

Good Exam Questions
CS 443/543 - User Interfaces
A.Hornof - 10/26/23

The Exam will cover:

1. All materials covered in lectures, quizzes, and projects
2. The following reading from Canvas. All are PDF files.
 - Cooper 1 - Why Digital Projects Fail
 - HTA_Materials
 - Rosson 2 - Analyzing Requirements
 - Rosson 5 - Interaction Design
 - Sharp 1 - Usability Goals
 - Sharp 2 - The Design Process
 - Sharp 8.4 - Interviews
 - Sharp 8.6 - Observation
 - Sharp 12 - Prototyping

When taking the exam, please...

- 1. Define all acronyms at their first occurrence in your answer.**

For example, given the question: “What is HCI?”

Good: “*Human-computer interaction (HCI)* is a field of study that examines how people...”

Bad: “*HCI* is how humans interact...”

- 2. Do not use a term in its definition.**

Good: “Interaction design is the process of *evaluating alternatives* for the *dynamic* aspects ...”

Bad: “Interaction design is the process of designing how a person will interact ...”

- 3. When defining terms, be sure to say what something is before providing additional details.**

Good: “HCI is a *field of research and practice* that examines how people ...”

Bad: “HCI is *how* humans interact...”

The instructor will not answer any questions that you may have during the exam. If something is unclear, please just do the best that you can.

You may not refer to any media or materials other than your brain and the exam. Any evidence of academic dishonesty will be taken seriously. You may not give or receive aid on the exam. If it is determined that you cheated then you will fail the class.

A general suggestion for studying: You should be able to take any two random ideas, concepts, or terms from the materials, and explain how they relate. Midterm questions will likely require you to do this.

Cooper 1 - Why Digital Projects Fail

1. In Chapter 1 of *About Face* by Cooper et al., the authors give four main reasons why digital products fail. What are those four reasons?

2. Consider the new UO CS website that launched on 12-1-2022, which, compared to the previous CS website, makes it harder for students find the “Prerequisite Override Request Form”.

Provide three possible explanations, specific to this website, to explain why it got harder for students to use the website. Each reason should relate to one of the following three reasons why digital products fail (from Cooper et al. *About Face*.) Each explanation should be specific to UO CS website, and the people likely involved in building that specific website.

1. Misplaced priorities on the part of the management and development teams.
2. Ignorance about real users and what they need.
3. Lack of a design process that permits knowledge about user needs to be gathered, analyzed, and used to drive the development of the end experience.

“Hierarchical Task Analysis”

1. What is HTA?
2. What is a task?
3. HTA addresses what shortcoming in traditional time and motion studies?
4. What is the role of the “plan” in the HTA? Where does it appear in a diagram? What are the three common types of plans discussed in the reading?
5. To what level of detail should you take an HTA?
6. What is the value in carrying out an HTA as opposed to simply listing the sequence of steps that a person needs to take to accomplish a task, such as in a flowchart?
7. How is HTA useful for building easy-to-use, easy-to-learn, and useful computer systems?
8. What aspects of doing a task is HTA good at representing? What aspects is HTA *not* so good at representing?

Analyzing Requirements - Rosson & Carroll Chapter 2

1. What is requirements analysis?
2. Work can be characterized as having three dimensions: activities, artifacts, and social context. Describe each of these. Why is it important to consider each in the design of a user interface? (pp.38-39)
3. What is hierarchical task analysis (HTA)? (pp. 39-40)
4. Which of the three dimensions of work are best captured by HTA? Which are not so well captured by HTA?
5. What is ethnography? (pp. 41-42)
6. What are stakeholders? Why is it important to get all stakeholders involved in the requirements analysis phase of a system design? (pp. 43-44)
7. What is “tacit” knowledge? How can you get it from someone? (p.44)
8. What is a field study? What is the goal of a field study? What kinds of data should you collect in a field study? What kinds of analyses would be useful to conduct? (pp. 51-64)
9. When interviewing a user or potential user of a system, why is it sometimes useful to start the interview with open-ended questions? What is an example of an open-ended question? An example of a question that is not open-ended?
10. What are hypothetical stakeholders? (Note: They are also known as personas.) Why is the role of hypothetical stakeholders in a design process? (pp. 66-67)

11. In scenario-based design, a “claims analysis” is a consideration of design tradeoffs, a sort of cost-benefit analysis. Why is a consideration of design tradeoffs important in a design activity? (pp. 72-75)

Interaction Design - Rosson & Carroll Chapter 5

1. What is interaction design? Why is it difficult to represent interaction design? What are three different ways to represent an interaction design?
2. What are the seven stages of action? (Figure 5.1 on p. 160)
3. What is the “gulf of evaluation” and the “gulf of execution”? How can an interface reduce these “gulfs”?
4. What is an affordance? What is the best way to figure out if something that you think is an affordance is really an affordance?
5. What is a direct manipulation interface? What is a command language interface? What are two advantages of direct manipulation over command-based interaction? Of command-based interaction over direct manipulation? Give an example of a task for which it would be best to provide a direct manipulation interface and a task for which it would be best to provide a command based interaction. (pp. 161-163)
6. What is an action sequence? (pp. 164-171) How does a user put together an action sequence? What is the relationship between planning an action sequence and HTA?
7. What is a chunk? (p. 166; and slides)
8. What are keyboard shortcuts? How are they useful? How are they not so useful? (p.177)
9. What is a storyboard? (p.190) What aspect of a user interface does a storyboard help to convey?
10. Name and briefly describe the two basic types of user errors. Which are more common for novices? Which are more common for experts? Give a specific example of each, and provide a general design guideline for minimizing each type of error.
11. What is a user interaction “mode”? Are modes generally considered to be a good or bad idea in user interface design? Why? Give two examples of when an interaction mode would be a good design decision and explain why.

Sharp 1 - Usability Goals

1. Sharp et al. (2019) *Interaction Design*: identifies six “usability goals”. Name each of them, and define each of them briefly, without using the goal that you are defining.
2. Define each of the following six characteristics of usability, without using the characteristic that you are defining in your definition of that characteristic: Effectiveness, efficiency, safety, utility, learnability, and memorability.
For each characteristic, provide a real-world example. Your example should specify the task that the user is trying to do, the interface they are using, and a specific detail of that interface that helps it to have that characteristic.
3. Describe each of the following design principles: Visibility, Feedback, Constraints, Consistency, Affordance. Provide a specific example of a specific user interface having, or not having, each design principle, in the context of a user trying to do a specific task.

Sharp 2 - The Design Process

1. Draw and explain the “Double Diamond of Design”.
2. Why is the “Double Diamond of Design” useful in user interface design?
3. How does the “Double Diamond of Design” relate to Projects 1 and 2?
5. According to Sharp et al. (2019) *Interaction Design*, what are the four basic activities of interaction design?
5. Explain what occurs in each of these four activities of interaction design. (Do not use the name of an activity to define it.): Discover Requirements, Design Alternatives, Prototype, Evaluate.
6. Why is it that you cannot always discover what a user’s “needs” by just asking them “What do you need”?

Sharp 8.4 - Interviews

1. Describe a structured versus an unstructured interview. When is it appropriate to use each?

Sharp 8.6 - Observation

1. What are the nine things specific that some experienced observers pay attention to when conducting observations in the field, as part of gathering the requirements for a user interface.
2. What is the difference between a *passive* observer and a *participant* observer? When is each most appropriate?
3. What are some of the downsides of being a *participant* observer?
4. What are three benefits of having multiple team members observe the same activity?
5. Is ethnography closer to *passive* observation or *participant* observation? Explain.

Sharp 12 - Prototyping

1. What Is a Prototype?
2. Describe each of the following types of prototypes, and give a specific example of each: Low-fidelity prototype, high-fidelity prototype, storyboard, paper prototype.

MIT Lecture on Paper Prototyping

at http://web.mit.edu/6.813/www/sp17/classes/08-prototyping/#paper_prototypes

1. What is the advantage of hand sketching prototypes rather than generating them with a computer-based drawing tool?
2. Can you conduct a valid user observation study of a paper prototype if your prototype includes placeholders such as “Menu Item”, “Menu Item”, or nonsense words instead of the actual text that would be used in the actual system? Why or why not?
3. What is the difference between a sequence of hand-drawn screenshots and a paper prototype?
4. What is the value in creating *more than one* paper prototype, each for a different version of the system?
5. Describe the “computer” that is used to run a paper prototype.

User Observation Studies

Rosson 7 - Evaluation (through measures).pdf

Sharp 14 - Evaluation (through measures).pdf

1. What is the best way to test the usability of a user interface?
2. What is the difference between formative and summative evaluation?
3. What are the two classic objective measures in human performance studies?
4. What is the “think aloud” protocol? When would you use it? When would you specifically not use it?
5. What is “storefront testing”? Give an example of a specific system that would be good to test in this manner, and a specific system that would not be good to test in this manner.
6. A user observation study generally looks for a cause and effect relationship between A and B, to measure the extent to which A causes B. What are A and B ?
7. What are common independent and dependent variables in a user observation study?
8. A study reports that people complete tasks faster with Interface A than with Interface B. The study presents accurate statistics that show the difference is real. Is Interface A better than Interface B? Explain.
9. Why might you care about how quickly people can do a task using a user interface?
10. Does task time matter for activities like online social networking or listening to music? Why or why not?
11. What are “within-subject” and “between-subject” designs? What are the benefits and drawbacks of each?
12. Why do psychology experiments explain (a) how participants were recruited, (b) the instructions that they received, and (c) how they were compensated for their time in the experiment?
13. In the context of experimental design, what is validity? Internal validity? External validity?
14. Identify five threats to validity that should be considered when conducting a user observation study (a) in a lab (b) in the real world. For each threat, explain something that you could do to reduce the threat.
15. How do you quantitatively measure the validity of an experiment?
16. What is “informed consent”? What must be communicated when getting informed consent?
17. What are some of the steps in Apple’s “Guidelines for Conducting User Observations”?