

LESSON 21

Designing for the Mobile Web

In this lesson we will move away from the desktop computer that you are used to using and look at how your customers are using web pages on mobile devices. As you learned in Lesson 16, “Using Responsive Web Design,” more and more people are moving to mobile to consume Web-based content. And if your designs are stuck in the 20th century—focused on desktop computers—your customers will find some other site to visit that better meets their needs.

With everything you’ve learned in this book so far, you could easily set it down and start building an amazing website. Your site would be responsive to mobile customers, have beautiful CSS layouts, and be well designed using the most up-to-date HTML tags and attributes. But if you continue reading, you will learn the techniques and tricks that the best Web designers know—the ones that make a site not just good but amazing.

This lesson covers mobile Web design best practices, including the following:

- How browsing habits on mobile differ from desktop
- Standards for writing mobile web pages
- How to write for mobile and online customers
- Designing pages and layout for mobile
- Optimizing your content
- Other habits you should get into for mobile web design

People Browse Differently on Mobile Phones

The first thing you should be aware of when considering designing for mobile devices is that the way people browse the Web on mobile phones is very different from how they browse the Web on their computers. They are more likely to know exactly what they are looking for, and once they find it they will take action. Consumers use mobile to access local information, stay up-to-date, buy products, and purchase music and video. If you think about how you use your phone, that is probably true for you as well. I know that it's definitely true for me.

In a study from Google, it was found:

- Mobile users visited search engines, social networking, retail, and video sharing sites.
- Nine out of ten smartphone searches ended with them either buying something or visiting a business.
- Nearly 80% of smartphone consumers use their phones to help with shopping.
- More than 90% of all smartphone users have searched for local information.
- And after searching, most take action within one day.

This study was done in 2011, but the numbers continue to rise. What you should consider is that mobile customers are task oriented. They usually have come to your site for a specific purpose. And unlike desktop browsers, that task is often to buy something. If they can't make that task happen, they will quickly go elsewhere.

That means that your site needs to be optimized for mobile customers. You want to give them what they want as quickly and painlessly as you can so they never feel the need to go to some other site.

The only caveat to this is location. If your business runs out of a country where mobile device usage is even more prevalent than it is in the United States, then you will have even more need to create a site that works well on mobile. Ultimately, whether your site is based in the United States, Australia, Africa, or somewhere else, mobile devices are growing more and more popular, and your website will suffer if it doesn't cater to them.

Standards Compliance and the Mobile Web

You might think you don't need to worry about standards compliance. After all, most people use a modern web browser, and mobile users upgrade their phones every 1 to 2 years, right? To some extent, that is true. The standards have come together in a way they never had in the past, with browser makers working together along with web designers to develop techniques that actually work—both for the browsers and the people building the pages.

Currently, browser makers are working together to a greater extent than ever before. The current versions of Internet Explorer/Edge, Firefox, Safari, Chrome, and Opera all offer strong standards support, and the browsers for popular mobile phones are based on the same codebase as their desktop brethren. Given the strong standards support in current browsers, the biggest question most developers face is how they want to deal with older feature phones that don't display web pages very well.

And even though most mobile browsers support the same HTML and CSS as desktop browsers, they still differ in terms of capabilities. The most obvious example is the size. Even the largest tablet, phablet, or oversized phone screen is smaller than most desktop monitors. But mobile devices aren't more limited than desktop or tablet computers. Their capabilities are different. For example, most desktop computers don't offer geolocation, and even if they do, it's not particularly useful, as you don't see people lugging 30-inch screens around with them. The ability to “click to call” is starting to get implemented on some computers with the use of Skype and other Internet calling services. But in general that is a phone-only feature.

Progressive Enhancement

Progressive enhancement is a popular approach to creating web pages. It describes an approach that enables web designers to use the latest and greatest technology available without leaving people using browsers with different capabilities behind. The idea is that you start with simple but completely functional web pages and then layer on enhancements that add to the experience. This should also help you stop considering mobile devices as somehow inferior to computers. After all, if you're building a web scavenger hunt game, the person with the desktop computer will be at more of a disadvantage than the one with the smartphone in her pocket.

You'll want to start with valid, standards-compliant HTML when you're creating web pages. This means HTML5. Your initial pages should consist only of HTML markup with no JavaScript or CSS, and they should look fine and work properly. All of your

navigation should be present and should work properly, but it won't be pretty (no CSS, remember?). Your main page content should be visible. In other words, you should start out with a fully functional, very plain website. This ensures that your site will work for even the most rudimentary browsers and for assistive technology like screen readers. Taking this approach also ensures that your markup reflects the content of your site rather than how you want to present it.

Once that is complete, you can start layering on the more advanced functionality. First, implement the visual design for your website using CSS. As you learned in Lesson 16, you should focus on mobile-first designs and use media queries to affect how the pages are displayed to different size devices. Later on in this lesson I'll go into the specifics for designing things like layout, where to place navigation, and dealing with images and text.

Given the robust support for CSS in the current browsers, there should be no need to use HTML to define the appearance of your website. You might find you need to add container elements to your page that provide the necessary structure for your styles. For example, if your page layout is split into columns for larger screens, it will be necessary to add `<div>` tags for the contents of each column. Fortunately, such tags do not create visual differences unless they are styled, so your page's appearance will not be altered for users who don't have CSS support.

Finally, add dynamic technology like JavaScript or Flash. Back in Lesson 19, "Using JavaScript in Your Pages," I discussed unobtrusive JavaScript. That approach complements progressive enhancement. When you add JavaScript to the page, make sure the page provides some minimum level of functionality without the JavaScript, and then use JavaScript to enhance that baseline functionality. For example, if your page includes collapsed elements that can be expanded with JavaScript, make sure to start out with them expanded on the page, and then collapse them when the page loads using JavaScript. That way, content will not be permanently hidden from users who don't have JavaScript.

This is what progressive enhancement is all about. It ensures that everyone with a browser of any kind will be able to view your site, while the site still provides an enhanced experience for those who can benefit from it.

Validating Your Pages

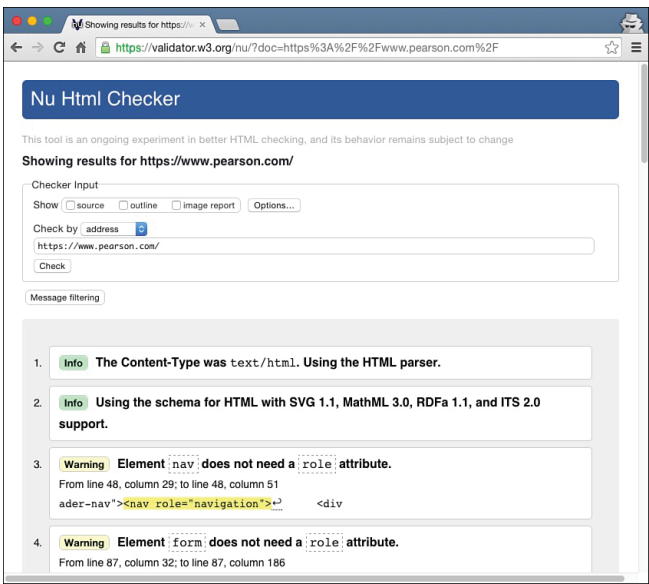
One way to be sure that your pages will have a good base for mobile devices is to make sure that the HTML (and CSS and JavaScript) is written well, or *valid*. This removes one place where your pages might get into trouble—if you know the HTML is valid, then you can look elsewhere to figure out why something isn't working.

It's all well and good to attempt to write valid pages, but how do you know whether you've succeeded? It's easy enough to determine whether your pages look okay in your

browser, but verifying that they’re valid is another matter. Fortunately, the W3C, which is responsible for managing the HTML recommendations, also provides a service to validate your pages. It’s a web application that enables you to upload an HTML file or to validate a specific URL to any W3C recommendation. The URL is <http://validator.w3.org/>.

Figure 21.1 is a screenshot of the validator in action. I’ve sent it off to validate <https://www.pearson.com/>.

FIGURE 21.1
The W3C Validator
validating
Pearson.com.

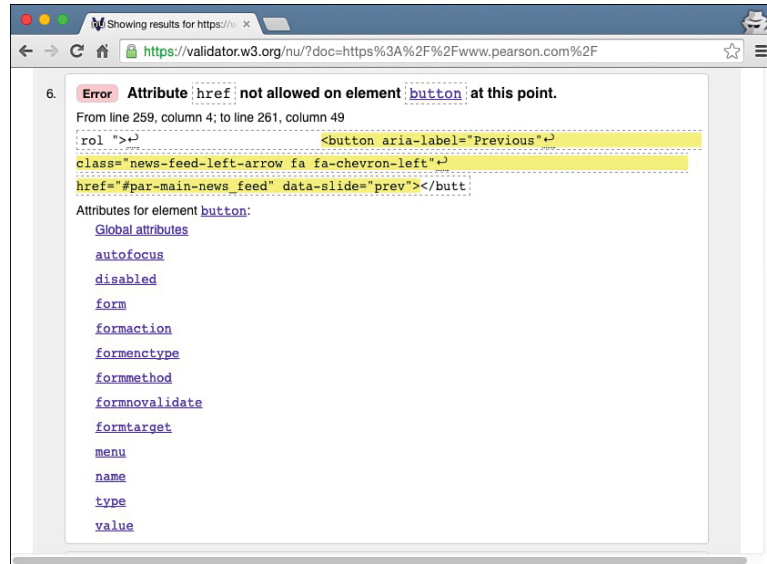


When I validate the page, I can see that there are ten messages from the validator: two info messages, four warnings, and four errors. The first two messages tell me about how the validator is working. I learn that it used the HTML parser because it detected the page was in HTML. Then I learned that it was using the schema for HTML with support for a few other languages like MathML and SVG. The warnings are messages that indicate lines in your code that you should be aware of. They are not saying that your code is wrong or that you should rewrite it, but rather that you might be using an unnecessary attribute or something similar.

The messages you want to pay attention to are the errors. Figure 21.2 shows the sixth message, an error, on the Pearson site validation.

FIGURE 21.2

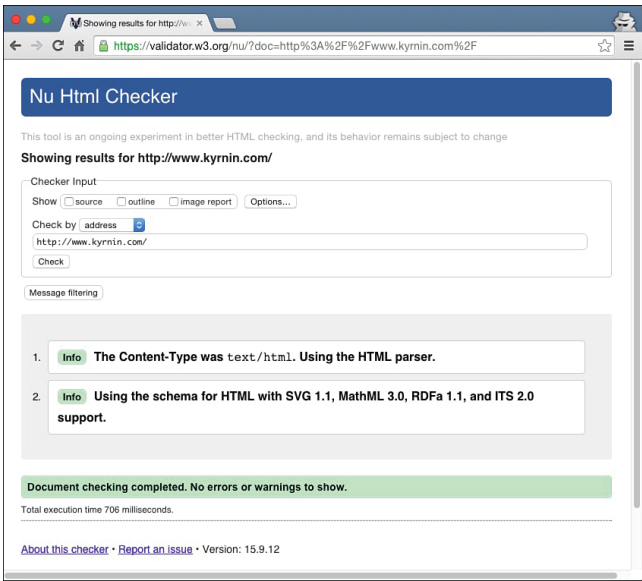
The W3C Validator
validating
Pearson.com.



As you can see, the first line is the error. In this case, it's that the `button` tag has an illegal attribute, `href`, assigned to it. Then the validator gives you the line number in the HTML and even the column number where the error was found. Below that the problem tag is highlighted in yellow. Finally, if possible, the validator shows you the relevant part of the specification—in this case, listing the attributes that are valid on the `button` tag. This makes it easy to go through your page line by line and fix the problems that are found.

After you've fixed all the errors, the only messages your site will get will be the two informational messages, as you can see in Figure 21.3.

FIGURE 21.3
The W3 Validator acknowledges a job well done.



Writing for the Mobile Web

Writing on the mobile Web is no different from writing in the real world. Although it's not committed to hard copy, it's still published and is still a reflection of you and your work. In fact, because your writing is online and your visitors have many other options when it comes to finding something to read, you'll have to follow the rules of good writing that much more closely.

Because of the vast quantities of information available on the Web, your visitors aren't going to have much patience if your web page is poorly organized or full of spelling errors. They're likely to give up after the first couple of sentences and move on to someone else's page. After all, there are several million pages out there. No one has time to waste on bad pages.

I don't mean that you have to go out and become a professional writer to create a good web page, but I give you a few hints for making your web page easier to read and understand as well as some tips for optimizing your writing for mobile devices.

Write Clearly and Be Brief

Unless you're writing the Great American Web Novel, your visitors aren't going to linger lovingly over your words. You should write as clearly and concisely as you possibly can, present your points, and then stop. Obscuring what you want to say with extra words just makes figuring out your point more difficult.

Mobile readers don't have a large screen to read from, and they often don't have a lot of time to read long form content, nor do they typically have the desire. Web pages written for mobile customers need to be as short as possible. Think in terms of screen chunks. Try to get the majority of your point across in the first screen worth of text—this could be the first 200 words or fewer.

If you don't have a copy of Strunk and White's *The Elements of Style*, put down this book right now and go buy that book. Read it, reread it, memorize it, inhale it, sleep with it under your pillow, show it to all your friends, quote it at parties, and make it your life. You'll find no better guide to the art of good, clear writing than *The Elements of Style*.

Organize Your Pages for Quick Scanning

Even if you write the clearest, briefest, most scintillating prose ever seen on the Web, chances are good that your visitors won't start at the top of your web page and carefully read every word down to the bottom.

In this context, *scanning* is the first quick look your visitors give to each page to get the general gist of the content. Depending on what your users want out of your pages, they may scan the parts that jump out at them (headings, links, other emphasized words), perhaps read a few contextual paragraphs, and then move on. By writing and organizing your pages for easy "scannability," you can help your visitors get the information they need as quickly as possible.

To improve the scannability of your web pages, follow these guidelines:

- **Don't bury important information in text**—If you have a point to make, make it close to the top of the page or at the beginning of a paragraph. Forcing readers to sift through a lot of information before they get to what's important means that many of them won't see the important stuff at all.
- **Use headings to summarize topics**—Note that this book has headings and sub-headings. You can flip through quickly and find the parts that interest you. The same concept applies to web pages.
- **Use lists**—Lists are wonderful for summarizing related items. Every time you find yourself saying something like "each widget has four elements" or "use the following steps to do this," the content after that phrase should be in an ordered or unordered list.

- **Don't forget link menus**—As a type of list, the link menu has all the same advantages of lists for scannability, and it doubles as an excellent navigation tool.
- **Write short, clear paragraphs**—Long paragraphs are harder to read and make gleanings the information more difficult. The further into the paragraph you put your point, the less likely it is that anybody will read it.

The most important thing to remember when writing for mobile is the first guideline. Put the most important information first. Mobile readers won't sift through, and they aren't very likely to even scroll to scan the whole page. If they don't find what they are looking for on the first screen full of text, they will hit the back button and be gone.

Make Each Page Stand on Its Own

As you write, keep in mind that your visitors could jump to any of your web pages from anywhere. For example, you can structure a page so that section four distinctly follows section three and has no other links to it. Then someone you don't even know might create a link to the page starting at section four. From then on, visitors could find themselves at section four without even knowing that section three exists.

Be careful to write each page so that it stands on its own. The following guidelines will help:

- **Use descriptive titles**—The title should provide not only the direct subject of this page, but also its relationship to the rest of the pages on the site.
- **Provide a navigational link**—If a page depends on the one before it, provide a navigational link back to that page (and a link up to the top level, preferably).
- **Avoid initial sentences such as the following**—"You can get around these problems by...", "After you're done with that, do this...", and "The advantages to this method are..." The information referred to by *these*, *that*, and *this* are off on some other page. If these sentences are the first words your visitors see, they're going to be confused.

As I've said previously, you should also focus on keeping the first screen full of content the most relevant. In other words, to optimize your content for mobile, you should focus on making each section of each page standalone. And the first part of any page is the most important.

Be Careful with Emphasis

Use emphasis sparingly in your text. Paragraphs with a whole lot of words in **boldface** or *italics* or ALL CAPS are hard to read, whether you use them several times in a paragraph or to emphasize long strings of text.

Link text also is a form of emphasis. Use short phrases for link text, but as you'll see later in this lesson, avoid making links too short—two to three words is best. By removing some of the boldface and using less text for your links, you can considerably reduce the amount of clutter on your pages.

Be especially careful of emphasis that moves or changes, such as marquees, blinking text, or animation. Unless the animation is the primary focus of the page, use movement and sound sparingly.

Don't Use Browser-Specific Terminology

Avoid references in your text to specific features of specific browsers. For example, don't use the following wording:

- **“Click here”**—Users of smartphones and tablets tap on links. A more generic phrase is “Follow this link.”
- **“To save this page, pull down the File menu and select Save”**—Most mobile devices don't work that way, and some don't even allow you to save files to the device. Even desktop browsers have different menus and different ways of accomplishing the same actions. If at all possible, do not refer to specifics of browser operation in your web pages.
- **“Use the Back button to return to the previous page”**—Each browser has a different set of buttons and different methods for going back. If you want your visitors to be able to go back to a previous page or to any specific page, link those pages.

It's also not a good idea to assume you know what mobile device they are using. Many Android users get offended if a website assumes they are on an iPhone and vice versa. Many smartphones have such large resolutions they appear to be tablets, and many tablets masquerade as laptop computers. By avoiding any reference to specific technology in your writing, you avoid the mistakes that would come with that.

Spell Check and Proofread Your Pages

Spell checking and proofreading may seem like obvious suggestions, but they bear mentioning given the number of pages I've seen on the Web that obviously haven't had either.

The process of designing a set of web pages and making them available on the Web is like publishing a book, producing a magazine, or releasing a product. Publishing web pages is considerably easier than publishing books, magazines, or other products, of course, but just because the task is easy doesn't mean your product should be sloppy.

Thousands of people may be reading and exploring the content you provide. Spelling errors and bad grammar reflect badly on you, on your work, and on the content you're describing. It may be irritating enough that your visitors won't bother to delve any deeper than your home page, even if the subject you're writing about is fascinating. If you don't believe me, just do a quick Internet search on annoying grammar mistakes to see how many people complain about grammar errors online.

Proofread and spell check each of your web pages. Remember that the spelling and grammar checking tools available aren't perfect. It's common to see homophones—words that sound the same but are spelled differently—used on web pages incorrectly. If possible, have someone else read your writing. Often other people can pick up errors that you, the writer, can't see. Even a simple edit can greatly improve many pages and make them easier to read and navigate.

Design and Page Layout

Probably the best rule of web design to follow at all times is this: *Keep the design of each page as simple as possible*. Reduce the number of elements (images, headings, and paragraphs), and make sure that visitors' eyes are drawn to the most important parts of the page first.

Remember that mobile devices come in all different shapes and sizes with different levels of quality and different resolutions. Some devices support zooming in and out on content, and some don't. Many feature phones can access the Web but cannot scroll horizontally. By keeping your design simple, more devices will be able to view your pages.

Keep this cardinal rule in mind as you read the next sections, which offer some other suggestions for basic design and layout of web pages.

Use Headings as Headings

Headings tend to be rendered in larger or bolder fonts in graphical browsers. Therefore, using a heading tag to provide some sort of warning, note, or emphasis in regular text can be tempting, but this is just another form of emphasis.

Headings stand out from the text and signal the start of new topics, so they should be used only as headings. Some mobile devices and many assistive devices use the headlines as a page outline. If you really want to emphasize a particular section of text, consider using CSS to change the background color, add a border, or add a shadow. Remember that you can use CSS to change the color, background color, font size, font face, and border for a block of text.

Group Related Information Visually

Grouping related information within a page is a task for both writing and design. As I suggested in the “Writing for the Mobile Web” section, grouping related information under headings improves the scannability of that information. Visually separating each section from the others helps to make it distinct and emphasizes the relatedness of the information.

If a web page contains several sections, find a way to separate those sections visually—for example, with a heading, a border, or tables.

Use a Consistent Layout

When you’re reading a book, each page or section usually has the same layout. The page numbers are placed where you expect them, and the first word on each page starts in the same place.

The same sort of consistent layout works equally well on web pages. Having a single look and feel for each page on your website is comforting to your visitors. After two or three pages, they’ll know what the elements of each page are and where to find them. If you create a consistent design, your visitors can find the information they need and navigate through your pages without having to stop at every page and try to find where certain elements are located.

Consistent layout can include the following:

- **Consistent page elements**—If you use second-level headings (<h2>) on one page to indicate major topics, use second-level headings for major topics on all your pages. If you have a heading and a rule line at the top of your page, use that same layout on all your pages.
- **Consistent forms of navigation**—Put your navigation menus in the same place on every page (usually the top or the bottom of the page, or even both), and use the same number of them. If you’re going to use navigation icons, make sure that you use the same icons in the same order for every page.
- **The use of external style sheets**—You should create a master style sheet that defines background properties, text and link colors, font selections and sizes, margins, and more. The appearance of your pages maintains consistency throughout your site.

But remember that consistency doesn’t mean identical. If you have a pull-out navigation for mobile devices, that doesn’t mean that larger screens must also have a pull-out navigation. But the navigation that small screens see should have access to the same information that the larger screen navigation has.

Using Links

Without links, web pages would be really dull, and finding anything interesting on the Web would be close to impossible. In many ways, the quality of your links can be as important as the writing and design of your actual pages. Here's some friendly advice on creating and using links for mobile design.

Mobile Users Tap; They Don't Click

This is an important distinction when you're working on your links, for more than just the words you use, as I mentioned previously. Tapping a screen is a different action than clicking and can have different results. For example, it's difficult to "click and drag" on a smartphone. And "tap and drag," if it does anything, often does something different. You also can't "right-click" a smartphone.

But more important, tapping requires that people use their fingers or a stylus to touch your web page. If the items they touch are too difficult, this can result in a lot of frustration. Some of the most frustrating things a Web designer can do with his links include the following:

- Put too many links too close together. The closer links are to one another, the more likely it is that the customer will tap on the wrong item.
- Linking just one word. When the links are small, they are also hard to tap, and single-word links, although they might look more interesting on the page, are difficult for mobile users to tap.
- Links that move. As I've said before, mobile users are coming to your site to take some form of action. When they see the link they want, they tap it immediately. If the link moves for any reason—such as if the page continues to load content above it—they may end up tapping on something they didn't expect.

Test your web pages in a mobile device, not just an emulator. This will give you a better idea of how tappable your links are.

Use Link Menus with Descriptive Text

As I've noted throughout this book, using link menus is a great way of organizing your content and the links on a page. If you organize your links into lists or other menu-like structures, your visitors can scan their options for the page quickly and easily.

Just organizing your links into menus might not be enough, however. Make sure that your descriptions aren't too short. For example, using menus of filenames or other marginally descriptive links in menus can be tempting, but if your readers don't know what

they are going to get, they aren't going to tap on the link. A better plan is to provide some extra text describing where the link goes.

Use Links in Text

The best way to provide links in text is to first write the text as if it isn't going to have links at all—for example, as if you were writing it for hard copy. Then you can highlight the appropriate words that will link to other pages. Make sure that you don't interrupt the flow of the page when you include a link. Once the text is linked, it will stand on its own in most designs. That way, the links provide additional or tangential information that your visitors can choose to follow or ignore at their own whim. Don't be shy about what you link; longer links are much easier to tap than shorter ones.

Probably the easiest way to figure out whether you're creating links within text properly is to print out the formatted web page from your browser. In hard copy, without hyper-text, does the paragraph still make sense? If the page reads funny on paper, it'll read funny online, too.

Avoid the “Here” Syndrome

A common mistake that many web authors make when creating links in body text is using the “here” syndrome. This is the tendency to create links with a single highlighted word (*here*) and to describe the links somewhere else in the text. Look at the following examples, with underlining to indicate link text:

Information about ostrich socialization is contained here.

Follow this link for a tutorial on the internal combustion engine.

Because links are highlighted on the web page, the links visually pop out more than the surrounding text (or *draw the eye*, in graphic design lingo). Your visitors will see the link before reading the text.

So the first thing they see in those two lines are “here” and “link.” Because “here” says nothing about what the link is used for, your poor visitors have to search the text before and after the link itself to find out what's supposed to be “here.” In paragraphs that have many occurrences of *here* or other nondescriptive links, matching up the links with what they're supposed to link to becomes difficult. This forces your visitors to work harder to figure out what you mean.

Plus, these links are just one word long. As mentioned several times, short links are difficult to tap. Here is an example of how you could rewrite those lines to make the links more mobile friendly and easier to understand:

Get more information about ostrich socialization.

This is a great tutorial on the internal combustion engine.

Both of these links are longer, which makes them easier to tap. They are also more descriptive, which gives the user a better understanding of where they are going to go.

To Link or Not to Link

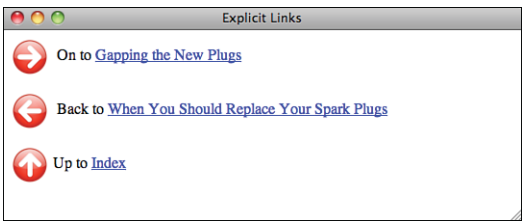
Just as with graphics, every time you create a link, consider why you’re linking two pages or sections. Is the link useful? Does it give your visitors more information or bring them closer to their goal? Is the link relevant in some way to the current content?

Each link should serve a purpose. Just because you mention the word *coffee* on a page about some other topic, you don’t have to link that word to the coffee home page. Creating such a link may seem cute, but if a link has no relevance to the current content, it just confuses your visitors.

The following list describes some of the categories of useful links in web pages. If your links don’t fall into one of these categories, consider the reasons why you’re including them in your page:

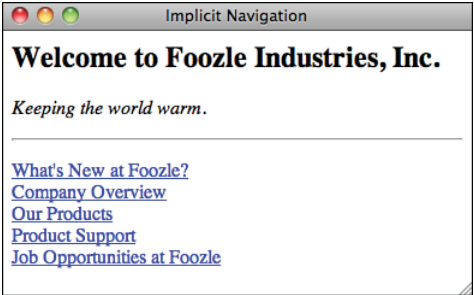
- Explicit navigation links indicate the specific paths that visitors can take through your web pages: forward, back, up, and home. These links are often indicated by navigation icons, as shown in Figure 21.4.

FIGURE 21.4
Explicit navigation links.



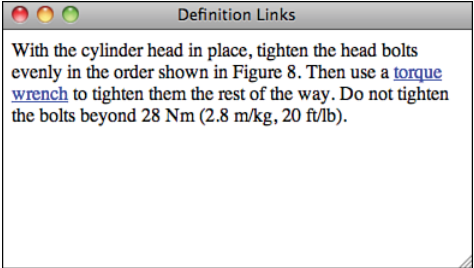
- Implicit navigation links (see Figure 21.5) are different from explicit navigation links because the link text implies, but does not directly indicate, navigation between pages. Link menus are the best example of this type of link. The highlighting of the link text makes it apparent that you’ll get more information on this topic by selecting the link, but the text itself doesn’t necessarily say so. Note the major difference between explicit and implicit navigation links: If you print a page containing both, you won’t be able to pick out the implicit links.
- Implicit navigation links also can include tables of contents or other overviews made up entirely of links.

FIGURE 21.5
Implicit navigation
links.



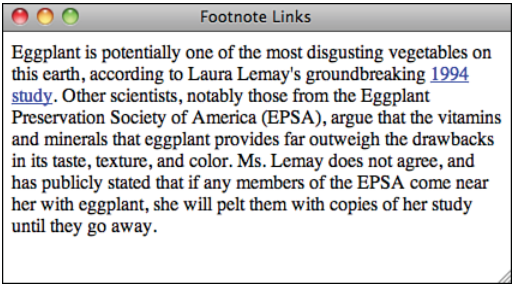
- Definitions of words or concepts make excellent links, particularly if you're creating large networks of pages that include glossaries. By linking the first instance of a word to its definition, you can explain the meaning of that word to visitors who don't know what it means without distracting those who do. Figure 21.6 shows an example of this type of link.

FIGURE 21.6
Definition links.



- Finally, links to tangents and related information are valuable when the text content will distract from the main purpose of the page. Think of tangent links as footnotes or endnotes in printed text (see Figure 21.7). They can refer to citations to other works or to additional information that's interesting but isn't necessarily directly relevant to the point you're trying to make.

FIGURE 21.7
Footnote links.



Be careful that you don't get carried away with definitions and tangent links. You might create so many tangents that your visitors spend too much time following links elsewhere to get the point of your original text. Resist the urge to link every time you possibly can, and link only to tangents that are relevant to your own text. Also, avoid duplicating the same tangent—for example, linking every instance of the letters *WWW* on your page to the *WWW Consortium's* home page. If you're linking twice or more to the same location on one page, consider removing most of the extra links. Your visitors can select one of the other links if they're interested in the information.

Using Images and Multimedia

In Lesson 9, "Using Images on Your Web Pages," you learned all about creating and using images in web pages. And in Lesson 14, "Integrating Multimedia: Video and Sound," you learned all about how to add video and audio files into your web pages. This section summarizes many of those hints and gives suggestions for optimizing them for mobile users.

Don't Overuse Images

Be careful about including a large number of images on your web page. Besides the fact that each image adds to the amount of time it takes to load the page, having too many images on the same page makes it look cluttered and distracts from the point you're trying to get across. This is especially true for mobile customers. Sometimes, though, people think that the more images they include on a page, the better it is. Remember the hints I gave you in Lesson 9. Consider how important each image really is before you put it on the page. If an image doesn't directly contribute to the content, consider leaving it out. Often one feature image per page is enough to get the point across.

Keep Images Small

Keep in mind that each image you use is a separate network connection and takes time to load over a network. This means that each image adds to the total time it takes to view the page, and data minutes deducted from your mobile customers' download limits. Try to reduce the number of images on the page, and keep them small both in file size and in actual dimensions. In particular, keep the following hints in mind:

- For larger images, consider using thumbnails on your main page and then linking to the images rather than putting them inline.
- Save your image in both the PNG and GIF formats to see which creates a smaller file for the type of image you're using. You might also want to increase the level of compression for your JPEG images or reduce the number of colors in the palette of

the GIF images to see whether you can save a significant amount of space without adversely affecting image quality.

- You can reduce the physical size of your images by cropping them (using a smaller portion of the overall image) or scaling (shrinking) them. When you scale an image, you might lose some of the detail.

CAUTION

Remember that reducing the size of your images using the `height` and `width` CSS properties or the `height` and `width` attributes of the `<img>` tag only makes them take up less space on the page; it doesn't affect the size of the image file or the download speed.

Watch Out for Assumptions About Your Visitors' Hardware

Many web designers create problems for their visitors by making a couple of careless assumptions about their hardware. When you're developing web pages, be kind and remember that not everyone has the same screen and browser dimensions as you do.

Just because that huge image you created is narrow enough to fit in your browser doesn't mean that it'll fit in someone else's. An image that's too wide is annoying because the visitors need to resize their windows or scroll sideways.

Most developers limit the overall width of their pages to 750 pixels or 950 pixels, and for the sake of readability, limit the width of containers used to display text to 500 or 600 pixels. Pages meant to be displayed on mobile devices need to be even smaller.

Don't Make Your Videos Annoying

The same rules about file sizes and download times apply to videos and other multimedia just as much as images. While you might want to film your videos in HD or 4K or some huge resolution, most of your mobile customers will just find it annoying if you expect them to download a gigantic file on their data plan.

But there are other so-called features that web designers often add to their videos that are particularly annoying to mobile users. Setting a video to play automatically when the page loads annoys just about everyone who comes to the page. This is especially true if the sound is turned on. That means that that wonderful sound file you added as "background music" to your web page does more than set the mood—it drives people away.

But multimedia can also annoy mobile users when you try to speed things up for them by preloading the files. This is a very tempting technique because many Web designers

believe that if the video doesn't start within a few seconds the customer will disappear. That might be true for nonmobile customers, but it's not true for mobile. For one thing, most mobile customers know that they will have to wait at least a short time to watch videos on their devices. But also, when you start downloading a video that they haven't requested, you are, in effect, stealing their bandwidth. You are forcing them to use data minutes for a file they might not even want.

One popular technique on the Web right now is a video background. And while you can do that with CSS, you risk driving away your customers if your page is too distracting. But more important, this is also downloading a video file that your mobile customers then have to pay for without requesting it. There's nothing stopping you from creating a video background, but they can annoy your customers, and annoying your customers turns them into ex-customers.

Avoid Flash

Depending upon who you ask, Flash is either the best thing to ever happen to the Web or the worst. Regardless of which side of the fence you fall on, you should be aware that mobile and Flash simply don't mix.

Apple has never supported Flash on its iOS devices, and Google stopped doing much with it for its Android devices after a year or two. The final nail in the coffin came when Adobe, the makers of Flash, announced in 2011 that it was no longer adapting Flash Player for mobile devices.

The majority of mobile devices can't use Flash, so you should not use Flash either.

Making the Most of CSS and JavaScript

Web design these days is about minimal markup, styled using CSS. Sticking with the following rules of thumb will make sure that your sites load quickly and efficiently on mobile devices as well as computers.

Put Your CSS and JavaScript in External Files

Nearly all browsers maintain a cache of recently loaded content. The more content on your site that can be cached, the more quickly pages on your site after the first one will load. You should put your styles in external style sheets and your JavaScript in linked scripts whenever you can. Linked files will be cached when users first visit your site and then will be retrieved from the cache on subsequent page views.

There are also advantages to this approach in terms of saving you time. If the styles for each page on your site live in `<style>` tags on those pages, you have to update every

page when you decide to make a change. It's much easier to make those changes in an external style sheet.

You can even include styles for specific pages in a single external style sheet if you use the class and id attributes cleverly. The `<body>` tag for a page can have a class or id, just like any other element. So if you want the pages in the news section of your site to have one background color and the pages in the “about us” section to have another, you could use this `<body>` tag for “about us”:

```
<body class="aboutus">
```

For news, you'd use this one:

```
<body class="news">
```

And then in your style sheet, you'd include the following styles:

```
body.aboutus { background-color: black; }
body.news { background-color: grey; }
```

The same rule applies to JavaScript, too. If you'd use unobtrusive JavaScript, discussed in Lesson 19, you can often put all the JavaScript for a site in a single file.

Location Matters

HTML5 requires links to external style sheets and the `<style>` tag to reside within the `<head>` element. You should be sure to follow this rule, because placing style sheets elsewhere in your document can cause your pages to take longer to display. By the same token, whenever possible, it's best to put `<script>` tags at the bottom of your document, just before the closing `</body>` tag. JavaScript loads in a single thread, which means when browsers are downloading an external script file, they don't try to download other page elements. This can slow down overall page loading time. Putting the scripts last on the page enables JavaScript to download everything else on the page in parallel before it gets to the scripts. It can make your pages load a bit more quickly.

Shrink Your CSS and JavaScript

Once you're done writing your CSS and JavaScript, it's a good idea to compress them so that they download more quickly. Yahoo! has created a tool called the YUI Compressor that shrinks JavaScript and CSS to the smallest size possible. The resulting files aren't really readable by humans, but browsers understand them just fine. You'll work on your files in the human-readable form, but shrink them before putting them on the server. Shrinking these files can save on download time. This shrinking is sometimes referred to as *minifying*. You can download the YUI Compressor from <http://yui.github.io/yuicompressor/>.

If you use third-party libraries like jQuery, be sure to deploy the minified versions. Your JavaScript files and style sheets might not be very big, but these libraries can be quite large. For example, the regular version of jQuery 1.4.2 is 160k, and the minified version is 70.5k. Most JavaScript libraries can be downloaded in either the regular or the minified form.

Google hosts versions of the popular AJAX libraries (like jQuery, Dojo, and YUI) so that you don't have to host them on your own server. This provides a number of advantages. The first is that you don't have to keep your own copy around. The second is that Google's infrastructure speeds up the delivery of these files. And third, if one of your users has already visited a site that is using the Google-hosted version of the file you're using, it's probably already cached so that the browser won't have to download it at all. You can find out how to use Google's copies of the files at <https://developers.google.com/speed/libraries/>.

Take Advantage of Mobile Features

Mobile devices are not inferior Web browsers; they are different web browsers. And as such, they have features that are not available on computer web browsers. When you write for the mobile Web, you should take advantage of these features as much as you can.

Geolocation

Geolocation lets users share their location with websites they trust. This is a feature of mobile devices that, while available on nonmobile devices, doesn't make a lot of sense there. HTML5 includes a geolocation *application programming interface* (API) to let web designers detect where a user is when he accesses the website. You can then use that information to provide more help to your customers.

As mentioned previously in this lesson, most mobile users use their smartphones to look up local information. This often means that they want to know where a local business is or find out whether there are special deals near where they currently are.

You can use geolocation on your website to do the following:

- Set up check-in links for your customers to connect to social media sites.
- Send notifications to customers when they are near your store.
- Provide maps to and from your business.

But while most desktop computers don't move around a lot, you shouldn't discount them when building your web applications. Getting their location could be helpful, even if they

never move. For example, in the near future a Web-enabled refrigerator might be able to connect to your site, place an order for more milk, and send you its location using geolocation.

Make Phone Calls

While the first mobile devices were really PDAs or palmtops (my dad and I both had HP 200LX palmtop computers back in the 1980s), most people think of cell phones as the first mobile devices. And phones are how most people get to the mobile Web. Of course, a feature of phones is that they can make phone calls. And, as a mobile web designer, you can add phone numbers to your website and make them work. This is called *click to call*.

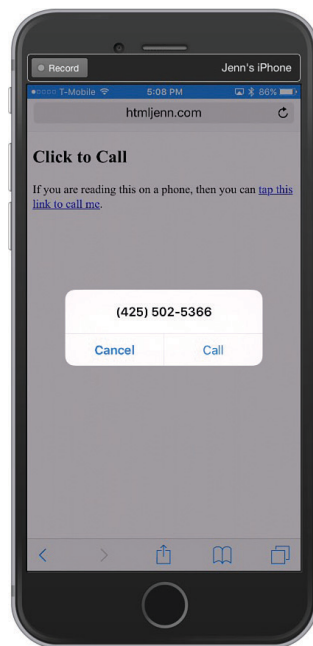
You write a link like you would any other link, but instead of linking to a URL or web page address, you link to a phone number:

```
<a href="tel:4255025366">
```

On mobile phones, when customers tap the link, they are asked if they want to make a call, as in Figure 21.8.

FIGURE 21.8

Click to call.



Of course, desktop browsers are catching up with this feature as well. Apple will open Facetime (voice) when presented with a click to call link. And other computers can link to Skype and other Internet phone services. So maybe nonmobile will be catching up soon.

SMS

One advantage that mobile devices have over computers is that mobile phones can also send SMS or text messages, but most nonmobile devices cannot.

NOTE

Apple has connected all its machines, but if you don't have an iPhone on the same network as your Mac, you can't send SMS text messages using it.

But as a mobile web designer, you can give your mobile customers a link to send you a text message. It works the same way as the phone links:

```
<a href="sms:4255025366">
```

When a user clicks on the link, she is taken to her messaging app with the phone number as the recipient.

Other Good Habits and Hints for Mobile Web Design

In this section, I've gathered several other miscellaneous hints and advice about building mobile websites.

Link Back to Home

Consider linking back to the top level or home page on every page of your site. This link will give visitors a quick escape from the depths of your site. Using a home link is much easier than trying to navigate backward through a hierarchy or repeatedly clicking the back button. This is especially important because visitors to most sites are directed there by search engines. If a search engine leads users to an internal page on your site, you'll want to give them a way to find their way to the top. The easiest way to do this is to link your logo to the home page. People tend to tap on images anyway, so if your logo image takes them to your home page, you haven't lost them.

Don't Split Topics Across Pages

Each web page works best if it covers a single topic in its entirety. Don't split topics across pages; even if you link between them, the transition can be confusing. It will be even more confusing if someone jumps in on the second or third page and wonders what's going on.

Plus, it's really common to see long documents or search results pages or the like with links that are single-digit numbers. These are *way too short* to tap on a mobile device. If you must have this type of pagination on a site, make the links large with CSS padding and then set the entire link to `display:block;` or `display:inline-block;`. This will tell the browser to make the entire box, including padding, tappable on smaller screens.

If you think that one topic is becoming too large for a single page, consider reorganizing the page so that you can break up the topic into subtopics. This tip works especially well in hierarchical organizations. It enables you to determine the exact level of detail that each level of the hierarchy should go and exactly how big and complete each page should be. You can then make the links out of the subtopic titles as long as they are at least two words long.

Sign Your Pages

Each page should contain some sort of information at the bottom to act as the signature. I mentioned this tip briefly in Lesson 7, "Formatting Text with HTML and CSS," as part of the description of the `<address>` tag. That particular tag was intended for just this purpose.

Consider putting the following useful information in the `<address>` tag on each page:

- Contact information for the person who created this web page or who is responsible for it. This information should include the person's name and an email address, at the least.
- The status of the page. Is it complete? Is it a work in progress? Is it intentionally left blank?
- The date this page was most recently revised. This information is particularly important for pages that change often or are time sensitive. Include a date on each page so that people know how old it is.
- Copyright or trademark information, if it applies.

Another nice touch is to link a Mailto URL to the text containing the email address of the site owner, as in the following:

```
<address>
Laura Lemay <a href="mailto:lemay@lne.com">lemay@lne.com</a>
</address>
```

This way, the visitors can simply select the link and send mail to the person responsible for the page without having to retype the address into their mail programs.

CAUTION

One downside of putting your email address on your web page is that there are programs that search websites for email addresses and add them to lists that are sold to spammers. You'll want to consider that risk before posting your email address on a public web page.

Finally, if you don't want to clutter each page with a lot of personal contact information or boilerplate copyright info, a simple solution is to create a separate page for the extra information and then link the signature to that page. Here's an example:

```
<address>
<a href="copyright.html">Copyright</a> and
<a href="contact.html">contact</a> information is available.
</address>
```

One Final Secret to Mobile Web Design

For the end of this lesson I will let you in on a little secret about mobile web design: *It is not all that different from nonmobile web design.* You can apply all of these techniques to your web pages even if you never have a mobile customer. Your desktop customers will also benefit. The great thing about focusing on mobile web design is that you are making your pages easier for everyone to use, not just mobile customers. And that is a good thing for everyone.

Summary

The main Do's and Don'ts for mobile web page design are as follows:

- Do use HTML standards like HTML5 and CSS3 when designing for the mobile Web.
- Do provide fallback options for any feature that might not be supported.

- Do test your pages in multiple devices.
- Do write your pages clearly and concisely.
- Do organize the text of your page so that your visitors can scan for important information.
- Do put the most important information first.
- Do validate your HTML and CSS, and check your JavaScript for errors.
- Do spell check and proofread your pages.
- Do group related information both semantically (through the organization of the content) and visually (by using headings or separating sections CSS features).
- Do use a consistent layout across all your pages.
- Do use descriptive links.
- Do have good reasons for using links.
- Do make your links large and tappable.
- Do keep your layout simple.
- Do provide alternatives to images for text-only browsers.
- Do use features like geolocation and click to talk that are only available on mobile devices.
- Do try to keep your images and multimedia small so that they load faster over the network.
- Do use external CSS and JavaScript files whenever possible.
- Do provide a link back to your home page.
- Do match topics with pages.
- Do provide a signature block or link to contact information at the bottom of each page.
- Do write context-independent pages.
- Don't link to irrelevant material.
- Don't overuse emphasis (such as boldface, italic, all caps, link text, blink, or marquees).
- Don't use terminology that's specific to any one browser or device ("click here," "use the Back button," and so on).
- Don't use heading tags to provide emphasis.
- Don't fall victim to the "here" syndrome with your links.
- Don't autoplay or preload videos or audio files.

- Don't link repeatedly to the same site on the same page.
- Don't clutter the page with a large number of pretty but unnecessary images.
- Don't split individual topics across pages.

Workshop

Put on your thinking cap again because it's time for another review. These questions, quizzes, and exercises will remind you about the items that you should (or should not) include on your pages.

Q&A

Q I've been creating pages, and they work when I test them in the browser. Is it really important to validate them?

A It's impossible to test your web pages in all of the browsers on all the mobile devices people are using, and making sure that they validate provides a baseline level of assurance that your pages are built correctly and that they'll work in situations that you haven't personally tested them with.

Q I'm converting existing documents into web pages. These documents are text heavy and are intended to be read from start to finish instead of being scanned quickly. I can't restructure or redesign the content to better follow the guidelines you've suggested—that's not my job. What can I do?

A All is not lost. You can still improve the overall presentation of these documents by providing reasonable indexes to the content (summaries, tables of contents pages, subject indexes, and so on) and including standard navigation links. In other words, you can create an easily navigable framework around the documents themselves. This can go a long way toward improving content that's otherwise difficult to read online. But if it really isn't your job to restructure the content for the mobile Web, you should provide feedback to the content creators. They need to know that the format they are providing you won't work well for mobile Web customers. You can even suggest they get this book so they better understand what they should be doing.

Q I have a standard signature block that contains my name and email address, revision information for the page, and a couple of lines of copyright information that my company's lawyers insisted on. It's a little imposing, particularly on small pages. Sometimes the signature is bigger than the page itself! How do I integrate it into my site so that it isn't so obtrusive?

A If your company's lawyers agree, consider putting all your contact and copyright information on a separate page and then linking to it on every page rather than duplicating it every time. This way, your pages won't be overwhelmed by the legal stuff. Also, if the signature changes, you won't have to change it on every page. Failing that, you can always just reduce the font size for that block and perhaps change the font color to something with less contrast to the background of the page. This indicates to users that they're looking at fine print.

Quiz

1. What are some ways you can organize your pages so that visitors can scan them more easily?
2. True or false: Headings are useful when you want information to stand out because they make the text large and bold.
3. True or false: Mobile web design applies only to mobile devices.
4. True or false: You can reduce the download time of an image by using the `width` and `height` style properties on the `<img>` tag to scale down the image.
5. Why does it improve performance to put your CSS in a linked style sheet rather than including it on the page?

Quiz Answers

1. You can use headings to summarize topics, lists to organize and display information, and link menus for navigation, and you can separate long paragraphs with important information into shorter paragraphs.
2. False. You should use headings as headings and nothing else. You can emphasize text in other ways or use a graphic to draw attention to an important point.
3. False. Mobile web design improves your web pages for everyone who views them, not just mobile customers.

4. False. When you use the `width` and `height` style properties to make a large image appear smaller on your page, it may reduce the dimensions of the file on the screen, but it won't decrease the download time. The visitor still downloads the same image, but the browser just fits it into a smaller space.
5. Putting your CSS in an external file enables the browser to cache the file so that it doesn't have to download the same information as the user moves from one page on the site to another.

Exercises

1. Go visit several of your favorite sites using a mobile device, preferably a small smartphone. How do they look? Do they break any of the rules you learned in this lesson? What do they do right?
2. How would you improve the sites that you visited in exercise 1 for mobile devices?

