

## CS160 Fall 2004 Final Exam

This is a closed-book exam with 8 questions. Please write all of your answers in this booklet. The maximum score is 130 points, and we suggest you budget one minute per point so as to finish comfortably within the time allowed. You have 3 hours to complete the exam (180 minutes).

NAME \_\_\_\_\_ SID \_\_\_\_\_

Q1. (40 points) Give short answers to the following questions:

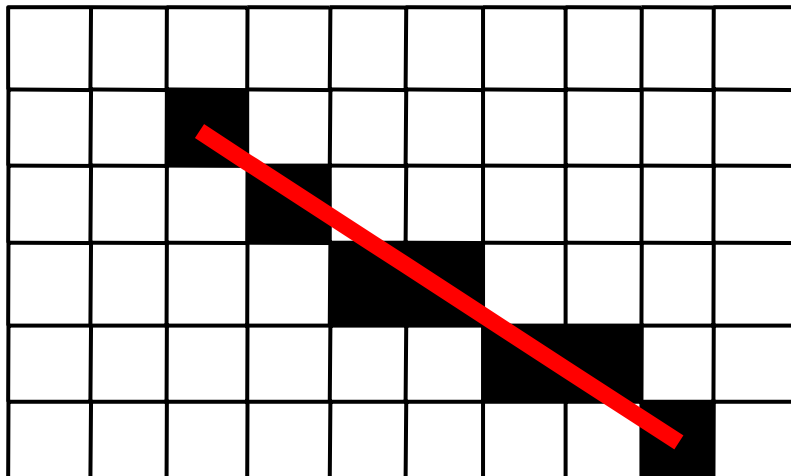
- a. Give TWO examples of the form SystemA/SystemB, where SystemA is an innovative new product which failed in the marketplace, and SystemB is an evolution of SystemA which succeeded. Example: Windows 2.0/Windows 3.1 (4 points)
- b. Draw the user-centered design cycle. (4 points)
- c. State one property that a good persona SHOULD have, and one property that a good persona SHOULD NOT have. (4 points)
- d. List FOUR of the “Task Analysis Questions” (4 points)
- e. Briefly explain what the “Zone of Proximal Development” (ZPD) is? (4 points)
- f. List some advantages of short-term goals (vs. long term) for group work. (4 points)
- g. What is a functional model vs. a structural model for a computing system? Which is USUALLY preferable? (4 points)
- h. Contrast “concrete” vs. “abstract” thought. Use an example if you can. (4 points)
- i. Give TWO advantages and TWO disadvantages of the Wizard of Oz (WOZ) method for informal prototyping. (4 points)
- j. After conducting a user test, each usability problem is given a unique number. What TWO additional ratings are added to each usability problem, and by whom? (4 points)
- k. List some innovations proposed by JCR Licklider. (4 points)

Q2. List at least 5 aesthetic faults (not usability problems) with this web page: (10 points)



Q3. (15 points)

a. On the figure below, shade the squares to show the effects of anti-aliasing. (5 points)

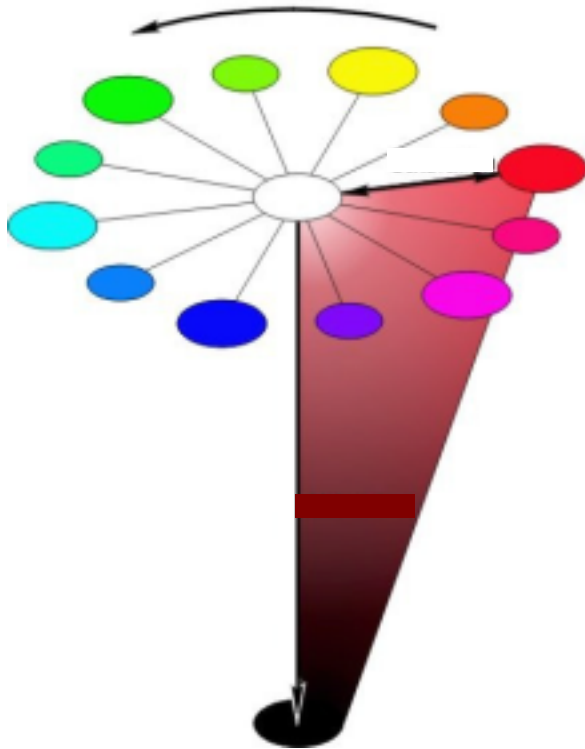


b. What are the advantages of outline vs. bitmap fonts ? (5 points)

c. What is the alpha channel in a 32-bit color image, and what is it used for? (5 points)

Q4. (15 points)

a. Label the axes of the chart below with Hue, Saturation and Value: (5 points)



- b. Gives examples of parallelism in the Model Human Processor (i.e. what operations can be performed in parallel)? (5 points)
- c. According to the “Power Law of Practice”, if you plot the log of task completion time vs. the log of the number of repetitions of the task for a routine task, what kind of curve should you see? (5 points)

Q5 (15 points) This question relates to design patterns, which typically include fields for:

1. Pattern Title
2. Context
3. Forces
4. Problem Statement
5. Solution+ Solution Sketch
6. Other Patterns to Consider

- a. Give some of the context and forces for online shopping: (5 points)
- b. List two SOFTWARE patterns that we described in this course: (4 points)
- c. List THREE ways to design a successful home page? (6 points)

Q6 (10 points)

- a. If an experiment proves a hypothesis H with significance 0.01, what does this mean? (4 points)
- b. What are dependent and independent variables? Give examples of each. (4 points)
- c. What is within-subjects design and what is between-subjects design? (2 points)

Q7 (10 points) In a group setting:

- a. What common “attribution error” do people make when explaining the causes of their own vs. others’ behavior? (2 points)
- b. How should remote collaboration systems be designed to minimize attribution errors? (3 points)
- c. What is a reference group? (2 points)
- d. What is the strongest facilitator of creativity in a group? (3 points)

Q8. (15 points) More short answers:

- a. What is a mode error? What kinds of system are prone to these? (3 points)
- b. List two methods for reducing the likelihood of user error? (2 points)
- c. What kind of help is most appropriate for a bus ticket kiosk? (2 points)
- d. What kind of help is most appropriate for a flight simulator program? (2 points)
- e. Should early or late fusion be used to combine human speech and hand gesture in a multimodal interface? (2 points)
- f. List two advantages of GUI interfaces vs. speech interfaces? (2 points)
- g. Why are multiple input modes useful? (2 points)