

## Quiz 1

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This quiz is closed book, closed notes. You have 80 minutes to complete it.

**Your name:** \_\_\_\_\_

1. (3 points) Which of the following are measurable dimensions of usability? (check all that apply)
  - Learnability
  - Efficiency
  - Price
  - Error rate
  - Response time
  - Satisfaction
  
2. (3 points) Assuming all of the following statements are true, which is **least likely** to be revealed by user and task analysis?
  - A. Files are rarely renamed.
  - B. A car must be washed before it can be waxed.
  - C. The 3D game interface you've designed makes some users nauseous.
  - D. Some users know the model number of the product they want.
  - E. A restaurant kitchen is a noisy place.

Choose one: \_\_\_\_\_

3. (4 points) Louis Reasoner says, "People can't keep more than  $7 \pm 2$  letters in working memory." In what sense is he right, and in what sense is he wrong?

**For the questions on this page,** suppose you're going to design and implement an alarm clock especially for blind users.

4. (3 points) Give one reason in favor of using the waterfall model in this case, and one reason in favor of iterative design.

5. (3 points) Explain what participatory design means in this case.

6. (3 points) Describe how a low-fidelity prototype might be made for this case.



10. (4 points) Name the parts of the MVC pattern and give the primary responsibility of each part.

11. (3 points) List all the places that the observer pattern appears in the MVC pattern.

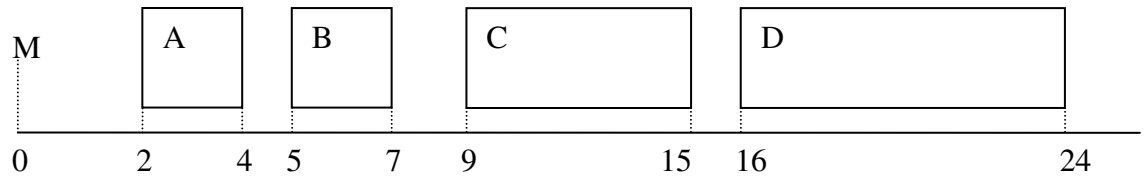
12. (4 points) List three ways that the view hierarchy is used in a GUI toolkit.

13. (3 points) Which of the following are related to working memory? (check all that apply)

- Elaborative rehearsal
- Maintenance rehearsal
- Perceptual fusion
- Open-loop motor control
- Chunking

14. (4 points) Assuming the mouse pointer starts at point M, rank the buttons A, B, C, and D by speed of access.

- slowest
- 
- 
- fastest

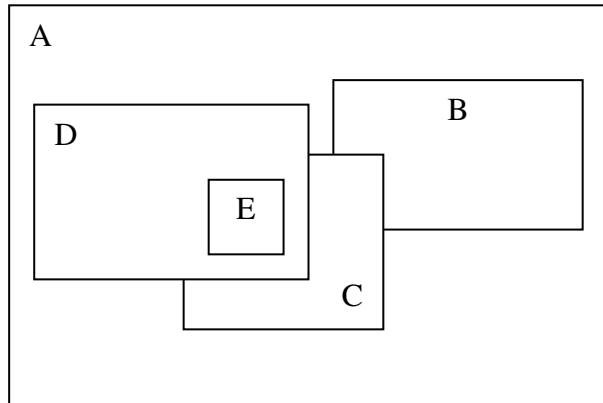
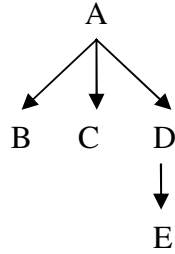


15. (3 points) Color blindness is caused by a problem in the

- A. Lens
- B. Retina
- C. Iris
- D. Aqueous humor

Choose one: \_\_\_\_\_

The questions on this page use the view hierarchy shown below. The hierarchy is shown on the left, and its screen appearance is shown on the right.



16. (4 points) The mouse button is pressed somewhere inside E. List the views that can receive this mouse-press event, in order.

17. (4 points) Suppose view E moves in such a way that its x coordinate doubles. (Assume that the toolkit is Swing, and that view A fills the entire screen.) List the views that are redrawn, in the order that they are drawn. Be careful!

18. (3 points) Ben Bitdiddle complains that his user interface flickers when the user drags objects around the screen. Which technique can he use to fix this problem?

- A. Double-buffering
- B. Antialiasing
- C. Subpixel rendering
- D. Event coalescing
- E. Alpha compositing

Choose one: \_\_\_\_\_

19. (4 points) Draw the HSV color model and label each dimension with its full name.

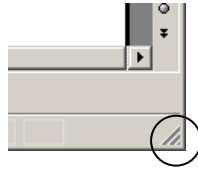
20. (3 points) Give two ways that the Unix *rm* command (which deletes files) fails to meet the definition of a direct manipulation interface.

21. (3 points) Explain why red-on-blue text is hard to read.
22. (4 points) Define internal, external, and metaphorical consistency. (You don't need to give examples.)
23. (4 points) Give two reasons why hand-drawn prototypes are good in the early stages of design.
24. (3 points) Which of the following is **least likely** to be revealed by a paper prototype?
- A. Your users don't know the term *algorithm*.
  - B. Toolbar buttons are too small to press.
  - C. A particular dialog box should be nonmodal, because users need to access information under it.
  - D. The Help menu isn't in the right place.

Choose one: \_\_\_\_\_



**For the questions on this page,** consider the Microsoft Windows window-resizing interface, circled below:



Discuss its advantages or disadvantages of this interface with respect to the following principles:

25. (3 points) Affordances

26. (3 points) Natural mapping

27. (3 points) Feedback

28. (3 points) Give one general technique for making a mode less error-prone.

29. (3 points) Which of the following statements is **not** true about the UI toolkit described in the paper “Glyphs: Flyweight Objects for User Interfaces”?

- A. Individual text characters are represented as components.
- B. Glyphs support automatic layout.
- C. A glyph must store its screen position.
- D. Glyphs are components (as opposed to strokes or pixels).

Choose one: \_\_\_\_\_

30. (4 points) State 5 of Nielsen’s 10 heuristics. (Their names are enough.)

**END OF QUIZ**