Midterm Exam COMP 675

Fall 1999

Prof. Franz J. Kurfess

October 1, 1999

Exam Time: 17:40 – 20:10

Last Name: ____________________ First Name: ____________________

Student ID: ____________________ Date: ____________________

Signed: ____

This is an open-book exam, and the use of books, notes and calculators is permitted. Please pay attention to the following points:

- Make sure that you have a complete copy of the exam (all pages must be consecutively numbered).
- The number of points for a question is indicated on the right margin, and summed up for a task, and for the overall exam at the end.
- Read the questions for the whole task before you start writing down your answers.
- Don't spend too much time on a question you have difficulties with, especially not if that question is only worth a few points.
- The amount of space provided is a rough indicator of how much I expect you to write.

Task 1: Multiple Choice Questions

Mark the correct answers (only one per question).

a) Which aspects are known collectively as *usability*? 3

- ☐ performance, resource consumption, and ease of use
- ☐ user interface design, human factors engineering, and cognitive aspects of human information processing
- ☐ effectiveness, efficiency, enjoyable use, and safety
- ☐ usage, utilization, and usefulness

b) Which of the following statements describes one of the "seven deadly sins of user interface design"? 3

- ☐ the use of a flowchart-like diagram to indicate steps the user needs to go through to complete a task
- ☐ the use of an entity-relationship diagram to explain the use of a data base to data entry clerks
- ☐ providing contextual help by showing a short explanation of an icon if the cursor points to the icon and is left there for more than one second
- ☐ the availability of a command-line interface (shell) as an alternative to a graphical user interface

c) What are two fundamental tasks of user interfaces? 3

- ☐ to communicate information from the user to the machine, and vice versa
- ☐ to establish an emotional bond between a user and the machine used, and vice versa
- ☐ to increase the amount of information transferred between user and machine
- ☐ to adapt the needs of the user to the user interface, and vice versa

d) What is sensory memory? 3

- ☐ a buffer to hold stimuli received from a sensory channel for a very short duration
- ☐ an area in the brain responsible for storing sensory information
- ☐ a new storage technology based on chemical molecules instead of electronics
- ☐ it acts as an intermediary between short-term and long-term memory

e) Abduction describes a form of reasoning which 3

- ☐ derives a logical conclusion from given premises
- ☐ generalizes from known to unknown cases
- ☐ derives probable causes from known facts
- ☐ is the basis for a mental torture method for forcing students to learn how to prove theorems

f) Out of the following problem solving theories, which one is used most frequently for computer-based problem solving approches? 3

- ☐ gestalt theory
- ☐ mental models
- ☐ analogy
- ☐ problem space theory

g) Task analysis 3

- ☐ identifies all tasks required to successfully complete a job or activity
- ☐ is a formal method to obtain formal system specifications
- ☐ describes the functions in a system necessary to solve a task
- ☐ is best performed by programmers, without direct user involvement

h) One of Nielsen and Norman's User Inteface Design principles is to prevent errors. A good strategy for this is to 3

- ☐ provide a precise formal description of the commands and their respective syntax in the user manual
- ☐ allow only legal commands to be selected
- ☐ use a modal dialog box to confirm the execution of every command
- ☐ require certification before a user is allowed to utilize the system

i) A conceptual model is 3

- ☐ an internal representation of a user's current conceptualization and understanding of a system
- ☐ a diagram of the essential components in a system, and their interconnections
- ☐ a general conceptual framework through which the functionality of a user interface is presented to users
- ☐ an attempt to describe the behaviour of a typical user of a system in an abstract way

j) Which of the following expressions describes the most frequently used metaphor for human-computer interfaces? 3

- ☐ personal computer (PC)
- ☐ desktop
- ☐ spreadsheet
- ☐ laptop

Task 2: Short Questions

a) Two contrasting approaches to human-computer interface design are the systems engineering approach, and the user-centric approach. Identify and briefly describe three essential aspects as well as one advantage and one disadvantage for each approach. 15

user-centric approach

(a)

(b)

(c)

(d) Advantage:

(e) Disadvantage:

systems engineering approach

(a)

(b)

(c)

(d) Advantage:

(e) Disadvantage:

b) What role do or could standards play for human-computer interface design? What are some advantages of standards, and possible problems? 15

role

advantages

problems

Task 3: Your Favorite Program and Apple's Design Principles

For a computer program of your choice, examine how well it conforms to the "Apple General Design Principles". For each of the ten principles, identify some characteristic features of your program that either adhere to or violate the respective principle. Try to concentrate your examination on the specific program (e.g. Netscape Navigator), not on generic features of the underlying operating system. 40

1. Metaphors from the real world

2. Direct manipulation

3. See-and-point

4. Consistency

5. WYSIWYG

6. User control

7. Feedback and Dialog

8. Forgiveness

9. Perceived stability

10. Aesthetic integrity

40

Total Points: 100