Developer Connection

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Web Page Development: Best Practices

The Safari development team at Apple has made a dedicated effort to implement Web standards. This means that the easiest way to ensure optimal rendering of your pages in Safari is by following the standards. Doing so will also guarantee optimal rendering in Mozilla, Opera and Internet Explorer for Macintosh. Of course, each of these browsers has its own minor quirks or legitimate differences of interpretation, so testing your site in all of them is still mandatory.

By comparison, Internet Explorer for Windows—the most popular browser for the Windows OS—often requires web developers to use a number of non-standard tricks or to accept layout differences. This situation is unlikely to change anytime soon, so for now, web developers have to work around these problems.

This article gives some practical hints on how to create standards-conforming websites, and to work around some of issues that will arise for Explorer for Windows.

Before you start coding yourwebsite you must make a few decisions—which DOCTYPE do you use? Do you use pure CSS, or CSS with Minimal Tables? We'll discuss these topics, and then go into some design guidelines and issues to consider with XHTML and CSS.

Doctypes

By using a certain DOCTYPE (strict or transitional) you claim to have correctly implemented a certain (X)HTML flavor:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
        "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

When you declare a DOCTYPE, validators take you at your word. When you validate your pages, they check your code against the syntax that you claim to follow. If the markup fails to meet the standard, it gives you error messages.

In addition,most browsers have implemented doctype switching. They use the DOCTYPE you declare to decide whether the browser should use Strict or Quirks mode when rendering the page. In Strict mode browsers strictly follow the CSS specification, while Quirks mode retains a few browser quirks that were common in the “bad old days” (before adherence to standards).

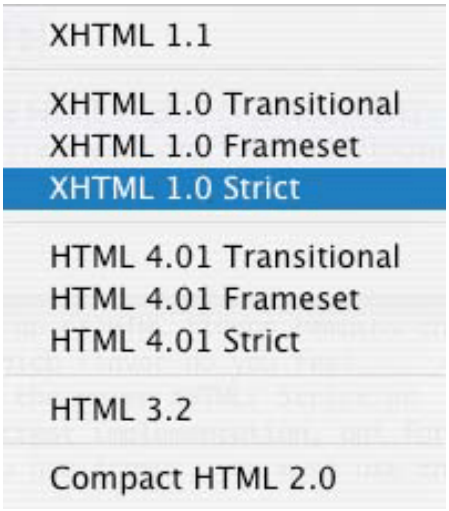
In general, you should opt for Strict Mode. A useful table from the Helsinki University of Technology tells you how the modern browsers interpret doctypes and allows you to select a cross-browser one. See also the A List Apart article Fixing your site with the right doctype

To fully understand the differences between Strict and Quirks Mode, study the documentation pages:

- Mozilla Quirks Mode Behavior
- CSS Enhancements in Internet Explorer 6 (Explorer 5 only supports Quirks Mode)
- The Opera 7 DOCTYPE Switches

There is no official list for Explorer 5 on Mac, but CSS guru Eric Meyer has summarized the differences. Safari follows Mozilla.

Despite doctype switching, selecting an (X)HTML flavor remains the most important function of a DOCTYPE. Which flavor do you feel comfortable with? Old-fashioned HTML or the newer XHTML? Strict or Transitional? If you want the very strictest implementation, opt for a Strict flavor. If you want to give yourself some more leeway, choose Transitional. If you use frames, you must use the Frameset variant. For example, in BBEdit, you can use this menu to choose the (X)HTML flavor you want:



The W3Schools XHTML Reference and the zvon.org comparison page give an overview of the tags you may or may not use in Strict and Transitional. blackwidow.org.uk gives an overview of permitted attributes and a list of common validation errors.

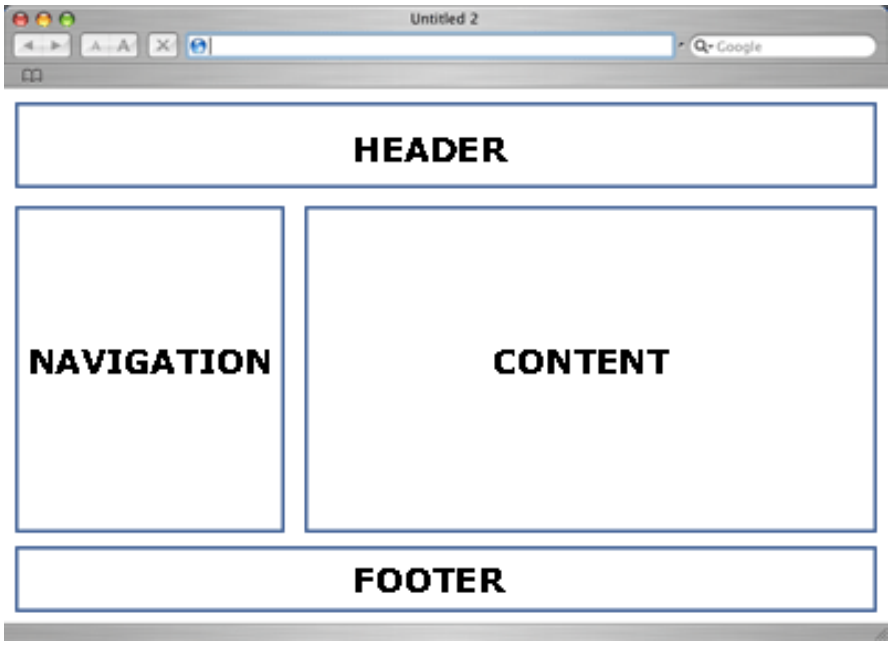
Use XHTML 1.0 Transitional if you have no experience with doctypes. It requires you to use XHTML instead of HTML, and thus forces you to take a step towards standards-compliant markup. On the other hand it allows for more tags and attributes than its Strict brother, so it's easier to implement.

The correct code for using the Transitional DOCTYPE is shown in the declaration above.

Below you'll find more instructions for writing correct, valid XHTML.

Page Layout

Most web site templates perform page layout by using a few blocks of content, for instance a header, a left column with the navigation, a right column with the main content, and a footer, as shown below:



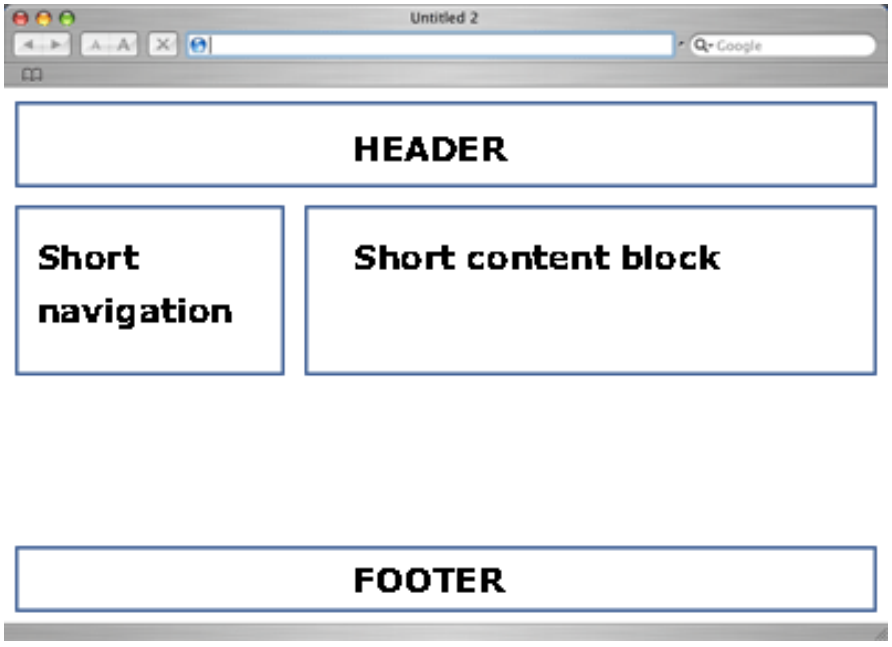
Any attempt to code this page must start by roughly positioning these four blocks of content. Style details can wait; first you should make sure that the content blocks are aligned correctly in all browsers on all resolutions. There are two ways to do this: pure CSS and minimal tables. Although pure CSS is the best choice overall, it has its problems.

Pure CSS

Generally speaking it's difficult to obtain proper **horizontal** alignment in CSS. Horizontal alignment wholly depends on the `float` declaration, which, though supported by all modern browsers, is supported according to two different models, with minor variations even between browsers that support the same model.

These problems aren't unsolvable; coding a simple four-block layout with the `float` declaration is quite possible. Nonetheless the danger of insolvable browser incompatibilities increases exponentially with every floating block you add.

Another common problem with CSS is ensuring a proper page footer. On long pages that use more space than the window height, the footer should appear directly below the navigation and content blocks. That's very easy to code. On short pages, though—those that span only part of the window height—the footer should nonetheless appear at the bottom of the viewport, and that's a far trickier code challenge:



Ensuring that the footer works properly on both long and short pages is a common cause of CSS headache.

Tables

Tables neatly solve these two problems. Correct horizontal alignment has been the most important advantage of tables ever since Mosaic. Giving the table a `height: 100%` and the cell containing the footer a `vertical-align: bottom` makes the footer reliable in all circumstances.

If the visual design of your web site requires complex horizontal alignment or a reliable page footer, minimal tables could help you evade complex browser incompatibilities.

Don't start using those tables right away, though. First try to create a cross-browser pure CSS page, and don't be shy to ask for help from css-discuss.org. Even if your CSS experiment turns out not to work, you will have acquired valuable experience.

Using pure CSS in all circumstances will have to wait until all browsers support CSS fully. If you've honestly tried to use CSS but encountered serious browser incompatibilities in the rough positioning of the content blocks, you should switch to minimal tables.

CSS with Minimal Tables

In the bad old days web developers placed all page elements in tables, and if the page didn't look as expected it needed yet more tables inside the already existing tables. This process was repeated until the page worked. The underlying theory seemed to be “If we squeeze enough HTML into the page it'll work eventually.” It made for eternal download times and nonsensical markup that was impossible to update.

Fortunately this coding style is on the way out. Nonetheless, as we've seen, tables still offer a few advantages over pure CSS. Minimal tables are the perfect compromise. They allow you to use the advantages of both without bloating your code (much).

Minimal table use means: use as little tables as possible. To obtain our simple four-block layout, the following code is all you need:

```
<table>
        <tr>
                <td colspan="2">
                        <div class="header">
                        Header
                        </div>
                </td>
        </tr>
        <tr>
                <td>
                        <div class="navigation">
                        Navigation
                        </div>
                </td>
                <td>
                        <div class="content">
                        Content
                        </div>
                </td>
        </tr>
        <tr>
                <td colspan="2" style="vertical-align: bottom">
                        <div class="footer">
                        Footer
                        </div>
                </td>
        </tr>
</table>
```

This minimal table does a fine job of roughly positioning the four content blocks. You have created a framework that solves some tricky problems for you and gives you free rein to fill in all the other details of your design by CSS.

The table needs many more refinements (a `width` for the navigation, a `vertical-align` for the footer) but that's the job of the CSS, not the XHTML. You don't need any more tables than this one.

In general you should style the DIVs inside the TDs instead of the TDs themselves. For instance, browsers see a `width` declaration on a TD as a sort of advice, and they don't hesitate to overrule it when they think it's necessary. They will always obey `width` declarations on DIVs, though.

The only exception is the `vertical-align`, which *must* be declared on a TD.

XHTML

The best way to start coding a new website is to make a rough sketch on paper. Draw the content blocks, make short notes on the XHTML and CSS you'll need and try to anticipate the problems you'll encounter. It's highly unlikely that you'll solve all, or even most, problems by this rough sketch, but creating it forces you to think logically and to define the rough outlines of your code. You'll also find that sketching helps you to remember your fundamental decisions and the reasons behind them better than just starting to write code.

Then create the XHTML file. If you've never used XHTML before, your first step should be to ditch some ancient HTML preconceptions. Fortunately migrating from HTML to XHTML is extremely simple:

1. Make all your tags lower case (`<p>` instead of `<P>`);
2. Close all your tags, even empty ones (`<br />` and `<hr />` instead of`<BR>` and `<HR>`);
3. Make all attribute names lower case and quote all attribute values; for example, `<td colspan="2">` instead of `<TD COLSPAN=2>`, and `onmouseover` instead of `onMouseOver`;
4. Give empty attributes a value—such as `<input type="checkbox" checked="checked" />` instead of `<INPUT TYPE=checkbox CHECKED>`;
5. Nest all your tags correctly.

Now your HTML has become XHTML. This is not enough, though. By choosing a `DOCTYPE` you have committed yourself to the Strict, Transitional or Frameset flavor, and you should make sure that you only use the tags and attributes that your chosen flavor allows.

When you think you're ready, validate your pages. The official W3C Validation Service is the most logical place to start. Nonetheless its error messages can be quite verbose and confusing to the uninitiated. W3C is experimenting with a new validator that gives more understandable error messages.

If you don't quite understand the error messages, ask groups.yahoo.com/group/XHTML-L for help. You're not the first one to run into a particular problem.

Even when your XHTML is perfectly valid it can contain bad coding. You have to avoid a few practices that, though not expressly forbidden, are strongly discouraged.

Tables Revisited

As we saw above, using one minimal table to roughly lay out your page is quite acceptable. Nonetheless, it is important to stress that this minimal table should be the *only* one. Do not insert more tables into your code. They're not necessary; CSS can do the job for you.

There's one single exception to this rule: you may use tables to display tabular data, for instance stock quotes or long lists of employees with their room numbers and phone numbers. For these bits of data (and *only* for these bits of data) you can add an extra table to your code.

If you're not sure if a certain data set requires a table, ask yourself how you'd display it in print. If you'd use a table even in print, the data is tabular.

Tagitis

Tagitis is the adding of many useless XHTML tags. This header, for instance, suffers from tagitis:

```
<h3><em>Header</em></h3>
```

You don't need the extra `<em>` tag. One line of CSS would give the same effect:

```
h3 {
font-style: italic;

}
```

Classitis and Divitis
A common error of beginning CSS coders is to use far too many `<div>` tags and `class` attributes, like:

```
<div class="header">
<div class="headerText">
<p class="headerP">This site uses CSS!</p>
</div>
</div>
```

Ninety-nine out of a hundred times these complicated structures are unnecessary. When you start writing CSS you should avoid them, instead of thinking you found the one in hundred exception to the rule. Start with simple XHTML:

```
<div class="header">
<p>This site uses CSS!</p>
</div>
```

Use these two CSS selectors:

```
div.header {
/* styles */
}

div.header p {
/* styles */
}
```

You'll find that you can style the entire header by styling these two selectors.

Black List

Some ancient HTML tags have been deprecated. You should not use them any more because there are excellent CSS equivalents.

font
You don't need `<FONT>`. Instead, use:

```
body {
font: 0.8em verdana,sans-serif;
}
```

There are some issues with font sizes in table cells, though, so to be completely on the safe side you could extend this declaration to all common text containers.

```
body,td,li,p {
```

```
font: 0.8em verdana,sans-serif;
}
```

Spacer GIFs

We can say goodbye to the ugliest HTML construct ever conceived— spacer GIFs are no longer necessary. Their purpose was to stretch up table cells to a certain minimum width, and they were inextricably intertwined with the hideous table constructs we used in the bad old days. Besides, when you use one spacer GIF you're seduced into using three dozen more and spawn bloat code like;

```
<tr><td rowspan=7 width=10><img src="pix/spacer.gif" height=150 width=1>
</td><td width=150><font face=obscurica size=7>Welcome to my beautiful site
<td colspan=4 height=17><img src="pix/spacer.gif height=1 width=23></td></tr>
```

Nowadays CSS offers far superior ways to set the widths of all elements. If you think a spacer GIF is the only solution for a certain problem, it's time to upgrade your CSS knowledge a bit. Again, you should ask from help, from www.css-discuss.org if you can't do it on your own. You're not the first one traveling along this path.

center

The ancient `<CENTER>` tag can safely retire, too. CSS is quite capable of centering text and blocks of content, though there's one catch.

To center the text in `div.text` you do:

```
div.text {
text-align: center;
}
```

Centering entire blocks is somewhat trickier. If you want to center the entire `div.text`, the official CSS way is:

```
div.text {
margin-left: auto;
margin-right: auto;
}
```

`auto` means: “as much as you need.” The `<div>` takes as much margin as it needs and equally divides it between left and right. As a result it is centered.

Unfortunately the `auto` value does not work in Explorer for Windows. Instead, you must use `text-align` on a block containing `div.text`:

```
div.container {
text-align: center;
}

div.text {
margin-left: auto;
margin-right: auto;
text-align: left; /* overrule inheritance */
}

<div class="container">
        <div class="text">
        This entire block is centered
        </div>
</div>
```

This use of `text-align` is not quite standards-compatible, but it's the only way to make Explorer for Windows behave. And yes, it's one of the very few cases where divitis and classitis are good for your page.

Accessibility

When you've created and validated the entire XHTML file you should perform an accessibility check. Remove all style sheets and JavaScript from the XHTML and carefully look at this unstyled page. Is the content ordered logically? Is the navigation clear and usable?

If content and navigation are usable, you've passed the first test. You should perform many more checks to ensure perfect accessibility, but this rough test helps you catch the most important and serious issues.

Although Bobby offers an accessibility validation service, its results are unclear and sometimes confusing and accessibility specialist Joe Clark has criticized its methodology. Besides, many accessibility features, like using the simplest possible language, cannot be validated by a computer; they need human eyes.

To dive deeper into accessibility issues, read the official W3C Web Content Accessibility Guidelines. If you want some practical examples and tips, the excellent accessify.com website is your best bet.

CSS

You'll probably encounter issues when you apply your CSS, especially in Explorer for Windows.

Before delving into cross-browser CSS compatibility issues, validate your style sheet. If it passes this test you are sure that the problems aren't caused by incorrect code but by incorrect browser implementations.

Validation doesn't remove the problems, though. If you encounter weird behavior, don't assume you found a bug. Ask for help at the wonderful css-discuss mailing list, where plenty of experts are ready to lend a helping hand.

If you still think you've discovered a bug, follow the instructions on the MysteryBug page to isolate and define the bug. Usually you'll find that you've misunderstood an obscure detail in the specs.

Nonetheless there are some serious issues related to Explorer for Windows in particular (you shouldn't find these with other browsers):

- **Box model**. Explorer 5 for Windows does not support the W3C box model. Explorer 6 does, but only in Strict mode. The W3C box model defines the `width` of a box as the width the *content* of this box takes. The traditional box model applies `width` to the borders, padding and content of a box.
- **Advanced selectors**. Explorer for Windows does not support the child selector (`>`), the adjacent sibling selector (`+`) and the attribute selector (`p[class]`).
- **Advanced pseudo-classes**. Explorer for Windows does not support the `:focus` and `:first-child` pseudo-classes.
- **Fixed position**. Explorer for Windows does not support `position: fixed`.
- **Background attachment**. Explorer for Windows does not support the W3C definition of `background-attachment: fixed` on elements other than the `<body>`.
- **Min and max**. Explorer for Windows does not support `min-width`, `max-width`, `min-height` or `max-height`, with the very minor exception of a `min-height` declaration on `<td>`'s in tables with `table-layout: fixed` (which, in turn, is not supported by any other browser).

The best way to deal with these incompatibilities is to make sure that the correct layout of your page doesn't depend on them. If you use these problematical selectors and declarations not for fundamental CSS declarations but only for nice extras, you can ignore Explorer for Windows' incompatibilities.

For instance, the `:focus` pseudo-class allows you to define a style for a focused form field. Although this extra style is nice to have, your page can do without it. Therefore you can safely use `:focus` and ignore Explorer Windows' lack of support.

A text that spans a full 1200 pixels of screen width is usually unreadable. You can solve this problem by applying `max-width`:

```
body {
max-width: 600px;
}
```

Now you've given the body a maximum width, so that your text remains readable even on large screen resolutions. Although Explorer for Windows does not support `max-width`, its users can always resize the window if they think the text is too wide. Therefore this declaration is safe, too.

The lack of support for advanced selectors can be a nuisance. Nonetheless you can evade incompatibilities by only using these selectors for extra styles, not for basic ones. Thus Explorer for Windows will show the basic page, even though it doesn't show some advanced styles.

Explorer 5's box model is a more fundamental flaw. You could use the famous Box Model Hack, or you could decide the minor differences aren't worth the trouble. Fluid thinking can solve many problems, not by hacking your way through browser incompatibilities, but by embracing a different, more web-like way of thinking.

The most serious problem by far is `position: fixed`. Eric Bednarz has found a pure CSS solution to this problem, but technically it can be tricky. For instance, when you use his fix you cannot use `position: absolute` normally. Read his page well if you want to implement his solution.

JavaScript

JavaScript suffers from less incompatibility issues than CSS. All modern browsers, including Explorer for Windows, support the ancient Level 0 DOM and the modern W3C DOM reliably. You should not use the two proprietary DOMs, Netscape's `document.layers` or Microsoft's `document.all`, any more, though. Safari doesn't support these DOMs, and neither does Mozilla. Use the `Document.getElementById` DOM instead.

Of course there are minor issues in all browsers. See the W3C DOM Compatibility Tables for an overview.

Conclusions

Although the standards are not yet fully supported by all browsers in all circumstances, creating standards-compatible pages is the best way to ensure good rendering. As always, learning to use new technologies will take some time and will give you some incompatibility headaches. Nonetheless the results will be well worth the investment.

Links

W3C specifications:

- XHTML 1.0
- CSS 1
- CSS 2
- DOM

Doctypes:

- Mozilla
- Explorer 6 on Windows
- Opera
- Explorer 5 on Mac (summary)

Validation:

- W3C (X)HTML (or the beta version with better error messages)
- W3C CSS

Compatibility tables:

- XHTML tags
- Attributes
- DoctypesRendering mMode
- CSS1
- W3C DOM

Mailing lists:

- From evolt.org, thelist, for general web development questions.
- XHTML-L, for XHTML questions.
- css-discuss, for CSS questions.
- WDF DOM, for JavaScript W3C DOM questions.

Accessibility:

- Bobby. Use with care, though.
- Accessify

Useful:

- A useful list of Tools for web developers, from the University of Minnesota at Duluth.

Get information on Apple products.
Visit the Apple Store online or at retail locations.
1-800-MY-APPLE

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