

Name and student number: _____

Exam HCI – Human-Computer Interaction
course code 400312

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Wednesday 4 April 2007

18:30 – 21:15

Q105/112

Write your name and student number on every page.

Please write clearly, in English or Dutch, in the space provided on the exam paper.

In the case of Multiple Choice questions, choose **one** answer which you think is most correct, by placing a circle around the a), b), c) or d).

The exam paper must not be taken away.

No books, readers or articles may be used for making the exam.

Points are indicated with each question, a total of 100 points can be gained. This would result in the end mark of 10!

1. HCI is a multidisciplinary research field, and relatively new. Mention at least five of the (more established or older) scientific, engineering or design disciplines that inform HCI. Describe two of these examples in more detail, illustrate how they inform HCI and how they are incorporated.

(6 points)

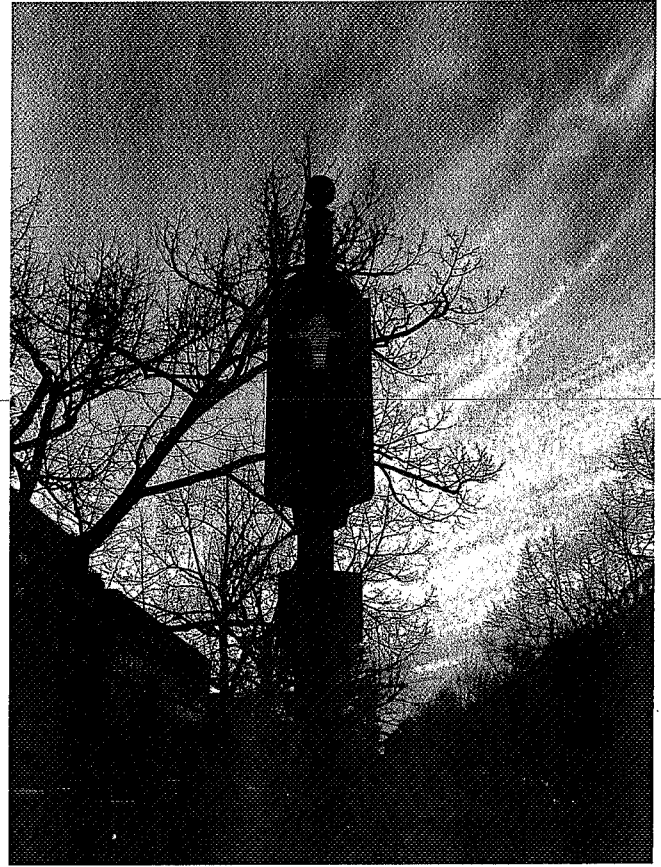
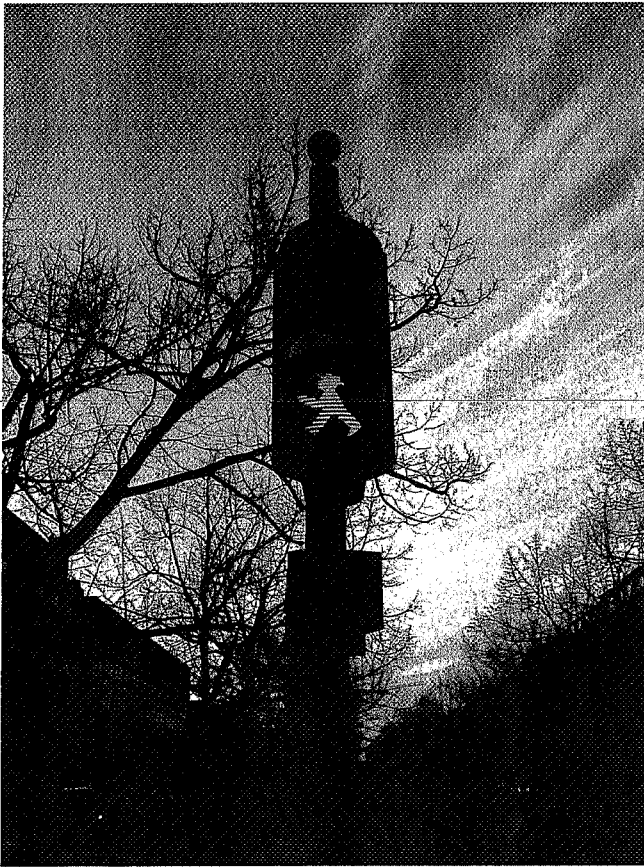
2. I encountered this bank machine (ATM or 'flappentap') in Hong Kong. What are the *symbolic* and what are the *iconic* elements in the display of information?

There are several peculiarities which influence the interaction between the user and the machine. Which are they?

(4 points)



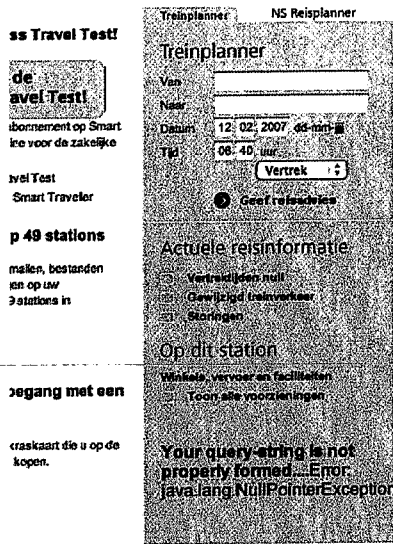
3. The information displayed in the pictures below is coded in various ways. Which are they, and why? (3 points)



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4. Below are three screen shots from my collection of alien dialogues in the Human-Computer Interaction. What is wrong here? Can you suggest more human versions?

(6 points)



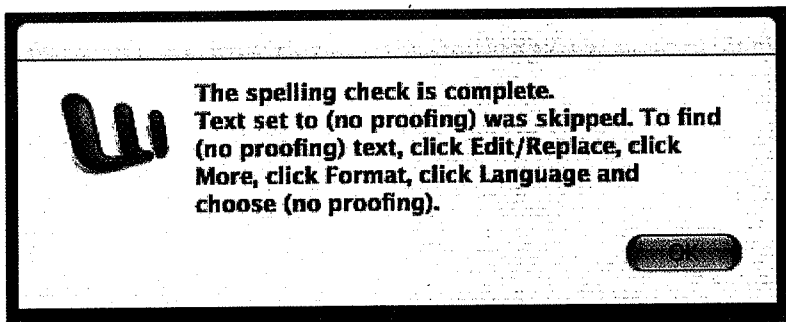
Human-Computer Interaction course



Information Lectures Assessment Encyclopedia Login

Fatal error: Call to a member function on a non-object in /misc1/export-rw/www/docs/tw/hci/pages/learning/handln.php on line 102

[thanks to Ard Bahlman!] [This happens when one logs out in another screen by the way.]



5. The classical categorisation in five senses (seeing, hearing, smelling, tasting and feeling) is insufficient for the field of study of HCI. Name three more senses or sub-senses, and indicate how these modalities can be applied in interface design for interactive systems. (6 points)

6a. As part of the early design phase often a requirements analysis is carried out. Recent research suggests that investigating *negative requirements* is important. What is the risk of ignoring negative requirements?

- a) That negative goals change in positive goals.
- b) That changes in positive goals are not covered.
- c) That changes in negative goals are not covered.
- d) That positive goals change in negative goals.

(2 points)

6b. The Short Term Sensory Storage in the human perceptual systems is different for every sense. How long is it in the case of auditory perception? (Average value according to the literature.)

- a) less than a second
- b) between 5 and 8 seconds
- c) up to 38 seconds
- d) more than 1 minute

(2 points)

6c. There are five main modes of *tactual perception*. How many sources of information does our nervous system use for these modes?

- a) 1
- b) 3
- c) 9
- d) 14

(2 points)

6d. How many *Degrees of Freedom* (DoF's) does the whole human hand have?

- a) a whole three of them!
- b) maximum twelve
- c) around 25
- d) about 300

(2 points)

7. What can be said about the cursor movement time in a pointing task on a standard computer when an icon is made bigger, or put closer to the starting point?

(5 points)

8. Why do we describe *roles* rather than *persons* in Task Model 1 (TM1) of GTA?

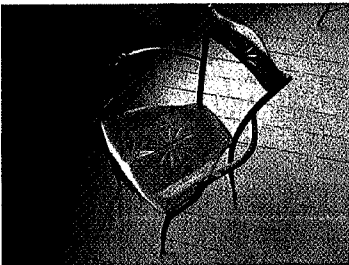
(3 points)

9. What are the advantages of *iterations* as opposed to the classical waterfall model of design methodology?

(3 points)

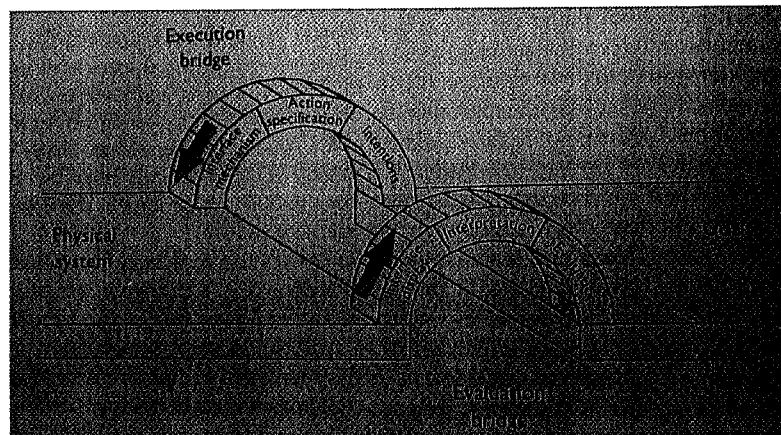
10. What is an *affordance*? Give at least three examples of (parts of) objects and their affordances.

(4 points)



11. What does Donald Norman mean with the Gulf of Execution and the Gulf of Evaluation?

(5 points)



12. What is the Wizard-of-Oz and how and when is this technique used in the design process? What are the advantages, and what are the limitations?

(3 points)

13. An interface can facilitate interaction with a computer system. What roles do *sensors* and *actuators* have in an interface?

(4 points)

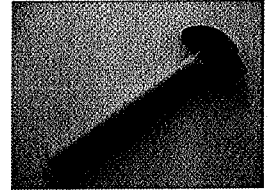
14. What is, in ethnographic terms, *implicit group knowledge*? Give an example.

(4 points)

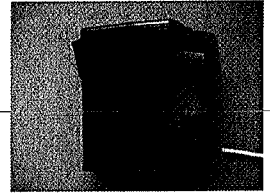
15. The technological artefacts and systems that we interact with, can be distinguished in several historical stages. To what technological categories do the devices belong that are listed below, and how do we interact with them (which modalities are used)?

(4 points)

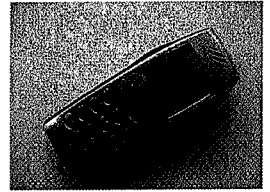
hammer



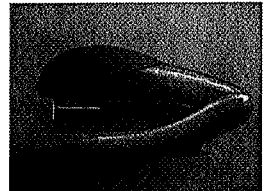
water cooker



mobile phone



stapler

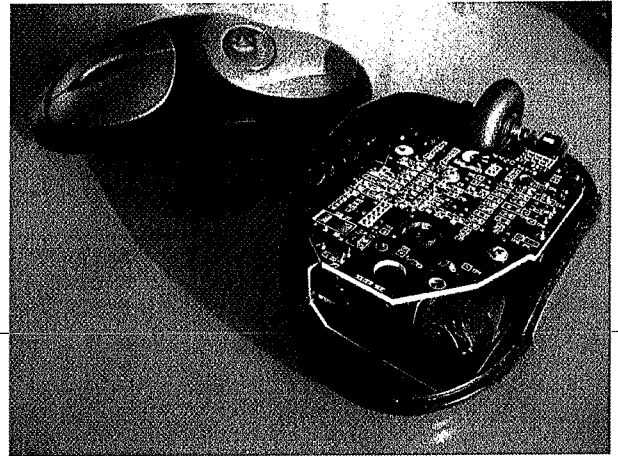


16. The interaction between human and computer systems can often be described in various levels (up to seven), for instance to do with the goals, or the actual actions carried out. Give the names and description of at least two of such layers.

(6 points)

17. How many Degrees of Freedom (DoF's) does this mouse have? Describe each DoF in the parameters of range, precision and haptic feedback (estimate the values).

(6 points)



18. In user interface design processes sometimes the QOC (Question, Options and Criteria) method is applied. Make an analysis of an everyday situation using the QOC method.

(6 points)

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19. What sort of things can one measure *qualitatively* rather than quantitatively in a usability test? And how would you approach that? (6 points)

20. Make a hierarchical task analysis of an activity (choose an activity). Describe one level, and work out one element to a second level. (8 points)