Project 1: PizzaML[*]

Monday, 19 October 2009, noon ET

Goals.

- Design your own data model.
- Introduce you to PHP, XML, and XPath.

Recommended Reading.

- *HTML, XHTML, and CSS: Your visual blueprint for designing effective Web pages:* chapters 15 and 17.
- *PHP & MySQL: Your visual blueprint for creating dynamic, database-driven Web sites:* chapters 2 – 6, 9, 10 – 12; appendices A and B.

- http://www.w3schools.com/php/
- http://www.w3schools.com/xml/
- http://www.w3schools.com/xpath/

---

[*] Inspired by `http://www.xml.com/pub/a/2001/02/28/rddl.html`.

Academic Honesty

All work that you do toward fulfillment of this course's expectations must be your own unless collaboration is explicitly allowed (*e.g.*, by some problem set or the final project). Viewing or copying another individual's work (even if left by a printer, stored in an executable directory, or accidentally shared in the course's virtual classroom) or lifting material from a book, magazine, website, or other source—even in part—and presenting it as your own constitutes academic dishonesty, as does showing or giving your work, even in part, to another student.

Similarly is dual submission academic dishonesty: you may not submit the same or similar work to this course that you have submitted or will submit to another. Nor may you provide or make available your or other students' solutions to Project 1, Project 2, or Project 3 to individuals who take or may take this course in the future. Moreover, submission of any work that you intend to use outside of the course (*e.g.*, for a job) must be approved by the staff.

You are welcome to discuss the course's material with others in order to better understand it. You may even discuss problem sets with classmates, but you may not share code. You may also turn to the Web for instruction beyond the course's lectures and sections, for references, and for solutions to technical difficulties, but not for outright solutions to problems on projects. However, failure to cite (as with comments) the origin of any code or technique that you do discover outside of the course's lectures and sections (even while respecting these constraints) and then integrate into your own work may be considered academic dishonesty.

If in doubt as to the appropriateness of some discussion or action, contact the staff.

All forms of academic dishonesty are dealt with harshly.

Grades.

Your code (CSS, PHP, XHTML, XML, *etc*.) will be evaluated along the following axes.

Correctness. To what extent is your code consistent with our specifications and free of bugs?
Design. To what extent is your code written well (*i.e.*, clearly, efficiently, elegantly, and/or logically)?
Style. To what extent is your code readable (*i.e.*, commented and indented with variables aptly named)?

`panel.cs75.net.`

☐   Surf on over to `http://panel.cs75.net/`, log in, and follow the link to **Subdomain Management** under **Your Account**. On the page that appears, add a subdomain called **project1** to your domain. Not only will the panel automatically create A records for `project1.domain.tld` and `www.project1.domain.tld` for you, where `domain.tld` is your domain, it will also create a subdirectory called `project1` in your `public_html` directory. All of your work for this project must ultimately reside within that subdirectory.

☐   Return to your panel's home page and select **Password Protected Directories**, also under **Your Account**. On the page that appears, click **Find a Directory to Password Protect**. You should then see the contents of your `public_html` directory. In the row containing your `project1` subdirectory, click **Protect** in the column labeled **Action**. On the page that appears, check the box next to **Protection Enabled**, and then fill out the rest of the form. Any username and password are fine, as is any value for **Protected Directory Prompt**, which is just an aesthetic detail. When done, click **Save**. The panel will proceed to create (or edit) at least two files for you: `~/public_html/project1/.htaccess`, which tells Apache to password-protect the directory, and `~/domains/domain.tld/.htpasswd/public_html/project1/.htpasswd`, which contains your choice of username and password, separated by a colon, with the latter encrypted. Had you not a convenient panel, you could also have just created files like those by hand.

`cs75.net.`

☐   Surf on over to `http://www.cs75.net/` and follow the link to the course's **Bulletin Board**. Anytime you have a question this semester (that's not, say, personal in nature), do search the bulletin board to see if your question has already been asked by some fellow student and, better yet, answered! If not, post away!

     Do be mindful of the syllabus's policies on academic honesty. Posting snippets of code is probably fine; posting an entire file is probably not. If ever in doubt, it's probably best to email your question to `help@cs75.net`. You are welcome to respond to fellow students' questions, but, again, do be mindful of the letter and spirit of the course's policies.

     The bulletin board is actually PHP-based software called SMF that we downloaded for free from `http://www.simplemachines.org/`. One of the things that's nice about PHP is just how much free software there is out there (tools, libraries, *etc.*). If you'd like to be overwhelmed (much like we were whilst evaluating them all), take a look at how many PHP-based bulletin boards exist.

     `http://en.wikipedia.org/wiki/Comparison_of_Internet_forum_software_%28PHP%29`

     Of course, we had to write some code ourselves to integrate SMF into `cs75.net`. But that's why you're here! Soon, if not already, so could you!

     For now, though, consider the course's bulletin board the place to go for Q&A!

`project1.domain.tld.`

☐ Just the other day, while waiting in line for lunch at your favorite pizza place, you were going on and on (as you often do) with a friend about how you're taking some course on building dynamic, scalable websites. "Maybe you should make this place a website so that we don't have to stand in line anymore," your friend interrupted, with just a hint of sarcasm. "Then we could order online."

"Hmmm," you replied, missing the sarcasm. "That is a fantastic idea!"

And so was born your Project 1. Your mission for this project is to implement a website that allows customers to place orders online!

Included at this document's end is a menu from a local haunt called Three Aces. Let's pretend they're still with us.[†] Turns out they sell more than just pizza. In fact, they offer ten different "categories" of food: **Pizzas**, **Specialty Pizzas**, **Special Dinners**, **Side Orders**, **Salads**, **Spaghetti or Ziti**, **Home made Lasagna Ravioli or Manicotti**, **Homemade Calzones**, **Wraps**, and **Grinders**. Some items only came in one size, but others clearly come in both small and large sizes, at different prices no less.

Your first challenge is to come up with a data model for this menu. You thought about using a database, but that feels like overkill, since you'd then also need to implement an interface with which the folks at Three Aces could update the menu. After all, you don't want a phone call every time they want to raise prices! Plus, the goal here is to save time. An XML file, then, feels like the right choice for this menu; your site will simply read items from it. That way, too, the folks at Three Aces can pretty easily update their own menu themselves with any old text editor. Of course, they'll have to keep the XML well-formed, but that seems a reasonable price to pay for an otherwise free website!

Spend some time thinking about how best to represent this menu as XML, keeping these goals in mind:

☐ It must be easy for someone less technical than you to make changes to the menu. The XML should be straightforward to read and alter.

☐ You must somehow keep track of each item's category, name, price(s), size(s), and description, if any.

☐ You should avoid duplication of data. Just because Three Aces sells Tomato & Cheese pizzas in two sizes, that doesn't mean "Tomato & Cheese" needs to appear twice in your file!

☐ Your model should be extensible. If Three Aces eventually decides to sell medium pizzas, they shouldn't need to call you!

[†] `http://www.thecrimson.com/article.aspx?ref=526651`

Before deciding on a model, though, best to read on so that you know how your XML will be used. The overall design and aesthetics of this site are ultimately up to you, but we require that your site meet some requirements.

Feature Requirements

☐ Your site must not display Three Aces's menu on one huge page but, rather, allow customers to browse the menu by category. It is fine to display multiple (but not all) categories per page. **Spaghetti or Ziti** and **Home made Lasagna Ravioli or Manicotti**, for instance, sound like they belong on the same page.

☐ You need not convert Three Aces's entire menu to XML, lest tedium take the fun out of design; three items per category suffice, so long as those triples make clear your overall design. However, we suspect you'll enjoy your site more if you input more than three items per category!

☐ Customers must be able to add items to a "shopping cart" whose contents persist until the customers check out or close their browsers. Customers must also be able to update quantities and remove items outright (without, *e.g.*, having to change some item's quantity to 0).

☐ When customers are ready to check out, they must be informed of their order's total cost and asked whether their order is for pickup or delivery. If pickup, they should be prompted for their name and email address. If delivery, they should be prompted for their name, address, phone number, and email address. However, only orders over $20 should qualify for delivery! Upon submitting their order, whether for pickup or delivery, customers should receive a receipt via email.

☐ Three Aces should also receive an email each time an order is placed, detailing that order. Rather than spam the actual Three Aces, why don't you represent their email address with a constant, the value of which is your own email address.

☐ Your site should perform rigorous error-checking. Under no circumstances should we be able to crash your site or induce unreasonable behavior. Letting us input negative quantities so that Three Aces owes *us* money is not, shall we say, reasonable. We will bang on your code and try to find faults; do not let us succeed.

Technical Requirements

☐ Your site must live at `http://project1.domain.tld/`, where `domain.tld` is your own domain.

☐ Your menu must be called menu.xml, be stored in `~/public_html/project1/`, and be chmod'd `600`.

☐ All PHP files must also be chmod'd `600`.

☐ Any constants or configuration options (particularly ones that we might want to examine or alter during evaluation of your site) should live in a file called `config.php` in `~/public_html/project1/`.

☐ Via an `.htaccess` file, HTTP requests for `www.project1.domain.tld` should be redirected to `project1.domain.tld`.

☐   Your XHTML should be valid (or "tentatively" valid), unless some feature of your site requires otherwise (for the sake of some browser); explain in XHTML comments any intentional invalidities. Your XHTML should also be as pretty-printed as possible. Your CSS need not be valid.

☐   Your PHP must be extensively commented and be as pretty-printed as possible.

☐   You may use a WYSIWYG editor to generate XHTML and/or CSS that you would like to use in your site.

☐   If you integrate third-party CSS or JavaScript libraries (*e.g.*, YUI) into your project, cite their origin with comments.

☐   If you incorporate or adapt snippets of PHP code from the Web into your project (*e.g.*, examples from `php.net`), cite the code's origins with comments.

☐   If you incorporate images from the Web into your project, cite the images' with comments.

☐   Your website must appear and behave the same on at least two major browsers, namely:
   ☐ Chrome 2.x
   ☐ Firefox 3.x
   ☐ Internet Explorer 7.x or 8.x
   ☐ Opera 9.x
   ☐ Safari 3.x or 4.x

So long as your site meets the foregoing requirements, you are welcome to interpret this specification as you see fit. Imagine, perhaps, an ideal site for Three Aces. Then go implement that. Or, at least, as much as you can!

And don't forget about that bulletin board of ours!

Submission.

☐   Once done with your site, put together a readme at `http://project1.domain.tld/readme/`. Treat this readme as your opportunity not only to explain but to justify your design decisions. Tell us why you modeled your XML as you did. Tell us why you chose, say, select menus over radio buttons for some feature. Tell us with which two (or more) browsers we should evaluate your site. And give us an overall sense of how your site works (*e.g.*, tell us which files do what). But still be succinct; keep this readme to just a few paragraphs in length.

☐   By this project's deadline, submit your website by SSHing to your domain and executing the command below in order to submit the contents of your `~/public_html/project1/` directory.

```
submit project 1
```

Thereafter, follow any on-screen instructions until you receive visual confirmation of your work's successful submission. You may re-submit as many times as you'd like, but take care not to re-submit after the project's deadline, lest your work be deemed late.

Three Aces

1613 Massachusetts Ave
Cambridge, MA 02139
Btwn Mellen & Everett St

617 491-2884
617 491-2889

Pizzas
Sm/lg

	Sm	Lg
Tomato & Cheese	5.50	9.75
Onions	6.85	10.85
Peppers	6.85	10.85
Broccoli	6.85	10.85
Fresh Garlic	6.85	10.85
Mushrooms	6.85	10.85
Fresh Spinach	6.85	10.85
Anchovies	6.85	10.85
Hamburg	6.85	10.85
Pepperoni	6.85	10.85
Sausage	6.85	10.85
Meatball	6.85	10.85
Bacon	6.85	10.85
Ham	6.85	10.85
Olives	6.85	10.85
Grilled Chicken	7.95	11.80
Hawaiian	7.95	11.80
2-way Combo	7.95	11.80
3-way Combo	8.90	12.80
Extra Cheese	1.25	1.85

Speciality Pizzas
$9.80 Sm / $15.80 Lg

Three Aces Special
Mediterranean *Sliced Tomatoes, Olives, Spinach, Fresh Garlic, Mozzarella & Feta Cheese*
Vegetarian *Sliced Tomatoes, Onion, Peppers, Mushrooms, Broccoli, Mozzarella*
Meat Lovers *Pepperoni, Hamburg, Sausage & Bacon*
Bbq Grilled Chicken *Choice Of Vegetables*
Grecian Supreme *Grilled Chicken, Feta Cheese, Tomatoes, Kalamata Olives*

Special Dinners

Chicken Wing Dinner	7.25
Gyro Plate	7.25
Chicken Finger Plate	7.25
3 Piece Chicken Dinner	7.25
Cheeseburger or Chicken Burger Plate	5.25
Double-cheeseburger Plate	5.75
Chicken Kabob Plate *With rice, salad & pita bread*	7.85
Steak Tips Dinner *Served with side salad & french fries*	8.25
Fish & Chips Dinner *Served with side salad, french fries & tartar sauce*	7.35

All Dinners served with French Fries and Salad*

Side Orders

Onion Rings	2.60	2.95
French Fries	2.25	2.65
Spicy Fries	2.60	2.95
Chicken Wings		5.75

Buffalo Wings	5.75
Chicken Fingers	5.75
Mozzarella Sticks(7 Pieces)	4.50
Slice Cheese Pizza	1.65
Slice Pepperoni Pizza	1.85
Homemade Spinach Pie	3.10
Buffalo Fingers	5.75
Chicken Burger	2.75
Cheeseburger	2.75
Spanakopita	3.25

Salads
SM/LG

	SM	LG
Garden	3.50	4.50
Greek	4.50	5.50
Antipasto	4.50	5.50
Chef	4.50	5.50
Tuna	4.50	5.50
Grilled Chicken	4.95	5.95
Kabob Salad *With grilled Chicken & feta cheese*	5.45	6.45

Spaghetti or Ziti

With Sauce	5.40
With Sausage	6.45
With Meat Ball	6.45
With Veal	6.45
With Chicken Cutlet	6.45
With Mushrooms	6.45
A La Three Aces *Sausage, Mushrooms, Bacon & Ham Topped with Sauce & Mozzarella Cheese*	7.25
Eggplant Spaghetti or Ziti Dinner *With Mozzarella Cheese*	7.25

Home made Lasagna Ravioli or Manicotti

With Sauce	6.25
With Sausage	7.25
With Meatball	7.25
With Veal	7.25
With Chicken Cutlet	7.25
With Mushrooms	7.25
Veggie Lasagna	7.25

All Pasta Dinners Served with Garlic Bread and Salad

Homemade Calzones
$7.35-lg

Vegetarian
Sausage
Ham & Cheese
Chicken Cutlet
Grilled Chicken
Meatball
Grecian
Veal

Eggplant	
Steak	
Italian *All the above come with mushrooms, peppers& onions*	
Grecian *Fresh Tomatoes, Spinach, Feta*	

Wraps $4.95

Turkey Club Wrap *Turkey, Cheese, Lettuce, Tomato, Onion, Mayo.*
Chicken Cobb *Grilled Chicken, Bacon, Cheese, lettuce, Tomatop, Onion, Honey Mustard*
Greek Supreme *Feta Cheese, Black Olives, Lettuce, Tomato, Onion, Greek Dressing*
Crispy Chicken *Chicken Finger, Lettuce, Tomato, Onion, Honey Mustard*
Steak Wrap

Grinders
Sm/lg

	Sm	Lg
Meatless	4.50	4.95
Hamburger	4.50	4.95
Cheeseburger	4.75	5.75
Meatball	4.75	5.75
Sausage	4.75	5.75
American	4.75	5.75
Veal Cutlet	4.75	5.75
Hot Pastrami	4.95	5.95
Italian	4.75	5.75
Genoa Salami	4.75	5.75
Ham	4.75	5.75
Tuna	4.75	5.75
Roast Beef	4.95	5.95
B.l.t. *Bacon, Lettuce, Tomato*	4.75	5.75
Sliced Turkey	4.75	5.75
Three Aces Special *Turkey, Roast Beef & Bacon*	5.30	6.40
Cheese Steak	5.10	6.00
Onion Steak	5.20	6.20
Pepper Steak	5.20	6.20
Mushroom Steak	5.20	6.20
Special Steak	5.40	6.40
Steak Bomb *Each Additional Item on Steak Subs $0.25/ $0.40*	5.50	6.50
Pepper & Egg	4.50	4.95
Ham & Egg	4.75	5.75
Steak & Egg	5.60	6.50
Bacon & Egg	5.30	6.40
Chicken Cutlet	4.75	5.75
Eggplant & Cheese	4.75	5.75
Gyro On Pita		5.50
Grilled Chicken On Pita		5.25
Grilled Chicken Delight	5.50	6.50
Grilled Chicken Sub	5.25	5.85
Chicken Finger Sub	4.60	5.60