing Elements	502
Using Interrupts	503
Using setTimeout	504
Canceling a Timeout	505
Using setInterval	505
Using Interrupts for Animation	507
Questions	509
22. Introduction to jQuery.....	511
Why jQuery?	512
Including jQuery	512
Choosing the Right Version	513
Downloading	514
Using a Content Delivery Network	514
Customizing jQuery	515
jQuery Syntax	515
A Simple Example	516
Avoiding Library Conflicts	517
Selectors	517
The css Method	518
The Element Selector	518
The ID Selector	519
The Class Selector	519
Combining Selectors	519
Handling Events	520
Waiting Until the Document Is Ready	521
Event Functions and Properties	522
The blur and focus Events	523
The this Keyword	524
The click and dblclick Events	524
The keypress Event	525
Considerate Programming	527
The mousemove Event	527
Other Mouse Events	530
Alternative Mouse Methods	531
The submit Event	532
Special Effects	533

Hiding and Showing	534
The toggle Method	535
Fading In and Out	536
Sliding Elements Up and Down	537
Animations	538
Stopping Animations	541
Manipulating the DOM	542
The Difference Between the text and html Methods	543
The val and attr Methods	543
Adding and Removing Elements	545
Dynamically Applying Classes	547
Modifying Dimensions	547
The width and height Methods	548
The innerWidth and innerHeight Methods	550
The outerWidth and outerHeight Methods	550
DOM Traversal	551
Parent Elements	551
Child Elements	555
Sibling Elements	555
Selecting the Next and Previous Elements	557
Traversing jQuery Selections	559
The is Method	560
Using jQuery Without Selectors	562
The \$.each Method	562
The \$.map Method	563
Using Asynchronous Communication	563
Using the POST Method	564
Using the GET Method	564
Plug-ins	565
jQuery User Interface	565
Other Plug-ins	566
Questions	566
23. Introduction to jQuery Mobile.....	569
Including jQuery Mobile	570
Getting Started	571
Linking Pages	573
Linking Synchronously	574
Linking Within a Multipage Document	574
Page Transitions	575
Styling Buttons	580
List Handling	582

Filterable Lists	583
List Dividers	585
What Next?	588
Questions	588
24. Introduction to React.	591
What Is the Point of React Anyway?	592
Accessing the React Files	593
Including babel.js	594
Our First React Project	595
Using a Function Instead of a Class	596
Pure and Impure Code: A Golden Rule	598
Using Both a Class and a Function	598
Props and Components	599
The Differences Between Using a Class and a Function	600
React State and Life Cycle	601
Using Hooks (if You Use Node.js)	604
Events in React	604
Inline JSX Conditional Statements	606
Using Lists and Keys	607
Unique Keys	608
Handling Forms	609
Using Text Input	610
Using textarea	612
Using select	613
React Native	615
Creating React Native Apps	615
Further Reading	615
Taking React to the Next Level	616
Questions	616
25. Introduction to HTML5.	619
The Canvas	619
Geolocation	621
Audio and Video	623
Forms	624
Local Storage	624
Web Workers	624
Questions	625
26. The HTML5 Canvas.	627
Creating and Accessing a Canvas	627

The toDataURL Function	629
Specifying an Image Type	631
The fillRect Method	631
The clearRect Method	631
The strokeRect Method	632
Combining These Commands	632
The createLinearGradient Method	633
The addColorStop Method in Detail	635
The createRadialGradient Method	636
Using Patterns for Fills	638
Writing Text to the Canvas	640
The strokeText Method	640
The textBaseline Property	641
The font Property	641
The textAlign Property	641
The fillText Method	642
The measureText Method	643
Drawing Lines	643
The lineWidth Property	644
The lineCap and lineJoin Properties	644
The miterLimit Property	646
Using Paths	646
The moveTo and lineTo Methods	647
The stroke Method	647
The rect Method	648
Filling Areas	648
The clip Method	650
The isPointInPath Method	653
Working with Curves	654
The arc Method	654
The arcTo Method	657
The quadraticCurveTo Method	658
The bezierCurveTo Method	659
Manipulating Images	660
The drawImage Method	660
Resizing an Image	661
Selecting an Image Area	661
Copying from a Canvas	663
Adding Shadows	663
Editing at the Pixel Level	665
The getImageData Method	665
The putImageData Method	668

The createImageData Method	668
Advanced Graphical Effects	669
The globalCompositeOperation Property	669
The globalAlpha Property	672
Transformations	672
The scale Method	673
The save and restore Methods	674
The rotate Method	674
The translate Method	675
The transform Method	676
The setTransform Method	678
Questions	679
27. HTML5 Audio and Video.....	681
About Codecs	682
The <audio> Element	683
The <video> Element	685
The Video Codecs	686
Questions	689
28. Other HTML5 Features.....	691
Geolocation and the GPS Service	691
Other Location Methods	692
Geolocation and HTML5	693
Local Storage	696
Using Local Storage	697
The localStorage Object	697
Web Workers	699
Drag and Drop	702
Cross-Document Messaging	704
Other HTML5 Tags	708
Questions	708
29. Bringing It All Together.....	709
Designing a Social Networking App	710
On the Website	710
functions.php	710
The Functions	711
header.php	713
setup.php	716
index.php	718
signup.php	719

Checking for Username Availability	719
Logging In	720
checkuser.php	723
login.php	724
profile.php	726
Adding the “About Me” Text	727
Adding a Profile Image	727
Processing the Image	727
Displaying the Current Profile	728
members.php	731
Viewing a User’s Profile	732
Adding and Dropping Friends	732
Listing All Members	732
friends.php	735
messages.php	738
logout.php	741
styles.css	743
javascript.js	745
Questions	746
A. Solutions to the Chapter Questions.....	747
Index.....	771