George Mason University

SWE 432 Design and Implementation of Software for the Web J. Offutt

**Final Exam, take-home component part 1**

Due 4 May, 430pm

Submit via dropbox request as specified below

**Rules**:

1. You must answer these questions individually, without any help
2. You may submit anytime between when the exam is distributed and the day and time it is due
3. You may submit answers as a text file, a PDF file, or a word document
4. You must include your name in your answers
5. Make sure that your responses are clearly labeled as to which question they answer
6. You may not share this exam with anyone but yourself—doing so will be considered an honor code violation and, as a maximum, dismissal from the program

Name:    

**I have not discussed this exam with anyone except the instructor, I will not share the exam with anyone else, and I will destroy all copies, both paper and electronic.**

Signature:    

Submit via the following dropbox request link:

**XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX**

Answer ten questions from the below list. Choose one sub-question from each list. You can add your answers inside this word document, or create a separate document. If you create a separate document, label your answers with the same numbers that appear on the exam. That is, label an answer to the “*7 plus or minus 2 rule”* question as “*2.2*” Each question is worth 1 point.

1. Answer one of three (1 point)
   1. Answer in **50 words or less**: We said that web applications have to be better than non-web software. Explain **why**.
   2. What is the difference between a *web page*, a *web site*, and a *web application*?
   3. What seven quality attributes did we discuss early in the semester?
2. Answer one of two (1 point)
   1. Answer in **25 words or less**: What is wrong with the term *user friendly*?
   2. Answer in **25 words or less**: Explain the 7 plus or minus 2 rule.
3. Answer one of two (1 point)
   1. Answer in **25 words or less**: Why shouldn’t we expect “users to come in through the front door”?
   2. Nielsen said that navigation is the worst and most common problem in web sites. Find a website that has **navigation problems**. Give the URL, and describe **exactly** what is wrong with the navigation. (You may **not** **use** Patriot Web, Blackboard, or Piazza as your website.)
4. Answer one of two (1 point)
   1. Answer in **25 words or less**: Give two suggestions for writing high quality HTML. You can suggest your own, or give suggestions from class.
   2. Answer in **20 words or less**: What is the difference between the *BOM* and the *DOM*?
5. Answer one of two (1 point)
   1. Answer in **25 words or less**: Nielsen gave a protocol for ranking the **relative severity** of usability problems. What three factors made usability problems severe?
   2. Find a website that has a poorly designed **internal search**. Give the URL, and describe **exactly** what is wrong with the search. (You **may** **not** use Patriot Web, Blackboard, or Piazza as your website.)
6. Answer one of three (1 point)
   1. Answer in **25 words or less**: Explain the difference between HTTP GET requests and HTTP POST requests.
   2. Answer in **25 words or less**: What does *separation of concerns* mean?
   3. Answer **in 25 words or less**: Describe the benefits of a *layered design* pattern.
7. Answer one of three (1 point)
   1. How can a servlet provide the same behavior for both GET and POST requests? Give three mechanisms, one sentence per mechanism.
   2. Answer in **25 words or less**: When is the servlet init() method called? When is the servlet destroy() method called?
   3. Answer in **50 words or less**: Explain how *forward* differs from *redirect* in web apps.
8. Answer one of three (1 point)
   1. Answer in **25 words or less**: Give one *excise* task and one *revenue* task that you did in the last 24 hours.
   2. Nielsen said that dialog boxes are often poorly designed. Find a web app that has a poorly designed **dialog box**. Give the URL, describe **exactly** what is wrong with the dialog box, and suggest a better design. (You **may not** use Patriot Web, Blackboard, or Piazza as your website.)
   3. Find a web app that has a poorly designed **error** **message**. Give the URL, describe **exactly** what is wrong with the error message, and suggest a better message. (You **may not** use Patriot Web, Blackboard, or Piazza as your website.)
9. Answer one of two (1 point)
   1. Write an XML message that is correct with respect to the following schema:

<xs:element name="**store**">

<xs:complexType>

<xs:sequence>

<xs:element name="**storeName**" type="xs:string" minOccurs="1" maxOccurs="1"/>

<xs:element name="**products**" type="productType" minOccurs="1" maxOccurs="unbounded"/>

<xs:element name="**age**" type="xs:nonNegativeInteger" minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:complexType>

</xs:element>

<xs:complexType name="**productType**">

<xs:element name="**item**" type="xs:string" minOccurs="1" maxOccurs="unbounded"/>

<xs:attribute name="**number**" type="xs:nonNegativeInteger"/>

</xs:complexType>

* 1. Answer in **50 words or less**: What is a *session* and how does it affect state handling?

1. Answer one of three (1 point)
   1. Answer in **10 words or less**: What essential ability does Ajax interaction provide to web application developers?
   2. Answer in **25 words or less**: How does Ajax affect **security**?
   3. Answer in **25 words or less**: Explain the difference between *authentication* and *authorization*. How are they related?