CIS 443/543 User Interfaces
Exercise #5
(Team-work: Presentation, Written Report, Graded)
Due: Tuesday, Feb. 17 at 10am

Introduction and Motivation
The fifth step in the scenario-based development process is called *usability evaluation: analytic methods* (chapter 7.1-7.2, 7.4). Its purpose is to evaluate the user's interaction by applying techniques to the interaction design products (chapter 5). These techniques are known to aid discovery of usability problems without collecting empirical information from actual users. The goal is to evaluate usability early in the formative stages of design before software implementation has occurred. Usability evaluation with analytic methods is followed by *user evaluation: empirical methods* (chapter 7.3-7.4) with usability testing.

      Analytic usability evaluation methods include *claims analysis*, which we have been doing through all our design stages, *usability inspection* and *user modeling*. Usability inspection has designers or usability experts examine in detail the screen mockups and user interaction network (Exercise #4) to check for conformance to usability guidelines. Guidelines can come from many sources. We will be using the Nielsen guidelines (see section 7.2.1) to evaluate overall usability. We will also use the guidelines for visually impaired Web users that are described in Reading #2 to evaluate your mockups for accessibility. Another method is user modeling. Rosson and Carroll describe the use of GOMS. We will use a model to predict skilled performance time called the Keystroke Level Model (KLM). KLM is derived from GOMS and described in Lecture 7. KLM is usually applied to the storyboards or interaction network for the interaction design scenarios (Exercise #4).

      After evaluating your design for usability using analytic methods, you may want to change your design specifications to improve usability or at least be aware of where a problem might occur with real users. The next step is to implement in software prototypes of the design that will be evaluated with usability testing methods.

      NOTE: The text website has several case studies illustrating usability inspection. Look under "interaction design: envisionment". See
http://ucs.cs.vt.edu/default.asp?button=2

Assignment
1. Read Chapter 5 in the Rosson and Carroll text.
2. Read Reading #2 "Bridging the Gap between Accessibility and Usability".
3. Using the on-line election problem, prepare a team presentation and written report.

Presentation (5 minutes/group)
1. Pick one *interesting* usability problem from Question 2, 3 or 4 Written Report (see below) that your group discovered doing this exercise.
    a. Describe the usability problem and the guideline or KLM computation that lead you to change the interface.
    b. Show the interface BEFORE you discovered the problem. Use the mockups and a walkthrough of the mockups or interaction network to describe the issue.
    c. Describe the possible alternative changes you considered.

    d. Show the interface AFTER you discovered the problem. Use the mockups and a walkthrough of the mockups or interaction network to describe the issue.

<u>Written Report</u> (16-20 pages)

CAUTION: These questions should be done in sequence!

1. Provide (a) your interaction design scenarios for your core groups of stakeholders; (b) your storyboards; and (c) your user interaction network from Exercise #4. Be sure we have mockups of all the needed screens. This will be the starting design specification from which you will do the analytic usability evaluation. (2-3 pages)

2. Using the Nielsen guidelines, do a usability inspection of your proposed design described in question 1. Describe any usability problems that you discover. Describe how you will improve the usability by changing the design. Provide any revised mockups, storyboards, and user interaction network. Note, only give me the revisions such as annotations on the mockups. (5 pages)

3. Using the accessibility guidelines of Theofanos & Redish (Reading #2), do a usability inspection of your proposed design as revised in question 2. Describe any accessibility problems that you discover. Describe how you will improve the accessibility by changing the design. Provide any revised mockups, storyboards, and user interaction network. Note, only give me the revisions such as annotations on the mockups. (2-3 pages)

4. Using the KLM technique, estimate how long it will take a person to vote using your proposed design. Make the following assumptions:
   a. they are already registered;
   b. they know exactly who and what to vote for;
   c. they don't use help;
   d. they have used your system before and know where things are;
   e. they don't make any errors;
   f. it is the General Election November 7, 2000 and that they are voting for President, Vice President, Congressional Representative for their district, Oregon Secretary of State and 4 initiatives. (For more information, see the website: http://www.sos.state.or.us/elections/nov72000/nov72000.htm);
   g. system response time is instaneous (!!!).

   Discuss how to improve the time to perform this task by changing your design for this type of skilled user as opposed to the first-time user. Discuss any other changes that you see might make it faster for people to vote using your Web pages. Make any changes to mockups, storyboards, user interaction network and interaction scenarios. Note, only give me the revisions such as annotations on the mockups. (2-3 pages)

5. Be sure and provide the COMPLETE final set of your revised mockups, storyboards, user interaction network and interaction scenarios that reflect your final design. This will be the "blue-print" for implementing the software prototypes. (5 pages)

6. Each member fills out a Group Membership Evaluation (GME)

<u>Grading</u>

You will be graded on (1) completing all the parts of the assignment, (2) correctly applying the methods and techniques, (3) having the content make sense and be representative of the real world, and (4) the quality of your presentation and writing—communicating ideas clearly, concisely, completely, and correctly (spelling and grammar).

See the Grading Sheet for Exercise #5.