This is a closed book, individual test. You are not allowed to use your notes, texts, or laptop computers. **You have eighty minutes for this exam; there are eighty points total.** Use your time accordingly.

Before you begin, **write your name on every page!** You will lose 1 point if you do not do this.

*If you find a question ambiguous, document the ambiguity.* Indicate the way you interpreted the question in a set of separate sentences next to the question. The questions on the exam are not intended to be ambiguous, but sometimes another meaning is interpreted by the examinee that we did not take into consideration.

**Part I: General HCI Questions (25 points)**

1) The "Start" button in Windows is located by default at the bottom left corner of the screen. How might you make accessing the "Start" button faster? What is the name of the principle you are relying on? What does that principle say? [3 points]

2) Who takes on the role of "apprentice" in a contextual inquiry and what is the reason for using the "master/apprentice" methodology? [3 points]

3) Explain why the iterative user interface design process does not fit well into the traditional "waterfall" model of software engineering. [2 points]
4) What is a conceptual model? [2 points]

5) What happens when the designer's conceptual model does not match the user's conceptual model? [2 points]

6) A good task description for use in task-centered user interface design (pick the two answers that best complete the sentence) [2 points]:
   a) lists the exact steps required to accomplish the task on a specific user interface
   b) uses specific, realistic examples
   c) describes tasks that are complete and common
   d) should describe the hardest tasks that a user might run into
   e) should be finalized prior to carrying out a contextual inquiry

7) A verbal protocol [3 points] (pick the one answer that best completes the sentence):
   a) is a way to transmit audio packets over a network without any losses due to transmission failure or congestion.
   b) is used in usability studies when the participants are asked to speak about what they are doing or thinking as they perform a task.
   c) is a way to study the usability of voice-based user interfaces.
   d) should always be used when trying to obtain bottom-line, quantitative usability metrics, such as time on task.

8) Give three reasons why the following story does not describe an effective team (as defined in the article *Discipline of Teams*) [3 points, 1 point each]:

Part I: General HCI Questions (25 points)
Aaron manages the development group at Anon Studios. It's a small group of five people, so he maintains close contact with its members — they all report to him. It's his responsibility to make sure that the group lives up to the company motto "more brains, more sales." He's always checking with marketing to check the sales performance of their products to gauge which direction to move in next. Aaron comes up with new ideas, and at the group meetings he assigns a different idea to each of the members of the group to develop further. After getting a report back from each member, he decides which idea is best to pursue as a project. Aaron then breaks up the project so that each member has a deliverable.

9) What are three advantages that low-fidelity prototyping has over high-fidelity prototyping? What are two disadvantages? [5 points, 1 point each]

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Part II: Heuristic Evaluation (15 points)

Professor Landay's dog Lucky decided to help out and design the CS160 Questionnaire. You need to clean up after Lucky, so to speak. Apply Heuristic Evaluation to this small, but flawed, piece of web interface. Describe seven usability problems in the online form. Label each violation with a number on the figure and make a list of violations. For each problem, you must discuss which guideline is violated and why. You should also suggest a solution for each of these problems. Use Nielsen's second set of heuristics (attached at the end) to label each violation. Remember to list each violation separately. (Remember: If the same violation occurs in multiple places, it is still one violation.)
Part III: Task Analysis (20 points)

The Berkeley Children's Museum would like a computer kiosk that teaches visitors about recycling. **Visitors to the museum are mostly five- to eight-year-old children and their parents.** While some kids may be computer savvy, this will be the first time many of the kids have used a computer. The kiosk should: 1) give kids some background knowledge on the environment; 2) teach them why they should recycle; and 3) give them and their parents some functional information about what can/can't be recycled in Berkeley, how it has
to be separated, and when recycling gets picked up at their address.

**Ask and answer five typical task analysis questions** about the recycling kiosk. Your answers to these questions should come directly from the above assignment and logical inferences about the assignment. Answers should be specific and detailed.

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**Part IV: Web Design Patterns (10 points)**

For each of the following web pages, identify two web design patterns that are best applied on the page. For each pattern, list its name, explain how the pattern is applied, and identify where it is applied.
Part IV: Web Design Patterns (10 points)
Part V: Evaluation (10 points)

A design team has two ideas (A & B) for a training interface for novice users of an electronic funds transfer application (millions of dollars will be transferred each day by each user of this program). To resolve the dispute, they propose to run a user study. Unfortunately, because the product is a secret, they are not allowed to bring in any real users. Therefore, they plan to test each version of the interface on two of the designers (first interface A and then interface B) and measure bottom-line, quantitative data. The two versions will be implemented using Java. There are five flaws with this plan. Find and describe each of the flaws and say how each can be fixed in the proposed study.
Extra Credit: (1 point each)

1) Who invented the mouse? (Hint: he was the recipient of the Turing Award two years ago)

2) What is the record of the Cal football team?

Reference: Nielson’s Revised Set of Ten Usability Heuristics
Back to Part II: Heuristic Evaluation

H2-1: Visibility of system status
H2-2: Match between system and the real world
H2-3: User control and freedom
H2-4: Consistency and standards
H2-5: Error prevention
H2-6: Recognition rather than recall
H2-7: Flexibility and efficiency of use
H2-8: Aesthetic and minimalist design
H2-9: Help users recognize, diagnose, and recover from errors
H2-10: Help and documentation