CT 310, Web Development
Things Covered in the Final Third of CT 310
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Here is a list derived from a review of the material covered after the second Midterm. Please keep two things in mind when using this list. First, it is intended to be relatively complete and a useful study guide. Second, it is **not** a contract. **Material covered in lecture or recitation not explicitly listed below may of course appear on the final exam**. One other reminder, the CT 310 Final Exam of comprehensive, so in studying please make use of not only this "Things Covered" list but also the two others previously released and posted.

1. You can now explain the DOM as it relates to the JavaScript Namespace.
2. You can explain the key differences between GIF, JPEG and PNG images.
3. You can explain quickly the concept of run-length encoding to compress images.
4. The concept of a color lookup table is now clear to you and you are able to explain it to a person unfamiliar with the concept.
5. You can spot, or describe, what happens when JPEG is used to store graphics with sharp color transitions, e.g. text that has not been anti-aliased.
6. You can name at least one source of photographs that may be freely used in your own web projects.
7. Now you understand the tristimulus theory of color. You are in a much stronger position to explain to others exactly why we describe color images in terms of the amount of red, green, and blue present.
8. You can now list the three most common image file formats used to support the World Wide Web. Further, you can describe very precisely how run-length encoding compression works. Finally, you can explain the difference between lossy and lossless image compression from a user's standpoint.
9. You now understand the essential idea behind anti-aliased text, and in particular how it is that having an alpha channel available makes it much easier to build versatile anti-aliased graphical components for a webpage.
10. Because you now understand alpha channel blending and can explain it to others, you are also in a position to do creative web designs which possibly multiple images and elements with varying degrees of transparency interacting with each other.
11. You now know what advice to give to a colleague who saves images of simple almost monochromatic graphics as PNG-24 images or conversely who tries to save pictures of cats and dogs using GIF or PNG-8.
12. Transparency of images prior to HTML 5 was handled inside the image encoding itself. With HTML 5 CSS has its own mechanism which you can now explain and utilize.
13. Consider this statement in light of what you've learned recently: the modern web works by having a client browser send a request for a page to a server which is then returned from the server to the client in a stream consisting of a header and a body. Be careful, if you're at a job interview, the way you answer this question will matter.

14. Even though you will probably never actually create an XMLHttpRequest object yourself in code that you write, a fundamental understanding of AJAX includes a basic understanding of the purpose and operation of this object. You can certainly list off 3 to 4 of the most critical methods supported by this object and the role they have played revolutionizing web applications.

15. Forms checking, i.e. testing whether a user's input to a form field is acceptable, may or may not require immediate interaction with the server. Be ready to give quick examples where such interaction either is or is not required, and if it is required be familiar with at least one working example of how it might be implemented.

16. You understand the special terminology "cross-site scripting" as well as the most basic policy constraint introduced to prevent it.

17. Arrays of objects play a key role in multiple examples used throughout the semester. Moving an array of objects between two different languages, for example between a server-side language and a client side language, can be highly problematic. There was once a dark time when such parsing and packing of data had to be written by hand. Today none of that is necessary, and you are skilled at using one of the most common solutions to this problem.

18. While understanding the lowest level support upon which AJAX rests is valuable, programming at that level on a daily basis is probably catastrophic. In class, a framework was introduced that greatly streamlined not only AJAX but JavaScript programming in general. You can name that framework, write programs using that framework and list of at least four reasons why this framework is so so popular.

19. Understanding the lowest level support upon which AJAX rests is critical, programming at that level on a daily basis is probably catastrophic. In class, a framework was introduced that greatly streamlined not only AJAX but JavaScript programming in general. Clearly you can name that framework as well as instantly generate a list of at least four reasons why this framework is so so popular.

20. Being asked to embrace "Dollar free jQuery" may seem like an admonition to reject currency, but it is not. However, it is good advice and advice that you understand and can explain to others.

21. Critical to an understanding of jQuery is an understanding of the distinction between the selector and the action. Because you have been working with jQuery this distinction is totally clear to you and something you can readily explain.

22. Some technical people assess the expertise of others by making statements that beg for correction/clarification. In that spirit, consider: "Using jQuery, an action is applied to the single object returned by the selector."

23. The "now you see it, now you don't" features that are present in JavaScript and CSS are made much easier to use by jQuery. You fortunately know how to build sites that use these features of jQuery.

24. In lecture an extended jQuery example put together a number of pieces developed over the semester. These include: HTML, CSS, PHP, SQL, JavaScript and jQuery programming. Your full understanding of this example represents one milestone in understanding how modern webs sites synchronize client and server views of

persistent data.

25. Through a combination of a new HTML5 element and extensive JavaScript support, there is now a full featured 2D drawing API that comes built into all modern browsers. You know how to use this new functionality to construct visually rich and possibly animated content.

26. Specific drawing features of HTML5 that you can use include: contexts, paths, fill and stroke styles, colors including transparency, and how to specific coordinates in a drawing.

27. Embedding videos on pages used to be difficult. With HTLM5 it is not. Therefore, you have no problem writing sites with embedded videos that work across multiple browsers and handle modern codec selection issues.

28. What constitutes good design is complex. In the real world of web development design responsibility often falls to people trained in graphic arts and human computer interaction. That said, this course devoted two lectures soely to design. Hence, at the least, you now understand and can expound knowledgeably about responsive design, gestalt grouping principles and how human attention relates to web design.

29. In the spirit of tricky questions or statements, consider your reaction to this statement: "The best websites optimize screen real estate by filling all available blank space."

30. Before addressing "how to build a website?", the first question is clearly "Why build a website?" You are comfortable identifying the most common motivations for establishing a website and can related these to specific examples.

31. The lectures on design had many screenshots showing before/after shots of popular websites showing designs from around 2010 versus today. You understand some of the most prominent trends. For example, is the apparent size of text growing or shrinking?

32. As our guest lecturer Jake Wilson stated, it is key to understand the fundamentals of HTML, CSS, PHP and JavaScript upon which pages depend. However, as he also said, it is at least as important if not more important not to waste your time and your employer's money reinventing the wheel. So, for example, you have now begun building using the Bootstrap Framework and have a basic understanding of the functionality provided.

33. Using the HTML table element to structure content (other than actual tabular data) on pages today a firing offense. However, laying out content in grid cells, a superficially similar concept, is to many developers essential. You understand the argument, and far more important, you understand grids as defined and implemented in the Bootstrap Framework.

34. If a prospective customer says they want one of those "Hamburger things" on their mobile responsive site, then you know what they want and how to build one using the Bootstrap Framework.

35. Jake Wilson, in his guest lecture, gave a good justification for linking to support frameworks externally, i.e. through common distribution points (a CDN). You should always think about pros and cons on matters of this kind, but it is very good that you

understand his argument.

36. One could argue that CT 310 fails to anticipate one of the most critical practical needs of any website by failing to introduce content management early. One could conversely argue it takes many weeks to be ready to understand the workings of a CMS. Either way, you can clearly state the single critical capability provided by a CMS, and missing from all that was taught before WordPress.

37. Understanding how to launch a new website with a custom theme and useful extra plugins goes far beyond the scope of CT 310. However, everyone in this class can quickly install from scratch and setup a default WordPress site. Be sure you understand all the steps thoroughly.

38. In her guest lecture on using WordPress, Amber Hinds covered many of the basics related to WordPress structure. For example, the role played by different folders including administration, themes and plugins. That you now have this level of understanding of WordPress gives you a solid start should you find yourself wanting to use WordPress in the future.

39. In his guest lecture, Jake Wilson explained nicely the internal processes and different people (organizational units) who must all work together for a company such as Otter Products to establish a meaningful and profitable web presence. You now understand in broad brush the different players and their respective roles.