

5

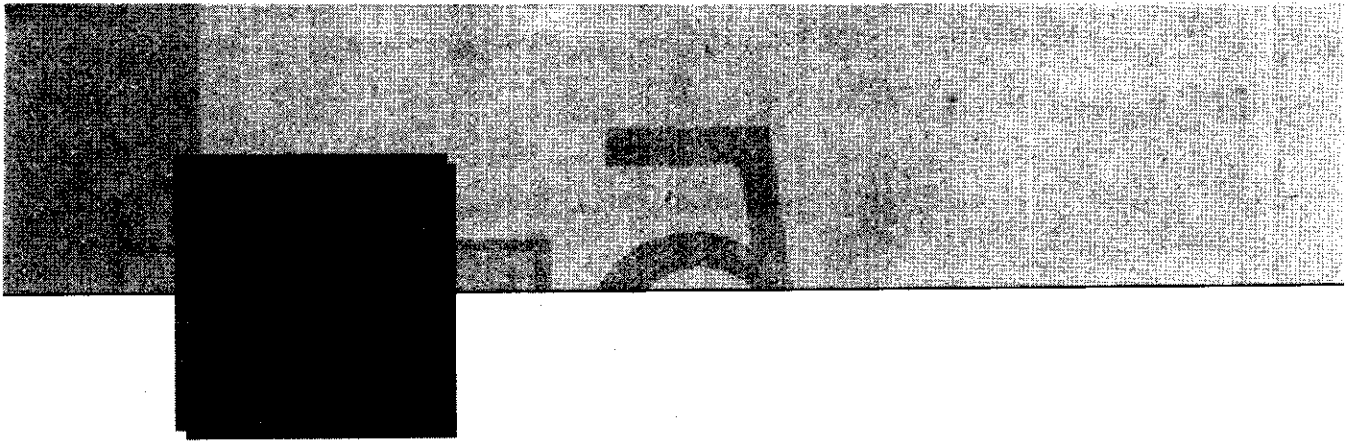
Appendices

Characters

The table A.1 shows the characters used in the World Wide Web Consortium's HTML 4.01 specification. The table is organized by character set, and the characters are listed in the order in which they appear in the specification.

Character	Character	Character	Character
�			
			
			
	
			
			
			
			
			
 	!	"	#
$	%	&	'
()	*	+
,	-	.	/
0	1	2	3
4	5	6	7
8	9	:	;
<	=	>	?
@	A	B	C
D	E	F	G
H	I	J	K
L	M	N	O
P	Q	R	S
T	U	V	W
X	Y	Z	[
\]	^	_
`	a	b	c
d	e	f	g
h	i	j	k
l	m	n	o
p	q	r	s
t	u	v	w
x	y	z	{
|	}	~	
€		‚	ƒ
„	…	†	‡
ˆ	‰	Š	‹
Œ		Ž	
	‘	’	“
”	•	–	—
˜	™	š	›
œ		ž	Ÿ
 	¡	¢	£
¤	¥	¦	§
¨	©	ª	«
¬	­	®	¯
°	±	²	³
´	µ	¶	·
¸	¹	º	»
¼	½	¾	¿
À	Á	Â	Ã
Ä	Å	Æ	Ç
È	É	Ê	Ë
Ì	Í	Î	Ï
Ð	Ñ	Ò	Ó
Ô	Õ	Ö	×
Ø	Ù	Ú	Û
Ü	Ý	Þ	ß
à	á	â	ã
ä	å	æ	ç
è	é	ê	ë
ì	í	î	ï
ð	ñ	ò	ó
ô	õ	ö	÷
ø	ù	ú	û
ü	ý	þ	ÿ

Table A.1: HTML 4.01 characters



XHTML Special Characters

The table of Fig. A.1 shows many commonly used XHTML special characters—called character entity references by the World Wide Web Consortium. For a complete list of character entity references, see the site www.w3.org/TR/REC-html40/sgml/entities.html.

non-breaking space	 	€	ê
§	§	†	ë
©	©	‡	í
®	®	§	î
¼	¼	¶	ø
½	½	·	ù
¾	¾	¸	ú
¿	à	¹	û
À	á	º	ü
Á	â	»	ý
Â	ã	™	þ
Ã	å		
Ä	ç		
Å	è		
Æ	é		

Fig. A.1 | XHTML special characters.

XHTML Colors

Colors may be specified by using a standard name (such as aqua) or a hexadecimal RGB value (such as #00FFFF for aqua). Of the six hexadecimal digits in an RGB value, the first two represent the amount of red in the color, the middle two represent the amount of green in the color, and the last two represent the amount of blue in the color. For example, black is the absence of color and is defined by #000000, whereas white is the maximum amount of red, green and blue and is defined by #FFFFFF. Pure red is #FF0000, pure green (which the standard calls lime) is #00FF00 and pure blue is #0000FF. Note that green in the standard is defined as #008000. Figure B.1 contains the XHTML standard color set. Figure B.2 contains the XHTML extended color set.

aqua	#00FFFF	navy	#000080
black	#000000	olive	#808000
blue	#0000FF	purple	#800080
fuchsia	#FF00FF	red	#FF0000
gray	#808080	silver	#C0C0C0
green	#008000	teal	#008080
lime	#00FF00	yellow	#FFFF00
maroon	#800000	white	#FFFFFF

Fig. B.1 | XHTML standard colors and hexadecimal RGB values.

aliceblue	#F0F8FF	dodgerblue	#1E90FF
antiquewhite	#FAEBD7	firebrick	#822222
aquamarine	#7FFFD4	floralwhite	#FFFAF0
azure	#F0FFFF	forestgreen	#228B22
beige	#F5F5DC	gainsboro	#DCDCDC
bisque	#FFE4C4	ghostwhite	#F8F8FF
blanchedalmond	#FFEBCD	gold	#FFD700
blueviolet	#8A2BE2	goldenrod	#DAA520
brown	#A52A2A	greenyellow	#ADFF2F
burlynwood	#DEB887	gray	#808080
cadetblue	#5F9EA0	hotpink	#FF69B4
chartreuse	#7FFF00	indianred	#CD5C5C
chocolate	#D2691E	indigo	#4B0082
coral	#FF7F50	ivory	#FFFFF0
cornflowerblue	#6495ED	khaki	#F0E68C
cornsilk	#FFF8DC	lavender	#E6E6FA
crimson	#DC143C	lavenderblush	#FFF0F5
cyan	#00FFFF	lawngreen	#7CFC00
darkblue	#00008B	lemonchiffon	#FFFACD
darkcyan	#008B8B	lightblue	#ADD8E6
darkgoldenrod	#8B860B	lightcoral	#F08080
darkgray	#A9A9A9	lightcyan	#E0FFFF
darkgreen	#006400	lightgoldenrodyellow	#FAFAD2
darkkhaki	#8D8678	lightgreen	#90EE90
darkmagenta	#800080	lightgrey	#D3D3D3
darkolivegreen	#556B2F	lightpink	#FFB6C1
darkorange	#FF8C00	lightsalmon	#FFA07A
darkorchid	#9932CC	lightseagreen	#20B2AA
darkred	#8B0000	lightskyblue	#87CEFA
darksalmon	#E9967A	lightslategray	#778899
darkseagreen	#8FBC8F	lightsteelblue	#B0C4DE
darkslateblue	#483D8B	lightyellow	#FFFFE0
darkslategray	#2F4F4F	limegreen	#32CD32
darkturquoise	#00CED1	linen	#FAFAD2
darkviolet	#9400D3	magenta	#FF00FF
deeppink	#FF1493	mediamaquamarine	#66CDAA
deepskyblue	#00BFFF	mediumblue	#0000CD
dimgray	#696969	mediumorchid	#BA55D3

Fig. B.2 | XHTML extended colors and hexadecimal RGB values. (Part I of 2.)

mediumpurple	#9370DB	plum	#DDA0DD
mediumseagreen	#3CB371	powderblue	#B0E0E6
mediumslateblue	#7B68EE	rosybrown	#DC8C8F
mediumspringgreen	#00FA9A	royalblue	#4169E1
mediumturquoise	#48D1CC	saddlebrown	#8B4513
mediumvioletred	#C71585	salmon	#FA8072
midnightblue	#191970	sandybrown	#F4A460
mintcream	#F5FFFA	seagreen	#2E8B57
mistyrose	#FFE4E1	seashell	#FFF5EE
moccasin	#FFE4B5	sienna	#A0522D
navajowhite	#FFDEAD	skyblue	#87CEEB
oldlace	#FDF5E6	slateblue	#6A5ACD
olivedrab	#6B8E23	slategray	#778899
orange	#FFA500	snow	#FFFAFA
orangered	#FF4500	springgreen	#00FF7F
orchid	#DA70D6	steelblue	#4682B4
palegoldenrod	#EEE8AA	tan	#D2B48C
palegreen	#98FB98	thistle	#D8BFD8
paleturquoise	#AFEEEE	tomato	#FF6347
palevioletred	#DB7093	turquoise	#40E0D0
papayawhip	#FFDAB9	violet	#EE82EE
peachpuff	#FFDAB9	wheat	#F5DEB3
peru	#CD853F	whitesmoke	#F5F5F5
pink	#FFC0CB	yellowgreen	#9ACD32

Fig. B.2 | XHTML extended colors and hexadecimal RGB values. (Part 2 of 2.)

JavaScript Operator Precedence Chart

This appendix contains the operator precedence chart for JavaScript/ECMAScript (Fig. C.1). The operators are shown in decreasing order of precedence from top to bottom.

[] ()	member access array indexing function calls	left to right
++ -- - ~ !	increment decrement unary minus bitwise complement logical NOT	right to left
delete new typeof void	deletes an array element or object property creates a new object returns the data type of its argument prevents an expression from returning a value	
* / %	multiplication division modulus	left to right

Fig. C.1 | JavaScript/ECMAScript operator precedence and associativity. (Part 1 of 2.)

+	addition	left to right
-	subtraction	
+	string concatenation	
<<	left shift	left to right
>>	right shift with sign extension	
>>>	right shift with zero extension	
<	less than	left to right
<=	less than or equal	
>	greater than	
>=	greater than or equal	
instanceof	type comparison	
==	equality	left to right
!=	inequality	
===	identity	
!==	nonidentity	
&	bitwise AND	left to right
^	bitwise XOR	left to right
	bitwise OR	left to right
&&	logical AND	left to right
	logical OR	left to right
?:	conditional	right to left
=	assignment	right to left
+=	addition assignment	
-=	subtraction assignment	
*=	multiplication assignment	
/=	division assignment	
%=	modulus assignment	
&=	bitwise AND assignment	
^=	bitwise exclusive OR assignment	
=	bitwise inclusive OR assignment	
<<=	bitwise left shift assignment	
>>=	bitwise right shift with sign extension assignment	
>>>=	bitwise right shift with zero extension assignment	

Fig. C.1 | JavaScript/ECMAScript operator precedence and associativity. (Part 2 of 2.)

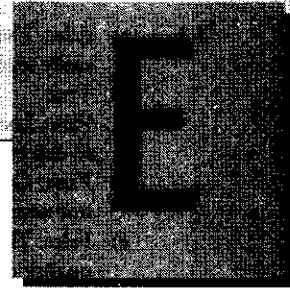
ASCII Character Set

In Fig. D.1, the digits at the left of the table are the left digits of the decimal equivalent (0–127) of the character code, and the digits at the top of the table are the right digits of the character code—e.g., the character code for “F” is 70, and the character code for “&” is 38.

Most users of this book are interested in the ASCII character set used to represent English characters on many computers. The ASCII character set is a subset of the Unicode character set used by scripting languages to represent characters from most of the world’s languages. For more information on the Unicode character set, see Appendix F.

	0	1	2	3	4	5	6	7	8	9
0	nul	soh	stx	etx	eut	eng	ack	bel	bs	ht
1	n1	vt	ff	cr	so	si	dle	dc1	dc2	dc3
2	dc4	nak	syn	etb	can	em	sub	esc	fs	gs
3	rs	us	sp	!	"	#	\$	%	&	'
4	()	*	+	,	-	.	/	0	1
5	2	3	4	5	6	7	8	9	:	;
6	<	=	>	?	@	A	B	C	D	E
7	F	G	H	I	J	K	L	M	N	O
8	P	Q	R	S	T	U	V	W	X	Y
9	Z	[\]	^	_	`	a	b	c
10	d	e	f	g	h	i	j	k	l	m
11	n	o	p	q	r	s	t	u	v	w
12	x	y	z	{		}	~	del		

Fig. D.1 | ASCII character set.



Answers to self-Review Questions

Chapter 1

1.1 a) Apple. b) IBM Personal Computer. c) programs. d) input unit, output unit, memory unit, arithmetic and logic unit, central processing unit, secondary storage unit. e) machine languages, assembly languages and high-level languages. f) compilers. g) Tagging. h) webtop. i) Refactoring. j) open source. k) ARPANET. l) bandwidth. m) Transmission Control Protocol/Internet Protocol.

1.2 a) World Wide Web. b) Tim Berners-Lee. c) Objects. d) client, server.

Chapter 2

2.1 a) Internet Explorer, Firefox. b) Internet and the web. c) URL. d) hyperlink, hand. e) history. f) **Save Picture As...., Save Image As....** g) AutoComplete. h) **Favorites, Bookmarks.**

2.2 a) False. Fiber optic cables have a greater bandwidth than metal ones. b) False. Web pages saved to the hard drive can be viewed using off-line browsing. c) True. d) True. e) True. f) False. Many FTP sites are restricted and do not admit the general public.

Chapter 3

3.1 a) Remixing.
b) Dale Dougherty
c) Tags.
d) XHTML, CSS, JavaScript, the DOM, XML, the XMLHttpRequest object.
e) Rich Internet Applications (RIAs).
f) web-scale computing.
g) network effects (an aspect of Metcalfe's Law).
h) Flex, Silverlight.

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- 3.2
- a) False. User-generated tags are used by many websites to categorize content so that it is easily searchable by other users.
 - b) True.
 - c) False. Location-based services often use GPS; however, they often use other information to determine your location, such as your IP address.
 - d) False. Open source software is free in terms of allowing access to the source code. It is not necessarily free of cost.
 - e) False. The PageRank algorithm considers the number of links into a web page and the quality of the linking sites (among other factors) to determine the importance of the page. Google search also considers all of the content on the page, its fonts, its headers and the content of neighboring pages.

Chapter 4

- 4.1
- a) False. An ordered list can be nested inside an unordered list and vice versa.
 - b) False. XHTML is an acronym for Extensible HyperText Markup Language.
 - c) True.
 - d) False. Hyperlinks are denoted by a elements.
 - e) False. You can specify the width of any column, either in pixels or as a percentage of the table width.
 - f) False. You can have an unlimited number of internal links.
- 4.2
- a) hr.
 - b) sup, sub.
 - c) h6, h1.
 - d) u1.
 - e) p.
 - f) type = "reset".
 - g) tr.
 - h) Asterisks.

Chapter 5

- 5.1
- a) 3 ems.
 - b) 0.75 ems.
 - c) 2 picas.
 - d) 1/6 inch.
 - e) 6 picas.
- 5.2
- a) link.
 - b) comma.
 - c) relative.
 - d) hover.
 - e) scroll.
 - f) span, div.
 - g) repeat-y.
 - h) @media.
 - i) text-indent.
 - j) padding, border, margin.

Chapter 6

- 6.1
- a) //.
 - b) Semicolon (;).
 - c) if.
 - d) Space characters, newline characters and tab characters.
 - e) window.
 - f) Keywords.
 - g) write, writeln, document.
- 6.2
- a) False. Comments do not cause any action to be performed when the program is executed. They are used to document programs and improve their readability.
 - b) False. JavaScript is case sensitive, so these variables are distinct.
 - c) True.
 - d) False. The operators *, / and % are on the same level of precedence, and the operators + and - are on a lower level of precedence.
 - e) False. Function parseInt converts a string to an integer value.
- 6.3
- a) `var c, thisIsAVariable, q76354, number;`
 - b) `value = window.prompt("Enter an integer", "0");`
 - c) `var age = parseInt(stringValue);`
 - d) `if (number != 7)`
`window.alert("The variable number is not equal to 7");`
 - e) `document.writeln("This is a JavaScript program");`
 - f) `document.writeln("This is a
JavaScript program");`
- 6.4
- a) Error: There should not be a semicolon after the right parenthesis of the condition in the if statement.
Correction: Remove the semicolon after the right parenthesis. [Note: The result of this error is that the output statement is executed whether or not the condition in the if statement is true. The semicolon after the right parenthesis is considered an empty statement—a statement that does nothing.]

b) Error: The relational operator `=>` is incorrect.
Correction: Change `=>` to `>=`.


- 6.5
- `// Calculate the product of three integers`
 - `var x, y, z, result;`
 - `var xVal, yVal, zVal;`
 - `xVal = window.prompt("Enter first integer:", "0");`
 - `yVal = window.prompt("Enter second integer:", "0");`
 - `zVal = window.prompt("Enter third integer:", "0");`
 - `x = parseInt(xVal);`
 - `y = parseInt(yVal);`
 - `z = parseInt(zVal);`
 - `result = x * y * z;`
 - `document.writeln("<h1>The product is " + result + "</h1>");`

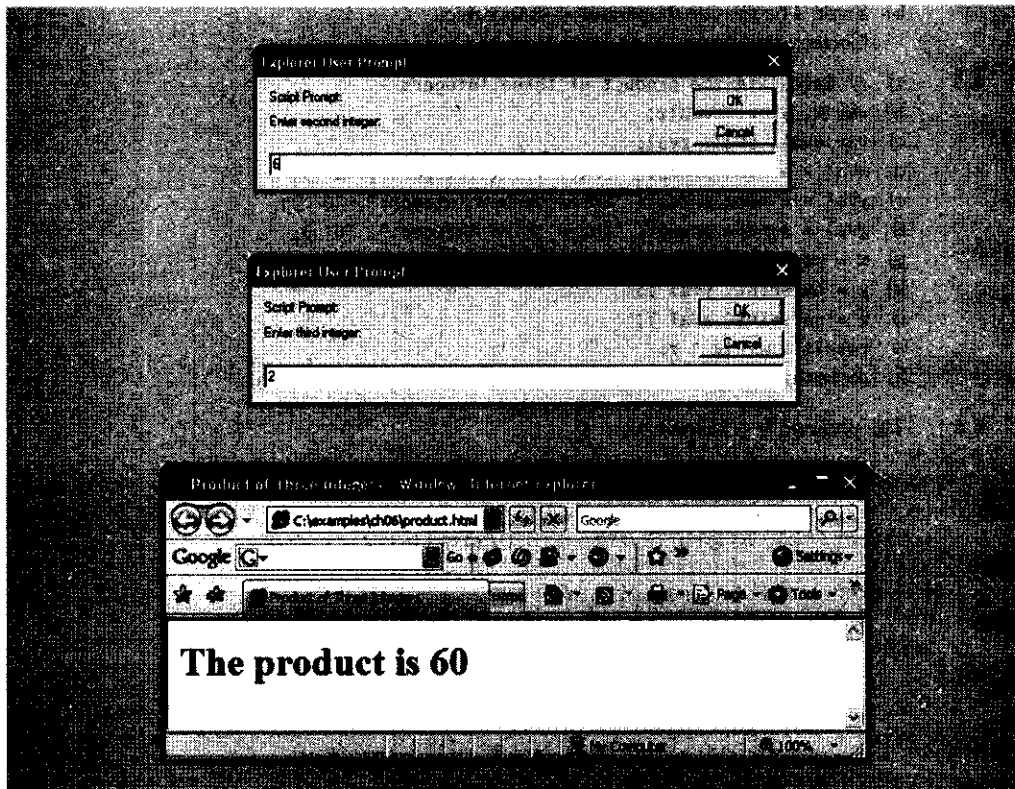
6.6 The program is as follows:

```

1  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN
2  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
3
4  <html>
5  <head>
6  <title>Product of Three Integers</title>
7  <script type="text/javascript">
8  <!--
9  // Calculate the product of three integers
10 var x, y, z, result;
11 var xVal, yVal, zVal;
12
13
14 xVal = window.prompt( "Enter first integer:", "0" );
15 yVal = window.prompt( "Enter second integer:", "0" );
16 zVal = window.prompt( "Enter third integer:", "0" );
17
18
19 x = parseInt( xVal );
20 y = parseInt( yVal );
21 z = parseInt( zVal );
22
23 result = x * y * z;
24 document.writeln( "<h1>The product is " +
25 result + "</h1>" );
26 // -->
27 </script>
28 </head><body></body>
29 </html>

```





Chapter 7

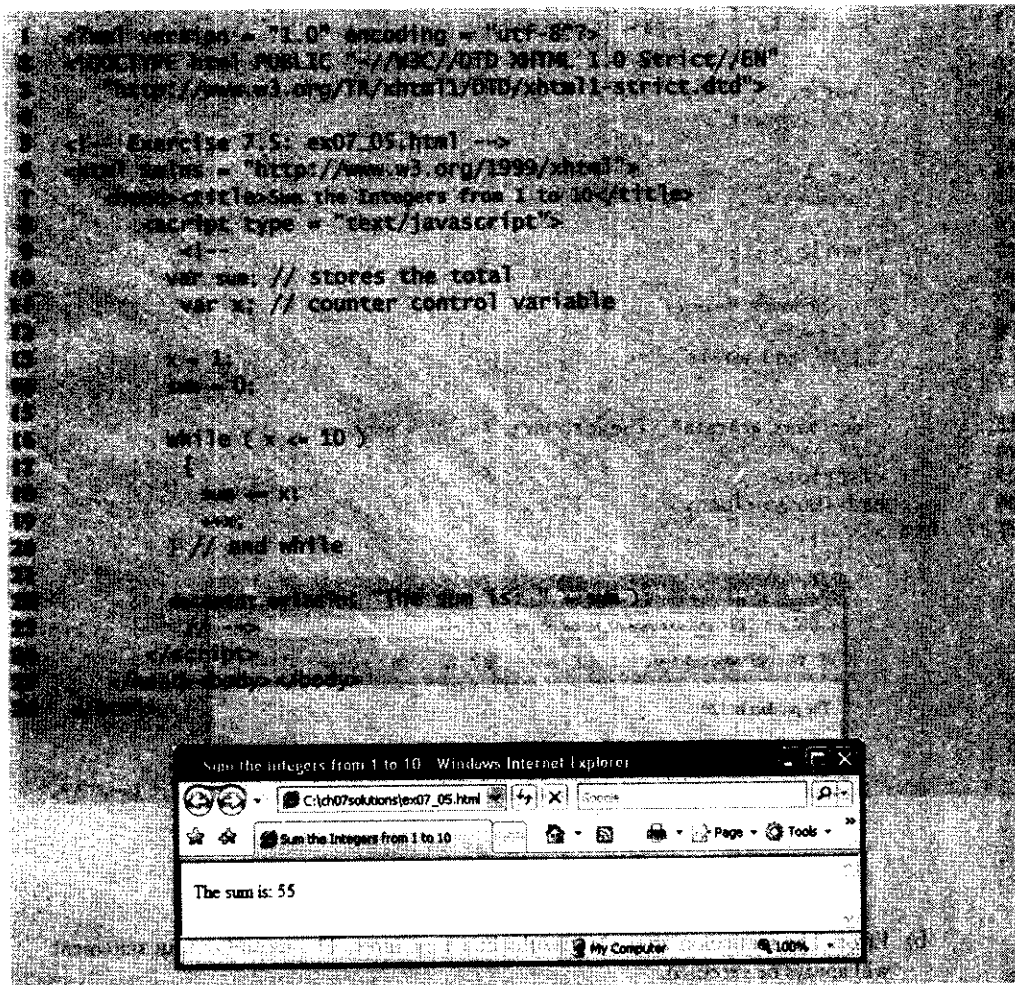
7.1 a) Sequence, selection and repetition. b) if...else. c) Counter-controlled (or definite). d) Sentinel, signal, flag or dummy.

7.2 `x = x + 1;`
`x += 1;`
`++x;`
`x++;`

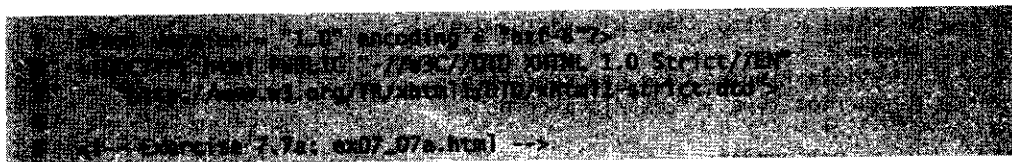
7.3 a) `z = x++ + y;`
 b) `if (count > 10)`
 `document.writeln("Count is greater than 10");`
 c) `total -= --x;`
 d) `q %= divisor;`
 `q = q % divisor;`

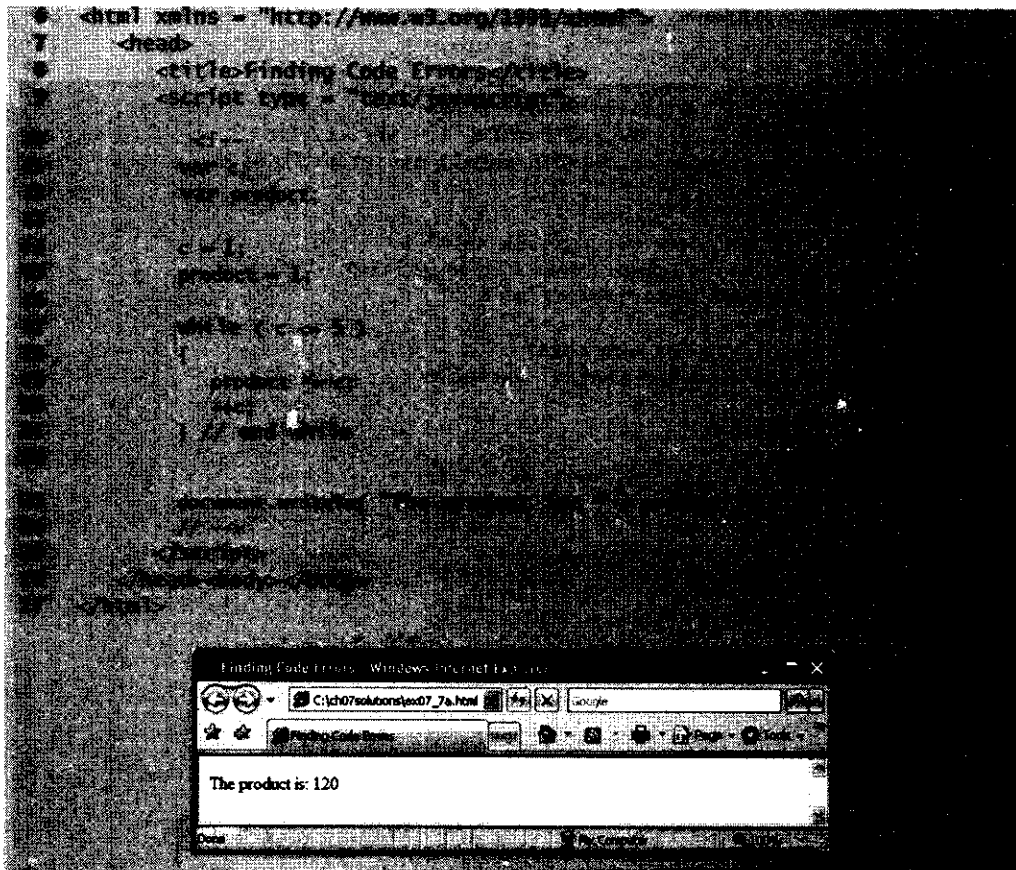
7.4 a) `var sum, x;`
 b) `x = 1;`
 c) `sum = 0;`
 d) `sum += x; or sum = sum + x;`
 e) `document.writeln("The sum is: " + sum);`

7.5 The solution is as follows:

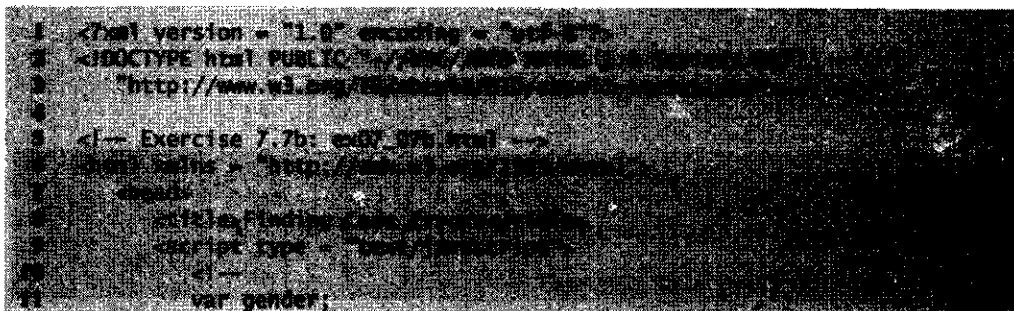


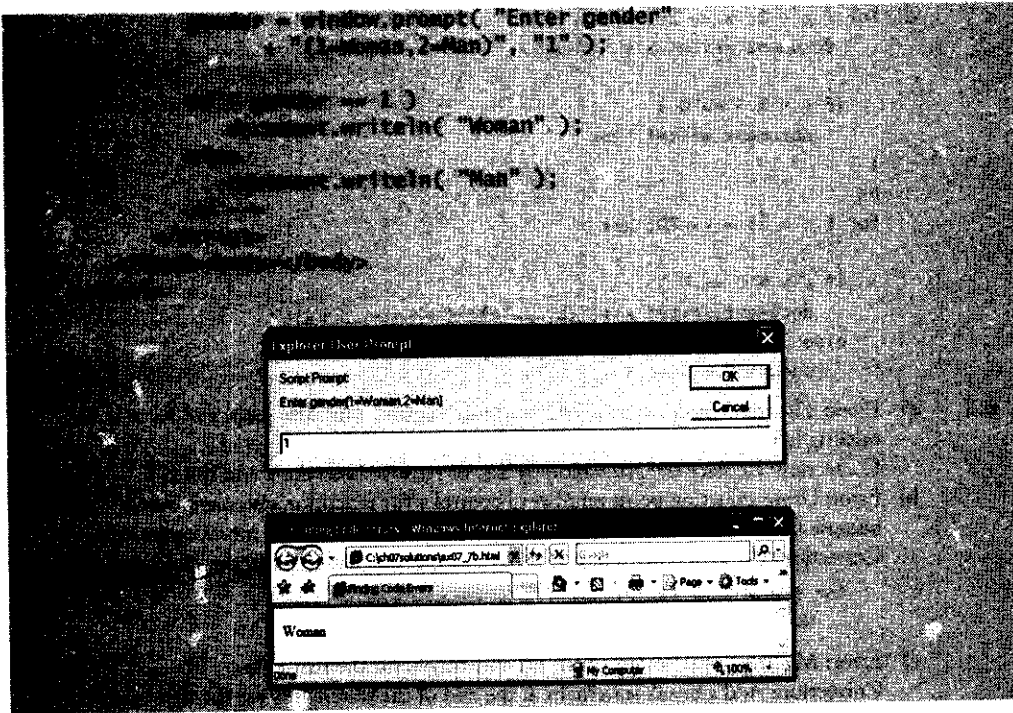
- 7.6 a) product = 25, x = 6;
 b) quotient = 0.833333..., x = 6;
- 7.7 a) Error: Missing the closing right brace of the while body.
 Correction: Add closing right brace after the statement ++c;.





- b) Error: The semicolon after `else` results in a logic error. The second output statement will always be executed.
 Correction: Remove the semicolon after `else`.





7.8 The value of the variable *z* is never changed in the body of the `while` statement. Therefore, if the loop-continuation condition (`z >= 0`) is true, an infinite loop is created. To prevent the creation of the infinite loop, *z* must be decremented so that it eventually becomes less than 0.

Chapter 8

8.1 a) False. The default case is optional. If no default action is needed, then there is no need for a default case. b) False. The `break` statement is used to exit the switch statement. The `break` statement is not required for the last case in a switch statement. c) False. Both of the relational expressions must be true in order for the entire expression to be true when using the `&&` operator. d) True.

8.2 a) `sum = 0;`
`for (count = 1; count <= 99; count += 2)`
`sum += count;`
 b) `Math.pow(2.5, 3)`
 c) `x = 1;`
`while (x <= 20) {`
`document.write(x + " ");`
`if (x % 5 == 0)`
`document.write("
");`
`++x;`
`}`

```

d) for ( x = 1; x <= 20; x++ ) {
    document.write( x + " " );

    if ( x % 5 == 0 )
        document.write( "<br />" );
}
or
for ( x = 1; x <= 20; x++ )

    if ( x % 5 == 0 )
        document.write( x + "<br />" );
    else
        document.write( x + " " );

```

- 8.3** a) Error: The semicolon after the `while` header causes an infinite loop, and there is a missing left brace.
Correction: Replace the semicolon by a `{`, or remove both the `;` and the `}`.
- b) Error: Using a floating-point number to control a `for` repetition statement may not work, because floating-point numbers are represented approximately by most computers.
Correction: Use an integer, and perform the proper calculation to get the values you desire:
- ```

for (y = 1; y != 10; y++)
 document.writeln((y / 10) + " ");

```
- c) Error: Missing `break` statement in the statements for the first case.  
Correction: Add a `break` statement at the end of the statements for the first case. Note that this missing statement is not necessarily an error if the programmer wants the statement of case 2: to execute every time the case 1: statement executes.
- d) Error: Improper relational operator used in the `while` continuation condition.  
Correction: Use `<=` rather than `<`, or change 10 to 11.

## Chapter 9

- 9.1** a) functions. b) function call. c) local variable. d) return. e) function.
- 9.2** a) Global scope. b) Function scope. c) Global scope. d) Global scope.
- 9.3** a) Global. b) `isNaN`. c) `escape`. d) `eval`. e) `unescape`.
- 9.4** a) scope. b) `return`; or `return expression`; or encountering the closing right brace of a function. c) `Math.random`. d) local.
- 9.5** a) Error: `method` is not the keyword used to begin a function definition.  
Correction: Change `method` to `function`.
- b) Error: The function is supposed to return a value, but does not.  
Correction: Either delete variable `result` and place the statement  

```

return x + y;

```

in the function or add the following statement at the end of the function body:  

```

return result;

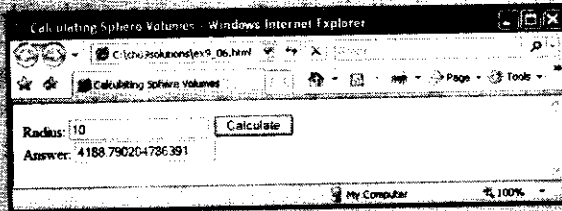
```
- c) Error: The semicolon after the right parenthesis that encloses the parameter list.  
Correction: Delete the semicolon after the right parenthesis of the parameter list.

9.6 The solution below calculates the volume of a sphere using the radius entered by the user.

```

1 <html version="1.0" encoding="utf-8">
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Exercise 9.6: volume.html -->
6 <html xmlns="http://www.w3.org/1999/xhtml">
7 <head>
8 <title>Calculating Sphere Volumes</title>
9 <script type="text/javascript">
10 <!--
11 function displayVolume()
12 {
13 var inputField = document.getElementById("radiusField");
14 var radius = parseFloat(inputField.value);
15 var answerField = document.getElementById("answer");
16 answerField.value = sphereVolume(radius);
17 } // end function displayVolume
18
19 function sphereVolume(radius)
20 {
21 return (4.0 / 3.0) * Math.PI * Math.pow(radius, 3);
22 } // end function sphereVolume
23 // -->
24 </script>
25
26 <form action="">
27 <div>
28 <label>Radius:
29 <input id="radiusField" type="text" /></label>
30 <input type="button" value="Calculate"
31 onclick="displayVolume()" />
32 </div>
33 <label>Answer:
34 <input id="answer" type="text" /></label>
35 </div>
36 </form>
37 </body>
38 </html>

```



## Chapter 10

**10.1** a) arrays. b) type. c) subscript. d) sorting. e) searching. f) two-dimensional.

**10.2** a) True. b) False. An array subscript must be an integer or an integer expression. c) False. Individual primitive-data-type elements are passed by value. If a reference to an array is passed, then modifications to the elements of the array are reflected in the original element of the array. Also, an individual element of an object type passed to a function is passed by reference, and changes to the object will be reflected in the original array element.

**10.3** a) `var fractions = [ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 ];`  
 b) `fractions[ 3 ]`  
 c) `fractions[ 4 ]`  
 d) `fractions[ 9 ] = 1.667;`  
 e) `fractions[ 6 ] = 3.333;`  
 f) `var total = 0;`  
    `for ( var x in fractions )`  
       `total += fractions[ x ];`

**10.4** a) `var table = new Array( new Array( 3 ), new Array( 3 ),`  
    `new Array( 3 ) );`  
 b) `document.write( "total: " + ( table.length * table[ 0 ].length ) );`  
 c) `for ( var x in table )`  
    `for ( var y in table[ x ] )`  
       `table[ x ][ y ] = x + y;`

**10.5** a) Error: Referencing an array element outside the bounds of the array (`b[10]`). [*Note:* This error is actually a logic error, not a syntax error.] Correction: Change the `<=` operator to `<`. b) Error: The array subscripting is done incorrectly. Correction: Change the statement to `a[ 1 ][ 1 ] = 5;`.

## Chapter 11

**11.1** a) object-based programming language. b) attributes, behaviors. c) Math. d) sending a message to the object. e) double quotation marks, single quotation marks. f) 0. g) `indexOf`, `lastIndexOf`. h) tokenization. i) `link`. j) computer's local time zone, Coordinated Universal Time (UTC). k) `parse`.

## Chapter 12

**12.1** a) False. Every element is represented by a DOM *node*. Each node is a member of the document's DOM tree. b) True. c) False. The `document` is the root node, therefore has no parent node. d) False. The style class is changed with the `className` property. e) False. The `createElement` method creates a node, but does not insert it into the DOM tree. f) True. g) False. `insertBefore` is called on the parent. h) False. `clearInterval` takes an interval identifier as an argument to determine which interval to end. i) False. The `links` collection contains all links in a document.

**12.2** a) `innerHTML`. b) `tree`. c) `length`. d) `item`. e) `images`. f) `history`. g) `style`.

## Chapter 13

**13.1** a) `inline`, `traditional`. b) `Ctrl`, `Alt` and `Shift`. c) event bubbling. d) return value. e) `event.target.id`, `event.srcElement.id`. f) `onclick`, `onmousedown`, `onmouseup`.



13.2 a) False. The onload event fires when an element *finishes* loading. b) True. c) False. It fires when an element gains focus. d) True. e) False. Returning false prevents the default action.

## Chapter 14

14.1 a, b, d, f. [Choice c is incorrect because it contains a space. Choice e is incorrect because the first character is a number.]

14.2 a) True. b) False. In an XML document, markup text is delimited by tags enclosed in angle brackets (< and >) with a forward slash just after the < in the end tag. c) True. d) True. e) False. XML does support namespaces. f) False. When creating tags, document authors can use any valid name but should avoid ones that begin with the reserved word xml (also XML, Xml, etc.). g) False. XML reserved characters include the ampersand (&), the left angle bracket (<) and the right angle bracket (>), but not # and \$. h) False. XML is case sensitive. i) True. j) False. DTDs use EBNF grammar, which is not XML syntax. k) False. XPath is a technology for locating information in an XML document. XML Schema provides a means for type checking XML documents and verifying their validity.

14.3 a) Namespaces. b) Processing instructions. c) MSXML. d) xmlns:output. e) schema. f) xmlns:stylesheet. g) xmlns:for-each. h) parent. i) sibling.

14.4 <date>  
     <month>May</month>  
     <day>5</day>  
     <year>2005</year>  
 </date>.

14.5 <?xmlns:stylesheet type = "text/xml" href = "wap.xml"?>

14.6 /letter/contact.

## Chapter 15

15.1 a) asynchronous. b) XMLHttpRequest. c) callback. d) innerHTML. e) XHR. f) JSON. g) cross-site scripting (or XSS). h) eval. i) try block. j) responseXML property.

15.2 a) False. Ajax applications can use any type of textual data as a response. For example, we used JSON in this chapter.  
 b) True.  
 c) False. readyState is the property that keeps track of the request's progress. The event handler is stored in the onReadyStateChange property.  
 d) True.  
 e) False. If the response data has XML format, the XMLHttpRequest object parses it and stores it in a document object.  
 f) True.  
 g) False. An exception is an indication of a problem that occurs during a program's execution.  
 h) False. The third argument to XMLHttpRequest method open must be true to make an asynchronous request.  
 i) True.  
 j) True.

## Chapter 16

16.1 a) tweening. b) symbols. c) shape, motion. d) shape. e) ActionScript. f) stage. g) circle. h) stroke. i) keyframes. j) alpha value.

16.2 a) False. The down state is entered when the button is clicked. b) True. c) True. d) True. e) False. Flash's `math.random` function returns a number greater than or equal to 0 and less than 1. f) False. Flash allows an unlimited number of layers for each movie. g) False. Flash can tween as many shapes as there are on a layer. The effect is usually better when the shapes are placed on their own layers. h) True. i) True. j) False. The **Ease** value controls the acceleration of a tween animation.

## Chapter 17

17.1 a) True. b) True. d) False. Neither locked nor hidden layers can be edited. Locked layers are visible, though, whereas hidden layers are not. e) False. New functions can be created inside a package, or inside a frame's **Actions** using the keyword `function`.

17.2 a) stage. b) small white circle. c) collision detection.

## Chapter 18

18.1 a) Curly (`{ }`). b) `mx`. c) `Application`. d) `itemRenderer`. e) `currentState` f) `creationComplete`. g) `dataProvider`. h) `filterFunction`. i) `Validators`. j) `Parallel`. k) `Style`. l) `CandlestickChart`.

18.2 a) False. Flex applications can run on Mac OS X, Windows and Linux.  
b) True.  
c) False. ActionScript 3 is executed in an asynchronous manner.  
d) True.  
e) False. ActionScript in the `click` attribute is executed when the user clicks a button.

## Chapter 19

19.1 a) `Canvas`. b) `MediaElement`. c) `XmlReader`. d) `MouseLeftButtonDown`. e) `Storyboard`. f) Silverlight Streaming. g) `Expression Blend`. h) `ZIndex`. i) `AutoPlay`. j) `findName`. k) `x:Class`.

19.2. a) True.  
b) True.  
c) False. Silverlight applications can be served by any server, or run locally.  
d) False. XAML is used to describe the user interface.  
e) True.  
f) True.  
g) False. The `BrowserHttpRequest` object allows for requests only to the Silverlight application's host domain.  
h) True.  
i) False. You can use a `Storyboard` as a timer.  
j) False. You can set the element's `visibility` to `Collapsed`.

## Chapter 20

20.1 a) True.  
b) True.

- c) False. Selecting **Special Characters** from the **HTML** submenu of the **Insert** menu provides a list of special characters.
- d) True.
- e) False. Dreamweaver supports several server-side scripting languages, such as ASP.NET, JSF and PHP.

**20.2** a) WYSIWYG (What You See Is What You Get). b) **Property Inspector**. c) **Merge Cells**. d) **Behaviors**.

## Chapter 21

**21.1** a.) True. b) False. Web browsers cache web pages for quick reloading. c) False. The middle tier implements business logic and presentation logic to control interactions between application clients and application data. d) True. e) False. A virtual directory is an alias for an existing directory on the local machine or network. f) True. g) False. For security reasons the path normally specifies the location of a virtual directory.

**21.2** a) get, post. b) middle. c) JavaScript. d) domain name system (DNS) server. e) localhost. f) alias. g) data tier, information tier. h) Multipurpose Internet Mail Extensions (MIME).

## Chapter 22

**22.1** a) SQL. b) rows, columns. c) primary key. d) WHERE. e) ORDER BY. f) joining. g) database. h) foreign key.

## Chapter 23

**23.1** a) False. PHP is directly embedded directly into XHTML. b) True. c) False. Function set-type permanently changes the type of a variable. d) True. e) True. f) False. Relational operators can also be used for alphabetic comparison. g) False. The quantifier + matches one or more of the preceding pattern. h) False. Function die has an optional argument—a string to be printed as the script exits. i) False. Cookies are stored on the client's computer. j) True.

**23.2** a) .php. b) int or integer, float or double. c) undef. d) Arrays. e) count. f) ereg. g) character class. h) \$\_POST. i) die. j) Cookies.

## Chapter 24

**24.1** a) Instant Rails. b) convention over configuration. c) Model-View-Controller. d) Active-Record. e) layout. f) scaffold method. g) link\_to\_remote. h) playEffect.

- 24.2** a) False. A line of Ruby code does not have to end with a semicolon, although one can be placed there.
- b) False. Rails is a framework for internet applications built in the Ruby programming language.
  - c) True.
  - d) False. The name of the table must be the plural version of the Model associated with it.
  - e) True.
  - f) True.
  - g) False. The Ruby between the <% %> tags is evaluated but is *not* rendered on the page. Only the Ruby between the <%= %> tags is evaluated then rendered on the page.
  - h) True.

## Chapter 25

**25.1** a) True. b) False. `web.config` is the file that stores configuration settings for an ASP.NET web application. c) False. An unlimited number of validation controls can be placed on a Web Form. d) True. e) False. A `LoginName` control displays the current authenticated user name on a Web Form. A `LoginStatus` control displays a link to either log in or log out, depending on whether the user is currently authenticated. f) True. g) False. The frequency with which the `AdRotator` displays ads is specified in the `AdvertisementFile`. h) False. A web control can map to a group of XHTML elements—ASP.NET can generate complex XHTML markup from simple elements in an ASPX file. i) True.

**25.2** a) bottom (information), middle (business logic), top (client). b) validator. c) postback. d) Page. e) `PreInit`, `Init`. f) code-behind. g) `CreateUserWizard`. h) master page, content pages. i) middle.

## Chapter 26

**26.1** a) False. If an application contains multiple JSPs, those JSPs will share the scoped data beans. b) False. `init` is invoked the first time the page is requested, but not on page refreshes. c) True. d) True. e) True. f) False. A web component can map to a group of XHTML elements—JSPs can generate complex XHTML markup from simple components. g) False. `#{` and `}` delimit JSF Expression Language statements. h) False. The scoped data beans may store any type of property.

**26.2** a) `Message`. b) validator. c) `AbstractPageBean`. d) `init`, `prerender`. e) page bean. f) regular expression. g) `Request (HttpServletRequest)`.

## Chapter 27

**27.1** a) False. Table components are used to display data from databases. b) True. c) False. The `CachedRowSetDataProvider` is a property of the page bean. It wraps a `CachedRowSet`, which is stored in the `SessionBean` and executes SQL queries. d) True. e) False. You must call method `refresh` on the data provider to re-execute the SQL command. f) True.

**27.2** a) `commitChanges`, `CachedRowSetDataProvider`. b) `Geocoding Service Object`. c) participants. d) Java BluePrints Ajax component library.

## Chapter 28

**28.1** a) False. Only methods declared with the `@WebMethod` annotation can be invoked by a web service's clients. b) False. The proxy class is created by Netbeans when you add a web service client to the application. c) True. d) False. In the JAX-WS 2.0 framework, the client must indicate whether it wants to allow the web service to maintain session information. First, you must cast the proxy object to interface type `BindingProvider`, then use the `BindingProvider`'s `getRequestContext` method to obtain the `RequestContext` object. Finally, you must use the `RequestContext`'s `put` method to set the property `BindingProvider.SESSION_MAINTAIN_PROPERTY` to `true`. e) True. f) False. You may also declare an instance variable as `public`. g) `true`.

**28.2** a) SOAP message or SOAP envelope. b) Representational State Transfer (REST). c) POJO (plain old Java object) d) HTTP. e) `operationName`. f) XML serialization.

# Exercises

- 1 Write a script that asks the user to enter two numbers, obtains the two numbers from the user and outputs text that displays the sum, product, difference and quotient of the two numbers. Use the techniques shown in Fig.6.9.
- 2 Write a script that asks the user to enter two integers, obtains the numbers from the user and outputs text that displays the larger number followed by the words "is larger" in an alert dialog. If the numbers are equal, output XHTML text that displays the message "These numbers are equal." Use the techniques shown in Fig. 6.17.
- 3 Write a script that outputs XHTML text that displays in the XHTML document a rectangle, an oval, an arrow and a diamond using asterisks (\*), as follows [*Note: Use the <pre> and </pre> tags to specify that the asterisks should be displayed using a fixed-width font*]:

```
***** *** * *
* * * * *** **
* * * * ***** * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
***** *** * *
```

- 4 Modify the program you created in Exercise 3 by removing the <pre> and </pre> tags. Does the program display the shapes exactly as in Exercise 3?
- 5 What does the following code print?

```
document.writeln("*\n**\n***\n****\n*****");
```



6 What does the following code print?

```
document.writeln("*");
document.writeln("****");
document.writeln("*****");
document.writeln("****");
document.writeln("*");
```

7 What does the following code print?

```
document.write("*
");
document.write("****
");
document.write("*****
");
document.write("****
");
document.writeln("*");
```

8 What does the following code print?

```
document.write("*
");
document.writeln("****");
document.writeln("*****");
document.write("****
");
document.writeln("*");
```

9 Drivers are concerned with the mileage obtained by their automobiles. One driver has kept track of several tankfuls of gasoline by recording the number of miles driven and the number of gallons used for each tankful. Develop a JavaScript program that will take as input the miles driven and gallons used (both as integers) for each tankful. The program should calculate and output XHTML text that displays the number of miles per gallon obtained for each tankful and prints the combined number of miles per gallon obtained for all tankfuls up to this point. Use prompt dialogs to obtain the data from the user.

10 The process of finding the largest value (i.e., the maximum of a group of values) is used frequently in computer applications. For example, a program that determines the winner of a sales contest would input the number of units sold by each salesperson. The salesperson who sells the most units wins the contest. Write a pseudocode program and then a JavaScript program that inputs a series of 10 single-digit numbers as characters, determines the largest of the numbers and outputs a message that displays the largest number. Your program should use three variables as follows:

- counter: A counter to count to 10 (i.e., to keep track of how many numbers have been input and to determine when all 10 numbers have been processed);
- number: The current digit input to the program;
- largest: The largest number found so far.

11 Using an approach similar to that in Exercise 10, find the *two* largest values among the 10 digits entered. [Note: You may input each number only once.]

12 Modify the program in Fig. 7.11 to validate its inputs. For every value input, if the value entered is other than 1 or 2, keep looping until the user enters a correct value.

13 Write a script that outputs XHTML to display the given patterns separately, one below the other. Use for statements to generate the patterns. All asterisks (\*) should be printed by a single statement of the form `document.write( "*" );` (this causes the asterisks to print side by side). A statement of the form `document.writeln( "<br />" );` can be used to position to the next line. A statement of the form `document.write( " " );` can be used to display a space (needed for the last two patterns). There should be no other output statements in the program. [Hint: The last two

patterns require that each line begin with an appropriate number of blanks. You may need to use the XHTML `<pre></pre>` tags.]

```
(a) (b) (c) (d)
* * * *
** ** ** **
*** *** *** ***
**** **** **** ****
***** ***** ***** *****
***** ***** ***** *****
***** ***** ***** *****
***** ***** ***** *****
***** ***** ***** *****
***** ***** ***** *****
***** ***** ***** *****
***** ***** ***** *****
```

**14** Modify Exercise 13 to combine your code from the four separate triangles of asterisks into a single script that prints all four patterns side by side, making clever use of nested `for` statements.



**15** Write a script that prints the following diamond shape:



You may use output statements that print a single asterisk (\*), a single space or a single newline character. Maximize your use of repetition (with nested `for` statements), and minimize the number of output statements.

**16** Modify the program you wrote in Exercise 15 to read an odd number in the range 1 to 19. This number specifies the number of rows in the diamond. Your program should then display a diamond of the appropriate size.

**17** Write a function `squareOfAsterisks` that displays a solid square of asterisks whose side is specified in integer parameter `side`. For example, if `side` is 4, the function displays

```



```

Incorporate this function into a script that reads an integer value for `side` from the user at the keyboard and performs the drawing with the `squareOfAsterisks` function.

**18** Modify the script created in Exercise 17 to also prompt the user for a character which will be used to create the square. Thus, if `side` is 5 and `fillCharacter` is #, the function should print

```


#####
```

**19** Computers are playing an increasing role in education. Write a program that will help an elementary-school student learn multiplication. Use `Math.random` to produce two positive one-digit integers. It should then display a question such as

How much is 6 times 7?

The student then types the answer into a text field. Your program checks the student's answer. If it is correct, display the string "Very good!" and generate a new question. If the answer is wrong, display the string "No. Please try again." and let the student try the same question again repeatedly until the student finally gets it right. A separate function should be used to generate each new question. This function should be called once when the script begins execution and each time the user answers the question correctly.

**20** The use of computers in education is referred to as **computer-assisted instruction (CAI)**. One problem that develops in CAI environments is student fatigue. This problem can be eliminated by varying the computer's dialogue to hold the student's attention. Modify the program in Exercise 19 to print one of a variety of comments for each correct answer and each incorrect answer. The set of responses for correct answers is as follows:

```
Very good!
Excellent!
Nice work!
Keep up the good work!
```

The set of responses for incorrect answers is as follows:

```
No. Please try again.
Wrong. Try once more.
Don't give up!
No. Keep trying.
```

Use random number generation to choose a number from 1 to 4 that will be used to select an appropriate response to each answer. Use a `switch` statement to issue the responses.

**21** Write a script that plays a "guess the number" game as follows: Your program chooses the number to be guessed by selecting a random integer in the range 1 to 1000. The script displays the prompt `Guess a number between 1 and 1000` next to a text field. The player types a first guess into the text field and clicks a button to submit the guess to the script. If the player's guess is incorrect, your program should display `Too high. Try again.` or `Too low. Try again.` to help the player "zero in" on the correct answer and should clear the text field so the user can enter the next guess. When the user enters the correct answer, display `Congratulations. You guessed the number!` and clear the text field so the user can play again. [*Note:* The guessing technique employed in this problem is similar to a **binary search**, which we discussed in Chapter 10, JavaScript: Arrays.]

- 22** Modify the program of Exercise 21 to count the number of guesses the player makes. If the number is 10 or fewer, display *Either you know the secret or you got lucky!* If the player guesses the number in 10 tries, display *Ahah! You know the secret!* If the player makes more than 10 guesses, display *You should be able to do better!* Why should it take no more than 10 guesses? Well, with each good guess, the player should be able to eliminate half of the numbers. Now show why any number 1 to 1000 can be guessed in 10 or fewer tries.
- 23** Write a script that reads a series of strings and outputs in an XHTML textarea only those strings beginning with the character "b."
- 24** Write a script that reads a series of strings and outputs in an XHTML textarea only those strings ending with the characters "ed."
- 25** Write your own version of the `String` method `indexOf` and use it in a script.
- 26** Write your own version of the `String` method `lastIndexOf` and use it in a script.





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