Exam HCI Design & Evaluation
Part I
Bachelor 2 *TCS/BIT EEMCS*

Module/course code: 202001031
Date: 16-12-2022
Time: 13:45 – 15:15
Module-coordinator: R. Klaassen
Instructor: R. Klaassen, L. Gatti

Type of test: Closed book, multiple choice

Allowed aids during the test: None

Attachments: Multiple Choice form

Additional remarks: All multiple-choice questions have equal weight.
For the multiple-choice questions, a standard correction for guessing is applied. For the general case of n questions and p correct answers, the formula for the score of the multiple-choice section is:
$$1 + 9 * max((p - 0.25 * n)/(n - 0.25 * n), 0)$$

Before leaving the room, you must hand in:

1. this question form with your name and student number on it.

2. the answer form for the multiple-choice questions

NB Handing in the test.
Students no longer hand in their exams at the front desk in the exam hall; instead, when they are finished they raise their hand, and wait till the exam supervisor comes to them to collect the test papers.
Students are not allowed to leave the exam hall within the first 30 minutes of the exam's start time.

Note: The answers circled are not necessarly the correct ones!

Multiple choice questions

1. Given are two statements about the *research life cycle* in HCI research.

   i One should always start with structured research methods such as experimental design, especially when investigating a new research topic.

   ii For a study with smart watches, where various contextual elements play an important role (e.g. weather, noise, comfort over time, and competing cognitive demands), an experiment "in the wild" is probably more appropriate; a study in a controlled environment would not be realistic for the usage of that type of technology.

   Following the reasoning of Lazar et al. (2017) are these statements true?

   (a) Only statement (i) is true.

   (b) Only statement (ii) is true.

   (c) Both statements (i) and (ii) are true.

   (d) Both statements (i) and (ii) are false.

2. Based on Lazar et al. (2017) Chapter 1, if we compare a DVORAK keyboard to a regular QWERTY keyboard and analyze the spread of use, what can we conclude?

   (a) Performance and optimization decide which products will be used.

   (b) Fun, entertainment, and UX in general will decide which products will be used.

   (c) Usability will decide whether a product is used.

   (d) None of these other answer possibilities alone decides eventual use.

3. Consider the following statement:

   The method of user centered design is centered on making as exactly as possible what the user asks for.

   Why is this true or not, what is the best explanation based on the slides and book?

   (a) This is **not** true, you listen to the user, but the user doesn't exactly know, they often say one thing but do or need something else.

   (b) This is true, because it makes clear that in *user centered design* you make what the user asks and not what the client asks.

   (c) This is **not** true, because every person wants something different.

   (d) This is **not** true, because you are the designer that makes the decisions, and you should not make the user the designer, it is important to leave decisions out of the hands of users.

4. You want to do a test with children. According to Lazar et al. (2017) building on the work of Read et al., which of the following tools is **not** appropriate?

   (a) The Smileyometer preference scale, indicating what they thought about the technology offered with an (ideally) 5-point scale, ranging from a sad face (awful) to a happy face (brilliant), with a somewhat positive smiley in the middle.

   (b) A shout-out-loud scale, indicating how enthusiastic a group of children were about a certain description of a design option, in order to quantitatively and reliably compare the enthusiasm of young children between concepts, before one decision is actually made.

   (c) The again-again scale, indicating per element whether the child would want to do a certain activity or element with "Yes" (do the activity again), "Maybe", or "No" (do not repeat again the activity).

   (d) A Fun Sorter, drawing pictures or sorting cards to indicate options or elements from best to worst according to certain categories.

5. What are the three components of the tripartite methodology of value-sensitive design?

   (a) Conceptual, empirical and technical investigations.

   (b) Design, implementation and testing.

   (c) Interviews, focus groups and cognitive walkthroughs.

   (d) Stakeholders, value tensions and context of use.

3

6. Technology, users and society can influence how technology is used and which values are supported.

   What does the *interactional position* say about how a technology will be used?

   (a) Designers inscribe their own intentions and values into the technology.

   (b) The technology's use depends on the goals of the people interacting with it.

   (c) Societal forces significantly shape how a technology will be used.

   (d) None of the above statements describes the interactional position.

7. Consider the following setting.
   Stacey is a 25-year-old woman who lives with her partner Maria. Stacey has bought a self-tracking device by the company BitFit that can measure her sleep patterns and daily movement. As she uses this device, she notices that she goes to bed at irregular times and does not move as much as she would want to. She now sets out to change her behaviour, and gradually adapts her daily habits to be more in line with her goals. BitFit is thinking about a redesign of the self-tracking product through a value-sensitive design process, and is considering who to involve as stakeholders. Which of the following statements is correct, regarding potential stakeholder involvement in the redesign of BitFit?

   (a) Stacey and Maria are direct stakeholders.

   (b) Stacey and Maria are indirect stakeholders.

   (c) Stacey is a direct stakeholder and Maria is an indirect stakeholder.

   (d) Stacey is an indirect stakeholder and Maria is a direct stakeholder.

8. Consider the following two statements about *focus groups* and *structures*.

    i A focus group is called such because it is a one-on-one interview structured around a group of questions focused on one topic.

    ii With proper planning, focus groups are relatively easy to manage; typically only one focused person who is skilled in HCI and running such groups can ensure successful data collection and can manage this in real-time (no recordings etc).

    Are these statements true?

    (a) Only statement (i) is true.

    (b) Only statement (ii) is true.

    (c) Both statements (i) and (ii) are true.

    (d) Both statements (i) and (ii) are false.

9. You are gathering requirements for a new system you are developing. Which of the following statements about interviews and properties of questions is true, according to Lazar et al. (2017)?

    (a) In this context you might want to ask broader questions about current practices, goals, frustrations, and concerns.

    (b) Especially interviews for requirement gathering should be done with multiple interviewers present during the structured interview to make sure the questions are asked in their prepared order.

    (c) You should prevent users to talk about things they would like to do, and rather focus on things they are doing.

    (d) As soon as you have a specific idea for a tool in mind, start with explaining in complete detail this idea to you users, and direct most questions towards this specific tool and specific elements.

10. As mentioned in the Lazar et al. (2017) book sometimes it is advised to use a stratified sample. In which of the following examples is it **not** needed (or perhaps the least needed) to use a form of stratification?

   (a) When researching how close friends use technology to keep in touch after moving, when you know the distribution of distance to these friends is **not** representative for the groups you are interested in.

   (b) When you are interested in the use of technology by grandparents and their grandchildren to keep in contact, and you got many responses as you used both digital surveys and paper surveys.

   (c) When you are interested in a small very homogeneous population and you send everyone the survey and your response rate was very high.

   (d) When the sub-populations have unequal representation, for example when distributing a survey to different years of Technical Computer Science students, as the intake varied quite a lot.

11. When developing questions to be asked in a survey we have to decide whether to ask open-ended questions or closed-ended questions. Often Likert scales questions are chosen to gather participant responses. What is **not** a property of the Likert scale?

   (a) Likert scale questions fall under a category of close-ended questions.

   (b) They allow the participant to indicate in their words what they like.

   (c) The answers result in an ordered response type of data.

   (d) Typically, the form of the scale is an odd number.

12. Many experiments in HCI include surveys after a certain intervention. It is important to formulate these questions correctly and to be able to correct your team members by pointing out what they are doing wrong. Consider a (future) colleague of you, who is investigating a VR installation to train rowing. One of the survey questions they suggest is:

On a scale from 1 (completely disagree) to 5 (completely agree), how much do you agree with the following statement?:
The size of the objects I saw in VR is unrealistic compared to real-life sized objects

According to Lazar et al.'s (2017) common problems with survey questions, what is the closest type of problem with this statement?

(a) Absolutes

(b) Double-barreled question

(c) Hot-button words

(d) Use of negative words

13. Consider the following two statements about scenarios as used in scenario-based design (described in Beth's paper):

    i Scenarios are solution-first: they approach describing a context of use by starting from a possible solution and showing how a user interacts with it.

    ii The primary role of a scenario is to list in detail all the possible functions that a product offers to the user.

(a) Only statement (i) is true.

(b) Only statement (ii) is true.

(c) Both statements (i) and (ii) are true.

(d) Both statements (i) and (ii) are false.

14. What is a similarity between *a priori coding* and *emergent coding*?

(a) Both *a priori coding* and *emergent coding* need a reliability check.

(b) Both *a priori coding* and *emergent coding* need coding categories to be based on existing literature.

(c) Both *emergent coding* and *a priori coding* only need one trained coder.

(d) Both *emergent coding* and *a priori coding* can only be done with objective coders.

7

15. Which of the following statements is true about *grounded theory*?

(a) In grounded theory, data analysis is creative and therefore unsystematic.

(b) In grounded theory, data are collected first, and a theory is formed later.

(c) In grounded theory, first a theory is formed, and then qualitative data are collected to prove it.

(d) In grounded theory, multiple rounds of data collection and analysis are **not** recommended.

16. Consider the following two statements about coding in content analysis.

i In *a priori coding*, the content of the data has influence on the set of coding categories.

ii In *emergent coding*, the coding categories can be modified after the coding process has started.

Are these statements true?

(a) Only statement (i) is true.

(b) Only statement (ii) is true.

(c) Both statements (i) and (ii) are true.

(d) Both statements (i) and (ii) are false.

17. Consider the following two statements about *scenarios*, as used in scenario-based design (described in Beth's paper):

i Scenarios can be used to define the research questions for product evaluations.

ii A good scenario describes only a sequence of actions and events in which the user is involved.

Are these statements true?

(a) Only statement (i) is true.

(b) Only statement (ii) is true.

(c) Both statements (i) and (ii) are true.

(d) Both statements (i) and (ii) are false.

18. There are *rights of a prototype* according to the lecture of Scott Klemmer on "The Power of Prototyping". Which of the following statements is *not* one of the three rights of a prototype:

    (a) Should not be required to be complete.
    (b) Should be easy to change.
    (c) Gets to retire.
    (d) Should be clean and neat.

19. What is **not** an advantage of a lo-fi prototype?

    (a) It enables for quick revisions of the concept.
    (b) It can test and compare multiple different designs of the concept.
    (c) It can be used to let the user explore the full functionality of the application.
    (d) It prevents spending more time fixing errors once the development of the concept is already started.

20. Based on the information from the lecture about research questions, what type of research question is the one below?

    "How can we recognize the errors made in spirometry for children with asthma?"

    (a) Predictive question
    (b) Design question
    (c) Knowledge question
    (d) Evaluation question

21. Lazar et al. (2017) mention "coding categories may come from several sources". It is good to know how to come up with categories. Which of the following is referring to *in vivo* codes?

    (a) The researcher's interpretation.
    (b) A random word generator.
    (c) Terms provided by the participants.
    (d) Terms from an already existing theoretical framework.

22. Consider the following two statements about *contextual inquiry*.

    i Contextual inquiry has a focus on generalizations, rather than on specific details.

    ii Contextual inquiry is designed to uncover implicit knowledge about work processes.

    Are these statements true?

    (a) Only statement (i) is true.
    (b) Only statement (ii) is true.
    (c) Both statements (i) and (ii) are true.
    (d) Both statements (i) and (ii) are false.

23. What is the role of a *probe* in this setting as described in Chapter 8 of Lazar et al.'s (2017) book?

    (a) A *probe* is an individual who is repeatedly called upon to provide important insights, often being shadowed as well as being interviewed, usually over an extended period of time.
    (b) A *probe*, in the context of HCI, is a type of question that is intended to help the participant think more deeply about the issue at hand.
    (c) A *probe* acts as an external tool/aid that encourages interviewees to provide more detail and explanation.
    (d) A *probe* is a rigid script to present questions in a well-defined order when timed cues in the context occur.

24. There are various sampling methods discussed in Chapter 5 of Lazar et al. (2017), each method with its pros and cons. Which of the following statements is **not** true about the sampling method in the statement?

    (a) In *probability sampling* a random selection of people within the population of interest is made and invited to fill in the survey.

    (b) When *randomly sampling* webpage visits (e.g., through pop-ups), this will lead to an accurate picture of the users with equal chance of participation fitting random sampling of users.

    (c) Sometimes using *probabilistic sampling* is theoretically attainable as we know the population and how they could be reached, but it is logistically unfeasible, for instance due to intellectual property conflicts in obtaining the data from companies.

    (d) In *random sampling* a random selection of people within the population of interest is made and invited to fill in the survey.

25. Consider the following two statements about *Triangulation* in research:

    i Triangulation refers to a user research method in ergonomics for determining proper size and placement of elements in the user's working environment

    ii In triangulation, every piece of research must follow the exact same approach

    Which of these statements is true?

    (a) Only statement (i) is true.
    (b) Only statement (ii) is true.
    (c) Both statements (i) and (ii) are true.
    (d) Both statements (i) and (ii) are false.

26. When planning an evaluation to measure a certain effect some students tend to come up with their own set of questions. From the *perspective of validated surveys* why should you advice against using mostly your own questions?

    (a) It takes time to make a proper survey.
    (b) Surveys are typically lower in validity than alternative qualitative measures.
    (c) It is better to use a fitting survey tool that is already validated.
    (d) It will result in unnecessary long survey formats.

11