

LBSC 690: Information Technology Final Exam (Practice)

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Exam Duration: Two hours.

Length: This paper has 5 pages including this cover page.

Authorised Materials: Examinees may use any online or offline resource they find themselves, including lecture notes, but may not exchange materials online during the conduct of the exam.

Submission Format: Write all of your answers into a text (or Word, or similar) file and email to wew@umd.edu at the conclusion of the exam. If you use a Word or similar non-text format, please save as PDF before sending. You may write programming files as separate files; please attach them to your email. *It is your responsibility to ensure all files are correctly sent.*

Clarifications: Examinees may seek clarifications on exam questions from the instructor. Please raise your hand and wait for the instructor to come to you. Please ask the question quietly; the instructor will determine whether the question and its answer should be shared with the examinees as a group.

Academic Dishonesty: Sharing materials on- or offline during the conduct of the exam constitutes academic dishonesty.

Advice to Examinees: Do not get bogged down in a single question; allow time to attempt every question. A partial answer is better than no answer.

Question 1:

Answer *four* of the following six questions:

a). If you enter the search “click here” into Google, you get the Adobe Acrobat PDF Reader download page as the first result. Why? [10 marks]

b). There is much talk these days of “digital convergence”, the trend for all varieties of media, and the activities that rest upon them, to converge on the one platform (the, often hand-held, “digital computer”). What is it about digital representation that allows this convergence (compared, say, to analogue representation)? [10 marks]

c). What are the three tiers of a three-tier architecture? Assign each of the programming languages PHP, SQL, and Javascript to the tier it is most closely associated with. [10 marks]

d). For each of these file types, say whether lossy compression can be usefully applied:

- A photograph
- A music file
- A text email
- Programming source code

[10 marks]

e). A common rule for image files is that if they start in a vector-graphics format (e.g. SVG), you should keep them in a vector-graphics format for as long as possible. Why? [10 marks]

f). A common term weighting scheme in text search is $tf * idf$. What do tf and idf stand for? What is the intuition behind idf ? [10 marks]

[40 marks in total]

continued . . .

Question 2:

a). Your library is setting up a new website. It will have five main sections, with multiple sub-sections and pages. Different librarians will write content for different sections, and new content and sub-sections will be added over time. A graphic designer will be hired to produce a design for the site. The library director proposes to have people write each page in HTML using notepad (to save money on software licensing). Is it a good idea to build such a site in static HTML? Why or why not? What other technologies could be used? Is the director right to be worried about software licensing costs? [20 marks]

b). A colleague mentions that they've heard on the radio that the internet is "running out of addresses". She wonders if this is because the big internet companies have bought all of the domain names. Is this why the internet is running out of addresses, and if not, then what is? How many public addresses (roughly) can the internet support, and what is the fundamental technical limitation that sets this limit? What steps are being taken to solve this problem, and how will they solve it? [20 marks]

[40 marks in total]

Question 3:

Complete *one* of the following two questions:

continued . . .

a). Develop a web page in HTML with a stylesheet (internal or external) in CSS. The web page should do the following:

- Have the title “Exam-Related Causes of Panic”
- Place the title in the browser title bar
- Place the title in large letters at the top of the page
- Display the image at the following URL: http://upload.wikimedia.org/wikipedia/en/0/07/Neuro_Panic_Disorder_Norepinephrine.png
- Display the explanatory text “Norepinephrine pathways in the brain” for⁴⁰ the image for the visually disabled
- List the following possible reasons for exam-related panic:
 - Forgetting the exam time
 - Forgetting the exam location
 - Forgetting your own name
- Set the page background color to red in CSS

[40 marks]

continued . . .

b).

Consider the following HTML page with an incomplete Javascript function:

```
<html>
  <head>
    <script type="text/javascript">
      function set_name() {
        /* Code goes here */
      }
    </script>
  </head>

  <body onload="set_name()">
    <h2>Hello , my name is <span id="name"></span>!</h2>
  </body>
</html>
```

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Write the content of the Javascript function, so that when the page loads, the following happens:

- The page asks the user "What is your name?"
- When the user types their name in, the page displays the user's name directly before the exclamation mark
- The user's name is displayed in italics

No other part of the page should be modified. (Hint: you don't have to use CSS to display the name in italics if you don't want to.)

[40 marks]

[40 marks in total]

[120 MARKS FOR EXAM]

Make sure you email your answers to wew@umd.edu.

end of exam