Name (print): ________________________________

- **INTEGRITY:** By taking this exam, you pledge that this is your work and you have neither given nor received inappropriate help during the taking of this exam in compliance with the Honor Code of Emory University. Do NOT sign nor take this exam if you do not agree with the honor code.

- **INSTRUCTIONS:**
  - Keep your eyes on your own paper.
  - Do your best to prevent anyone else from seeing your work.
  - Do NOT communicate with anyone other than the professor/proctor for ANY reason in ANY language in ANY manner.
  - Do not use notes, books, calculators, etc during the exam.
  - Turn all mobile devices off and put them away now. You cannot have them on your desk.
  - Write neatly and clearly. What I cannot read, I will assume to be incorrect.
  - Academic misconduct will not be tolerated. The penalty for violating any of the above policies or other misconduct will be a zero on this exam. Other disciplinary action as deemed appropriate by the Emory Honor Council may also be applied.

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_I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Emory community. I have also read and understand the requirements outlined above._

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1. (1 point) What is the name used to identify all of the following fonts?

Helvetica
Avant Garde
Computer Modern

**Solution:** Sans Serif fonts

2. (1 point) What does IRB stand for?

**Solution:** Institutional Review Board

3. (1 point) True or False: All of the techniques used during summative evaluation can also be used during formative evaluation.

**Solution:** False

4. (2 points) What is the difference between qualitative and quantitative evaluation?

**Solution:**
- qualitative: subjective
- quantitative: objectively measurable

5. (2 points) Why might a computer scientist **not** be the best person to conduct a Cognitive Walkthrough.

**Solution:** The technique assumes knowledge of cognitive psychology which a computer scientist (probably) won’t have. Note that’s it not enough to say “computer scientists aren’t typical users.” That’s true, but neither are cognitive psychologists. It’s a training/knowledge issue rather than what group is more like a “typical” user.

6. (2 points) Video or audio recording a usability session has some positives and some negatives. One positive is that recording is a way to ensure that no details are missed in a usability study. List one potential **negative** of video or audio recording.
Solution: difficult to analyze/transcribe
requires extra equipment to coordinate
can be hard to sync with other forms of data

7. (2 points) Besides cost and time, what is one **disadvantage** of high-fidelity prototypes?

Solution: Users may get bogged down in “look and feel” or details.
Users less likely to critique something they perceive as a “finished product”.
Can’t test as early, so go farther in development cycle before testing.

8. (2 points) What are two (of many) aspects of human subject research that the IRB is responsible for regulating?

Solution: informed consent
participant data confidentiality; data storage
safety/harm to participants
compensation
withdrawal from study

9. (2 points) What is the difference between “help” and “documentation?”

Solution: help: problem oriented and specific
doc: system oriented and general

10. (2 points) What is the purpose of having usability participants sign an informed consent form?

Solution: Serves to document consent for both research and participant. Note:
wasn’t enough just to talk about why informed consent was required. Had to answer
why participants sign form.

11. (2 points) List two uses of color in an interface.
12. (3 points) What is the critical distinction between a think-aloud observational evaluation versus a cooperative/co-discovery evaluation? Give two reasons why you might choose a cooperative evaluation over a think aloud.

**Solution:** co-discover/cooperative: participants paired with someone else to talk to rather than just talking aloud to the air.
Can help participants feel less self-conscious
Participants have someone to bounce ideas off of
More natural.
Can evaluate two participants at once instead of just one.

13. (4 points) Explain why the “Wizard of Oz” technique is useful in prototyping user interfaces. Give an example of a prototyped interface in which the Wizard of Oz technique might be useful.

**Solution:** Allows us to simulate complex, back-end functionality (via a “man behind the curtain”) even if code isn’t ready yet. Removes errors because of perfect human recognition from experimental design.
Any sort of interface which needs recognition capabilities is a good candidate for a WoZ technique.
14. (4 points) Carrie is a novice web designer working with a new web development application for the first time. The application has a design mode and a test mode; users can only upload files to a live server when in test mode. When Carrie is done with her website, she tries to upload the files to the live server while in design mode and receives the following error message: “Error: Cannot update the live server.” What is wrong with this error message and how would you improve it?

Solution: Error message isn’t descriptive enough. Doesn’t make any reference to modes of operation which is source of error. Application shouldn’t allow you to attempt uploading if you’re in test mode. Application could provide better text/description of error. E.g. “You cannot update the live server while in test mode. Please switch to design mode.”

15. (4 points) In your own words, define horizontal and vertical prototyping. Give an example of a design situation in which one approach would be more appropriate than the other.

Solution: Horizontal: covers a large portion of the interface, but doesn’t go in-depth on many (if any) components. Vertical: limited coverage of entire interface, but what is implemented is done in full detail. If you want to make refinements to only a particular portion (such as just the menu system) of an interface while leaving the rest of the interface as is, you would use a vertical prototype on just the menu system.
16. (4 points) In designing icons, we talk about the use of a “graphics alphabet.” Give an example of a graphics alphabet and explain how it exemplifies a graphics alphabet. You may supplement your answer with drawings/sketches if you feel that it adds to your answer.

**Solution:** Graphics alphabets are primitive components which can be combined in many different configurations to yield a set of icons which encompass many more possibilities than any of the individual pieces. In the example below, we use several primitives which combine to yield different icons with specific meanings. Analogous to letters combining to form words which have meaning.

![Graphics alphabet primitives](image1)

Figure 1: Graphics alphabet primitives

![Icons made with graphics alphabet primitives](image2)

Figure 2: Icons made with graphics alphabet primitives
17. The following is a transcript from an audio recording of a usability session between Jim (the researcher) and Susan (a participant).

Jim: Hey, Susan. Thanks for coming in today. Ready to get started?
Susan: Sure.
Jim: Ok, your task is to use this interface to enter a purchase order. Tell me what you’re thinking each time you do something.
Susan: Ok. Ummm, I think I’d start by...
Jim: [interrupting and pointing] Just click on that menu, right there.
Susan: Oh. Ok. So in this menu, I’d choose this thing that says ‘PO’
Jim: That’s not right! Why would you do that? Everyone knows ‘PO’ stands for Post Office. That’s for shipping packages. You’re supposed to be looking for Purchase Orders. That’s funny! I’m totally going to tell all the guys about your answer over drinks tonight.
Susan: That’s not very nice. I don’t think I’m interested in doing this anymore.
Jim: Oh, come on. I was just kidding. You can’t quit now! I need to run some more participants to make sure we’ve got this interface right.

(a) (1 point) What evaluation technique is Jim attempting to use?

Solution: Think aloud

(b) (2 points) List two ways Jim is making mistakes in his use of the evaluation technique you listed in part (a).

Solution: Evaluating user not interface (“that’s dumb, etc”) Leading/interfering with user. (“click here, etc”)

(c) (3 points) List three different ethical violations that occurred in this scenario.

Solution: threat to breach confidentiality (telling guys after work)
no informed consent
not letting user quit when they want to
not informing user of recording
18. (6 points) Cognitive Walkthrough is considered a “discount formative evaluation technique for learnability.” Discuss the terms “discount,” “formative,” and “learnability” in relation to Cognitive Walkthrough. In other words, what about a Cognitive Walkthrough makes it these things?

**Solution:** Discount: no users or complex equipment involved. Less time and resources make it cheaper than many other eval. techniques.

Formative: Can be used before design is fully implemented. Need only low fidelity prototype or textual description of prototype. Since used early in process can lead to more change in later versions.

Learnability: CWs revolve around building believability story of user’s interactions as they explore interface. Since exploration is highly related to ease of learning, this technique is most likely to lead to insights about the learnability of the interface.
19. (2.5 points (bonus)) Write a question about something from the material for this test which you studied but was **NOT** covered on this exam. The question must be of appropriate level/difficulty to receive credit. (No fill in the blanks, multiple choice, true/false, etc.)