Quiz 1

This quiz is closed book, closed notes. You have 50 minutes to complete it.

Your name: ________________________________________ ________________

Course: ___ 6.813U     __6.831G

1. (3pts) Louis Reasoner notices that his UI toolkit delivers two click events before every double-click event. He wishes the toolkit could (at the programmer’s option) send click events only for single clicks, not for double-clicks. His proposal would cause problems for:

   ___ (choose best letter)
   A. event propagation
   B. hit testing
   C. mouse capture
   D. mouse coalescing
   E. perceptual fusion

2. (7pts) User-centered design always involves (check all that apply):

   ___ controlled experiments
   ___ early focus on users and tasks
   ___ evaluation
   ___ graphical user interface toolkits
   ___ iteration
   ___ participatory design  (desirable, but not always possible)
   ___ prototypes

3. (4pts) The user’s mental model: (check all that apply)

   ___ consists of processors and memories
   ___ is beyond the control of the UI designer
   ___ is influenced by affordances
   ___ should be identical to the system model (also called implementation model)
4. (6pts) Suppose you’re designing the ticket vending machines for the subway in Boston. The three most important dimensions of usability for this design problem are:

   efficiency
   ___________
   errors
   ___________
   learnability or memorability

5. (6pts) Suppose you have a bug where you see the correct output displayed in your window, but when you drag another window across your window, your window doesn’t repaint itself correctly. This is likely to be caused by (check all that apply):

   [✓] an event handler    (a stalled event handler can prevent repainting)
   [ ] another window having the focus
   [ ] automatic layout problems
   [✓] drawing outside the redraw method
   [ ] mode error
   [ ] z order

6. (7pts) Rearranging components in the view hierarchy directly affects (check all that apply):

   [✓] automatic layout
   [ ] event loop
   [✓] event propagation
   [✓] hit testing
   [ ] perceptual fusion
   [✓] redraw
   [✓] z order

7. (3pts) The location of the Macintosh menubar may be good for efficiency because of [ ] (choose best letter)
   A. Fitts’s law
   B. Hicks-Hyman law of choice reaction time
   C. Recognition, not recall
   D. Power law of practice
   E. Steering law
8. (5pts) Mark each of the following statements with the part of the MVC pattern that is primarily involved: M, V, and/or C. **Choose the single best letter.**

- **C** Decision to handle multiple selection in a listbox using either click-to-toggle or click/shift-click/ctrl-click
- **M** Storing data in a database or a text file
- **M** Representation invariants
- **V** Target of event dispatch
- **M** Managing undo history

9. (5pts) Ima Skeptic says, “UI is just a taste test, like Coke vs. Pepsi.” Help her understand by stating which dimension of usability is investigated by a “taste test.” Then give two other techniques we’ve discussed in this class (for either prototyping or evaluation) that are appropriate for investigating two other important dimensions of usability.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Dimension of usability</th>
</tr>
</thead>
<tbody>
<tr>
<td>“taste test”</td>
<td>satisfaction</td>
</tr>
<tr>
<td>formative evaluation</td>
<td>learnability</td>
</tr>
<tr>
<td>predictive evaluation</td>
<td>efficiency</td>
</tr>
</tbody>
</table>

(Other answers possible)

10. (5pts) Keyboard focus: (check all that apply)

- ✓ determines event dispatch for key events
- ✓ helps the user tell whether Caps Lock is on
- ✓ is a mode
- ✓ is a property of the event object in a typical GUI toolkit
- ✓ is not a property of the model
11. (6pts) Task analysis often collects information using (check all that apply):

   ___ CPM-GOMS
   ✔ contextual inquiry
   ___ controlled experiments
   ✔ interviews
   ✔ questionnaires
   ___ web server logs

12. (3pts) The three major styles of interaction in the history of user interfaces are command languages, menus-and-forms, and:

   direct manipulation

13. **For 6.831G only:** (6pts) Identify whether each of the following primarily threatens internal validity (I), external validity (E), or reliability (R):

   ___ condition ordering
   ___ experimenter bias
   R measurement error
   ___ not randomly assigning subjects to conditions
   E running the experiment in a lab
   F task selection

14. **For 6.831G only:** (4pts) Suppose you are designing each of the following experiments. Choose the appropriate experimental design, and then identify the right statistical test to use for it: (A) t-test, (B) paired t-test, (C) ANOVA.

   C Comparing the time to move the mouse to different corners of the screen
   A Comparing the time to take this quiz on paper vs. on a computer
   B Measuring the rate of mistyped letters on QWERTY vs. Dvorak keyboards
   B Testing whether Firefox or IE is faster at rendering web pages

15. (5pts) Domain multiplicities are important to record because (check all that apply):

   ✔ good ways to organize data are scale-dependent
   ___ paper prototyping is feasible only for small domains
   ___ sketching designs by hand is unreasonable for large domains
   ___ small domains can be ignored in early stages of design
   ✔ some widgets are better for data at certain scales than others
16. (6pts) List three visual variables that are important for creating contrast in the user interface below.

- position
- hue
- value

17. (5pts) Which of the following are good reasons why white space should be used to separate parts of a user interface, rather than dark lines? (check all that apply)

- alignment
- balance
- Gestalt rule of proximity
- perceptual fusion
- simplicity

18. (4pts) A keystroke-level model (check all that apply):

- can be used for command-line interfaces, but rarely helps with direct manipulation interfaces
- models only physical actions
- typically approximates Fitts’s Law with a constant
- typically uses a speed-accuracy curve to model errors

END OF QUIZ