McMaster University

Department of Computing and Software

CS/SE 4HC3/6HC3 – Human-Computer Interaction
Instructor: Adam Lenarcic
Fall 2015
Midterm Test
Nov. 5th, 2015 10:30-11:20

Name: _____ Student ID#:

Instructions:

1. **Read all instructions before starting.**
2. No calculators/aids permitted. This is a closed book test. This includes any electronic devices. Unauthorized use of aids or talking in the exam room will result from immediate dismissal from the exam room, and a grade of zero.
3. Keep answers short and concise. Point form is encouraged.
4. Answer all questions in the space provided.
5. The duration of this exam is 50 minutes. Upon completing the exam, submit your paper and leave the exam room (quietly).
6. Circle this line for a bonus mark. It's an easy one, take it.
7. Read all questions prior to starting. Some are easier than others, and some may take you more time.
8. Values of questions are written in square brackets.
9. This exam is worth 15% of your final grade.

Part		Value
A		/12
B		/16
C		/11
D		/16
Bonus		
Total		/55

Part A – Multiple Choice – Circle the **best** answer to the following questions. Correct answers: +2 marks. Unanswered questions: 0.5 marks. Incorrect guesses: -0.5 marks after the first (i.e. you get to guess wrong once, then it costs you). [*12 marks total*]

1. The biggest problem with UI design guidelines and principles is:
   They are strict rules that you should follow, even when they don't apply in your situation.
   They were written so long ago as to no longer be relevant.
   It's impossible to apply design concepts developed for physical artifacts to digital user interfaces.
   They are often either too specific or too general to be helpful in a given design situation.
   Trick question: there are no problems with design guidelines and principles.

2. Sutherland's Sketchpad, developed in 1962, was the first example of:
   A modal user interface
   A mouse-based user interface
   A direct manipulation user interface
   A joystick-based user interface
   A user study in HCI

3. Which of the following is a responder?
   A keyboard
   A finger
   A flashing light
   All of the above
   None of the above

4. What types of doors have become known as 'Norman doors'?
   Sliding doors
   Revolving doors
   Doors with no windows
   Doors with windows
   None of the above

5. What does usability measure?
   The effectiveness with which specified users can achieve goals in a specified environment
   The efficiency with which specified users can achieve goals in a specified environment
   The satisfaction with which specified users achieve goals in a specified environment
   A and B
   All of the above

6. The beveled, or "3D" buttons with drop-shadows sometimes used in UIs help to:
   Improve visibility of the button's affordances
   Provide better feedback
   Improve mode visibility
   All of the above
   None of the above

Part B – Short-Answers – Keep 'em Short! [*16 marks total*]

7. Are your eyes capable of being considered responders? If yes, how? If no, why not? [*3 marks*]

8. What is learned helplessness? [*2 marks*]
   How can a UI be designed to avoid it? [*2 marks*]

9. Explain what is meant by the term "*saccade.*" [2 *marks*]

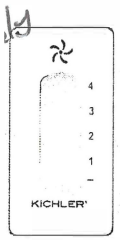
10. Fill in the missing fields with the given words below the table. [*4 marks*]

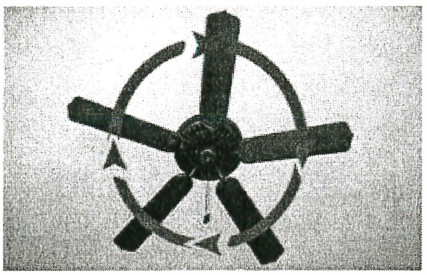
Scale (sec)	Time Units	System	World (theory)
10^7	Months		
10^6	Weeks		
10^5	Days		
10^4	Hours	Task	
10^3	10 min	Task	
10^2	Minutes	Task	
10^1	10 sec	Unit Task	
10^0	1 sec	Operations	
10^{-1}	100 ms	Deliberate Act	
10^{-2}	10 ms	Neural circuit	
10^{-3}	1 ms	Neuron	
10^{-4}	100 µs	Organelle	
Cognitive Band	Rational Band	Biological Band	Social Band

11. In which of these bands do most experimental HCI tasks occur? [*1 mark*]

12. Fill in the table mapping the control axes to the display axes. The switch is mounted on a wall, and the fan is mounted on the ceiling. [*2 marks*]

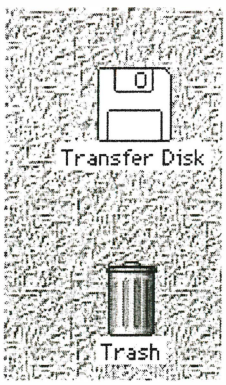
DOF	Control	Display
x		
y		
z		
θ_x		
θ_y		
θ_z		



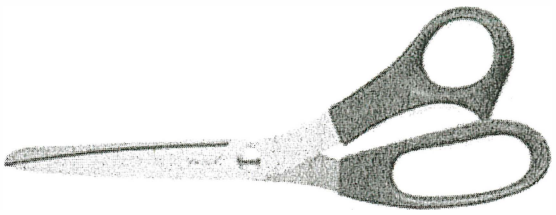


Part C – UI Critique - Examine the following artifacts and user interfaces. Some demonstrate good design, while other demonstrate poor design. Discuss each example in the context of Norman's design principles and guidelines discussed in class. You should point out any design principles that are violated, and any that are upheld, and how these contribute to good or poor design. [*11 marks total*]

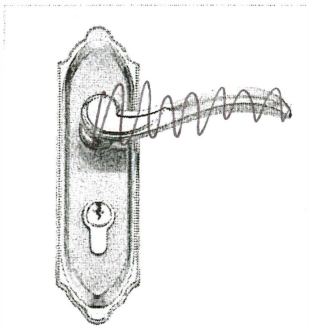
13. The Apple "eject disk" user interface – putting the disk in the trash can. Discuss the use of metaphors with respect to the conceptual model created. [*2 marks*]



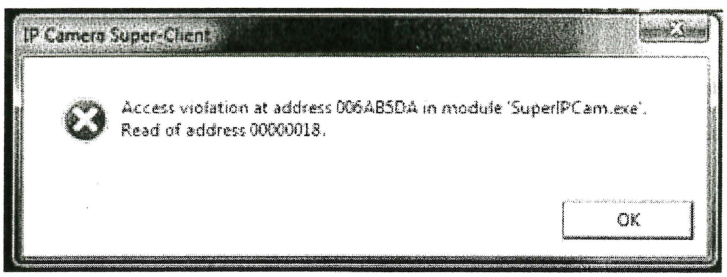
14. These scissors. Discuss affordances/signifiers and constraints. [*3 marks*]



15. The *keyhole* below. Discuss discoverability/visibility, constraints, and feedback. [*3 marks*]



16. The following error message. Comment on visibility/discoverability, feedback, and conceptual model. [*3 marks*]



Part D – Written Answers – Answer the following in the space provided. Remember, sometimes less is more. Also, if you write a correct answer *and* an incorrect one, you will be marked incorrect. [*16 marks*]

17. What are modes?[1] Describe the "mode awareness" problem.[2] Give an example of a highly-moded interface, and why it is highly-moded. [2] Should you try to eliminate modes from your user interface? Why or why not?[2] [*7 marks*]

18. Explain the difference between Hard Controls and Soft Controls. [*3 marks*]

19. What is meant by the term "the magic number" 7±2 chunks of information with respect to short-term memory? Suppose you wanted to verify this number – explain how you could do this experimentally. Briefly discuss the implications of memory on UI design. [*6 marks*]