# CS174 Final Spring 2021

| |
|---|
| Name: |
| StudID: |

## Instructions:

1. This midterm is due 11:59pm PST, May, 2021.
2. To complete the final, print it out, fill in your answers on the final, and scan it back (or take pictures of the pages and make a pdf) into a file Final.pdf where the total size is less than 10MB.
3. If you don't have a printer, copy and paste each problem into a word processor document. Then after each problem write your solution. Make a less than 10MB Final.pdf file of the result and submit that.
4. Use the same submit mechanism as for the homeworks to submit your completed final.
5. Each problem on this final is worth the same amount (3pts).
6. If you have a question on the interpretation of a problem on the final, you can email me at chris@pollett.org.
7. Due to the coronavirus this is an open book, open internet final.
    a. What that means is that you can consult any static (on the order of static for weeks) source of information related to the final material.
    b. You cannot directly or indirectly ask another person how to do any problem off the final.
    c. To receive credit on problems that make use of your personal information, you need to have correctly filled in that personal information.
    d. When you submit your completed final, you are asserting all of the work in the final is your own.

1. Explain the mediating-controller MVC design pattern and give an example of code for each of its components. Here I mean the three main components. The code example can be minimal, but should be functional. Make sure the example is connected to something you intend to do when you graduate. (3pts - 1pt/component).

2. Give a DTD that might be suitable for tracking your music collection. Your DTD must have at least three tags (0.5pts). At least one tag must support the nesting of another tag within it (0.5pts). Your DTD should also have at least one entity and at least one tag should an attribute (1pt). Given an example document that conforms to this DTD and involves your favorite band/singer (1pt).

3. Give the commands to create a git repository named after your favorite reptile. (1pt). Give the commands to do three commits on this repository (say also what files you edited) (1pt), then give the command to make a patch from the last two commits (1pt) .

4. Describe each of the following website attacks as they might apply to a fan fiction web site for your favorite sitcom: (a) SQL Injection (1pt), (b) Click-Jacking (1pt), (c) XSS (1pt).

5. Show with code: (a) how to connect to a MySQL database in Node, (b) how to make use of logger middleware, (c) how to determine the value of a posted form variable in Express.

6. Write an external Javascript which when included into a document adds an event listener to each form on the document (1pt). When a form that is listened to is submitted, it should check each text field on the form to make sure that field does not contain you least favorite food before submitting (1pt). If a field does contain your least favorite food, an alert should be shown saying "Ick - I hate " + least_favorite_food and the browser should not submit the form (1pt).

7. Explain and give an example of the following CSS concepts (1pt each): (a) class selector, (b) pseudo selector, (c) relative positioning. Your examples should refer to the last four digits of your student ID.

8. Write a PHP program days.php that, when no request data has been sent, outputs an XHTML 5 page with a form that uses method GET (1pt). The form should have no action attribute and it controls should consist of a dropdown with options 1 through how many days old you are and a submit button (1pt). When submitted, the form should print the date selected in the format d-m-Y using the PHP date function (1pt).

9. Suppose you are developing a REST API for your BLOG website. Define (say what every parameter does and detail the response format and what an example response will look like) at least two methods in this API and give the REST urls for these methods (1pt/method). Give an example of how your API might be used in connection to JSONP (1pt).

10. Briefly explain how autoloading works in PHP (1pt). Describe the steps needed to get a project to work with composer (1pt). Give an example based on the homeworks you did this semester (1pt).