

Web-Oriented Programming  
CS215 Winter 2009 – Final (D. Hepting)  
April 23, 2009  
CL431 – 14:00-17:00

**PLEASE READ:** There are 120 marks available (and 180 minutes in which to complete the exam). The exam is closed book. You have been given 3 exam booklets: 2 to hand in and the other (optionally) for rough work (please return it if it is unused). On the booklets with your answers, fill in the fronts completely (except where noted). In the **FIRST** booklet, allocate  $\frac{1}{2}$  page for each response in Part 1 (for example, on the first page side you'll put questions 1 and 2 – even if you are not answering them). You'll have 1 page side leftover. In the **SECOND** booklet, answer questions in Parts 2 and 3. For Part 2, you may use 1 page side per answer. For Part 3, you may use 2 page sides per answer. You **DO NOT** have to fill the page side with your answers! Think quality over quantity. The only place where you should write on the exam is after Question 26. Please indicate (YES or NO) if you would like to have your code included in the version of the web-based participant pool management system that goes into use at the University of Regina and becomes available as open source. If you don't indicate a preference, your code *will* be included. When you have completed the exam, return this sheet tucked inside your exam booklet. If you follow all of these instructions, you will earn 3 marks (no part-marks awarded on these). Questions about exam questions will not be answered during the exam – note your assumptions in your answers.

Part 1 of 3 (Choose 15 of 20 x 4 marks = 60 marks. You must answer those marked with \*\*).

1. What are some techniques you can use to improve the quality of software that you write?
2. What is a servlet container?
3. What are SOAP, WSDL, UDDI? Add and define 2 of your favourite abbreviations or acronyms from this class to round out this list at 5.
4. What is the similarity between scenarios and test cases (written before coding)?
5. \*\* When writing a RESTful application, are cookies or sessions preferred? Why?
6. What role do users play in the construction of quality software?
7. When don't comments add value to code, and when (and how) do they add value?
8. What is "====" in javascript? How is it different from "=="?
9. \*\* What is AJAX and what is its key?
10. Explain the pseudocode programming process, and its value.
11. How can the eval function of javascript cause problems?

12. Is it good practice to use inline style sheets? Why?
13. What is DOM?
14. Where does XML come from? What do DTDs and schemas do for XML? Should one of them (DTDs, schemas) be preferred over the other?
15. \*\* What are the main http methods?
16. Discuss, with some specifics, how complexity, coupling, and cohesion are related.
17. Why was our project an XPRT system?
18. What is JSTL and why is it useful?
19. Compare and contrast server-side code versus client-side code.
20. \*\* What does it mean to program into a language?

Part 2 of 3 (3 questions x 10 marks).

21. Look at the following code and suggest improvements (each part worth 5 marks):
  - a) Identify 5 things to fix in this code, then *briefly* why and how to fix them.

```
void HandleStuff(CORP_DATA & inputRec, int crntQtr, EMP_DATA empRec,
    double &estimRevenue, double ytdRevenue, int screenX, int screenY,
    COLOR_TYPE &newColor, COLOR_TYPE &prevColor, StatusType &status,
    int expenseType)
{
    int i;
    for (i = 0; i < 100; i++ ) {
        inputRec.revenue[i] = 0;
        inputRec.expense[i] = corpExpense[ crntQtr ][i];
    }
    UpdateCorpDatabase( empRec );
    estimRevenue = ytdRevenue * 4.0 / (double) crntQtr;
    newColor = prevColor;
    status = SUCCESS;
    if (expenseType == 1) {
        for (i = 0; i < 12; i++ )
            profit[i] = revenue[i] - expense.type1[i];
    }
    else if (expenseType == 2) {
        profit[i] = revenue[i] - expense.type2[i];
    }
    else if (expenseType == 3) {
        profit[i] = revenue[i] - expense.type3[i];
    }
}
```

b) In the following 2 code snippets, what are the problems and how can the code be improved?

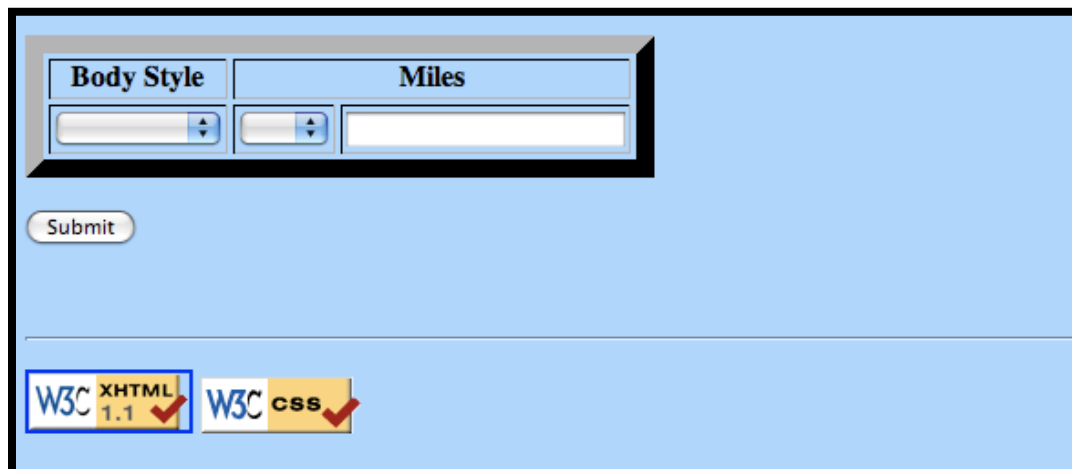
- `int result = RetrievePayrollData(data, true, false, false, true);`
- `CurrentFont.size = 16;`

22. When would you choose to write a java servlet? What are the steps necessary to write a servlet? How are requests and responses handled? Use an example from class to illustrate.
23. Consider the following 2 screenshots used in our discussion of database access. Discuss the various issues that are evident. Include Raskin's laws of interface design in your answer.



Please enter your query:

Reset Submit request



Body Style	Miles
<input type="text"/>	<input type="text"/>

Submit

W3C XHTML 1.1 ✓ W3C CSS ✓

Part 3 of 3 (2 questions x 15 marks).

24. How should we debug code for the web? What is working for and against us? Give specific examples of situations, tools, and strategies.

25. Discuss insights from your project:

- what went well and what didn't – from requirements gathering to integration?
- did you notice the time spent on design when you were coding?
- will we put Sona Systems out of business this year?
- is there anything you would have done differently?
- was the project wiki a valuable support – can you suggest improvements?

26. BONUS: (3 marks) What is the Boston Triathlon, as related in class?



I, \_\_\_\_\_ (print name), understand that the class project for cs215 may go on to be used at the University of Regina, and elsewhere (under an open source software license).

***YES, I AGREE*** to allow my code to be included \_\_\_\_\_ (signature)

***NO, I DO NOT AGREE*** to allow my code to be included \_\_\_\_\_ (signature)



That's it. Have a great summer.