Midterm Exam Preparation Handout

ENGR3220 Human Factors and Interface Design

Spring 2005

Exam Format

The exam will be available on Monday 3 April at or before 4pm. It will be due back to Holly Bennett in AC360 by 10am Friday 7 April. However, it should be treated as a (self-administered) in-class examination rather than a take-home; it is intended to be completed in single sitting lasting approximately 2 hours. You may take the exam at a time and place of your convenience. (One of the two class sessions on 4/3 or 4/6 will be available for you to use if you so choose.)

Please document the time at which you began and ended your session. You may give yourself additional time, within reason, to complete the work, but you should not take the exam over several sessions or use more than double the allotted time.

This exam is not intended to be an open book exam – it should test what you actually know, not how fast you can look things up – but you may make limited use of written resources to jog your memory provided that you carefully and completely document each instance of this use. (As a rule of thumb, no additional time is provided for use of resources.)

The actual exam will consist of a mix of short answer questions and a much smaller number of open-ended design and design evaluation questions. Samples of both types are provided below.

Coverage

This exam is comprehensive and covers everything that we have done in this class up to 1 April. It is intended to focus on those aspects of the course that are not well tested in the project, especially some of the conceptual aspects of the readings to date, and secondarily to provide an individual assessment of diagnostic and design skills.
Practice Questions

The questions below are meant to be representative of the material that will appear on the exam. They themselves will probably not appear on the exam and the format of exam questions may differ. If you can answer questions like these you should be well-prepared for the exam.

Short-Answer Questions

1. Briefly describe the concepts of affordances and mental models. How do they help explain how people think about their interactions with objects in the world?
2. Give an example of a mapping from controls to behavior in an interface or artifact.
3. Describe a significant difference between user-centered design and standard software engineering practice.
4. List at least two techniques for "getting to know" the users of an interface? (Not including formal user studies.)
5. Explain the use of grouping in interface layout.
6. Name a way that color can be used in an interface in a useful manner (as opposed to only decorative or aesthetic).
7. Why do we say both "The user is always right" and "The user is not always right" when discussing design and design guidelines?
8. We can’t measure user friendliness. As a result this concept is not all that useful when designing interfaces. Instead we identify specific things about the interface that we can measure that relate to the effectiveness and success of the product. Name at least three specific attributes that have measurable quantities that help determine interface’s effectiveness.
9. Name two current common user interface practices for providing error messages or error corrections that really should not be used.
10. Consider the user interface of a standard web browser. Describe the ways it uses consistency in design for helping users following hyperlinks.
11. Why is it a good idea to separate the content of the user interface from the display characteristics? How is this done?
12. Name three advantages of low-fi prototyping over hi-fi prototyping. Name two disadvantages.
13. How are severity ratings computed and used in heuristic evaluation?
14. Describe a situation in which a slower response time than what the system is capable of supplying might be preferable to the faster response time. Explain your answer.
15. Aging users are a growing proportion of computer users, and some developers of word processors see an opportunity to provide a special version for these users. Critics think that the current Word 7.0 in Windows is adequate for these users and the costs of a special version are not warranted. They have come to you to help design and test a special version for elderly users.

- List three possible design changes you would make for elderly users and justify them.

- Choose one of these design changes for empirical evaluation and determine if these changes bring greater benefits for elderly as compared with benefits for other users. Design a formal experiment by doing the following:
  - Specify the independent variables, i.e., what intrinsic variation you are looking at, and the dependent variables, i.e., what “effects” you are looking for.
  - State the hypotheses being tested and the results you expect to find.
  - Do the experiment design. This means, for the independent variables (also known as factors), decide on the levels for each factor – what groups you’ll test -- and decide which aspects will be tested by within-subjects versus between-subjects design as well as the per-subject (blocking of iterations of) trials.

16. The bicycle gearshift redesign question at http://www.sims.berkeley.edu/courses/is213/s05/assignments/bicycle-question.html

17. Choose one of the other groups’ class projects. Read the descriptions of their project goals and the interviews they conducted for their needs assessment. Based on this, draw up a task table that summarizes the tasks they should pursue, with importance priorities.