

# Exam Design and Evaluation of HCI

Module Intelligent Interaction Design 201500118 (BIT/TI), 201500148 (CreaTe)

13.45 – 16.45 hr, January 12, 2016

## Introduction

This is a closed book exam. You are not allowed to use any material other than the forms given to you and blank paper.

The exam consists of two parts:

- 18 multiple-choice questions about the book Research Methods in Human-Computer Interaction. All questions have equal weight. Each multiple-choice question has one correct answer. All students have to answer all of the multiple-choice questions.
- 15 open questions about the book Interaction Design and about the section Playtesting from the book The Art of Game Design. All questions have equal weight. Answers can be given in Dutch or English.

**NB CreaTe students only have to answer the open questions 1-6.** Other students have to answer all of the open questions.

The two parts have equal weight in determining the final mark, except for CreaTe students: for them the weight of the two parts is 5 : 2.

Before leaving the room you must hand in

- this question form
- the answer form for the multiple-choice questions
- the answers for the open questions.

Each of the three must clearly state your name and student number.

## Multiple-choice questions (about Research Methods)

1. A hypothesis is a problem statement that can be directly tested through an empirical investigation. Which of the following does **not** apply as a criterion for a good hypothesis?

- (a) It is presented in precise, lucid language.
- (b) It focuses on a problem that is testable in one or multiple experiments.
- (c) It clearly states the control groups or conditions of the experiment.
- (d) It is believed to be true by the researchers.

2. Consider the following two statements about independent variables.

- (i) Independent variables refer to the outcome or effect that the researchers are interested in.
- (ii) The term 'independent' is used to suggest that the variable is independent of a participant's behavior.

Are these statements true?

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

3. Consider the following two statements about significance tests.

- (i) All significance tests are subject to Type I errors and Type II errors.
- (ii) Significance tests show how confident we are to generalize the results to the target population.

Are these statements true?

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

4. Which of the following statements about between-group design is false?

- (a) Between-group design allows us to avoid learning effect.
- (b) Between-group design is also called between-subject design.
- (c) In between-group design the number of participant groups directly corresponds to the number of experiment conditions.
- (d) In between-group design each participant is exposed to multiple experiment conditions.

5. Consider the following two statements about systematic errors in experimental research.

- (i) Measurement instruments belong to the major sources of systematic errors.
- (ii) Experimenter behavior belongs to the major sources of systematic errors.

Are these statements true?

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

6. Which of the following conditions should be satisfied for a Chi-square test?

- (i) The data points in the contingency table must be independent from each other.
- (ii) The data set size should not be too small.

- (a) Both conditions (i) and (ii) should be satisfied.
- (b) Only condition (i) should be satisfied.
- (c) Only condition (ii) should be satisfied.
- (d) Neither of the conditions (i) and (ii) have to be satisfied.

7. The central tendency of a data set **cannot** be measured by the

- (a) maximum
- (b) mean
- (c) median
- (d) mode.

8. Consider the following two statements about random sampling.

- (i) In case of random sampling coverage errors cannot occur.
- (ii) In case of random sampling non-response errors cannot occur.

Are these statements true?

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

9. Given is a question in a survey:

Have you ever smoked marijuana?

Yes

No

If yes, about how many times have you smoked marijuana?

Once

2 to 5 times

6 to 10 times

11 to 20 times

more than 20 times

Consider the following two statements about this question.

- (i) This is an example of a contingent question.
- (ii) This is an example of a double-barreled question.

Are these statements true?

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

10. Consider the following two statements about non-probabilistic surveys.

- (i) In non-probabilistic surveys demographic information about the respondents is important in establishing informal validity.
- (ii) Non-probabilistic surveys are often used as a first step in researching unknown research phenomena or user groups.

Are these statements true?

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

11. Consider the following two statements about focus groups.

- (i) In focus groups generally structured interviews are used.
- (ii) Focus groups are appropriate for discussing sensitive or controversial topics.

Are these statements true?

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

12. Consider the following two statements about contextual interviews.

- (i) Contextual interviews are appropriate to uncover implicit knowledge about work processes.
- (ii) During contextual interviews the researcher and the interviewee preferably work together as master and apprentice.

Are these statements true?

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

13. Which of the following statements about content analysis of qualitative data is **not** true?

- (a) Coding categories in content analysis are sometimes based on existing theories.
- (b) Content analysis of multimedia data involves similar steps as content analysis of textual data.
- (c) Content analysis typically involves human coding.
- (d) Only qualitative methods are used in content analysis.

14. Consider the following two statements about coders of qualitative data.

- (i) Subjective coders can be involved in the collection of data.
- (ii) Objective coders are also called outside coders.

Are these statements true?

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

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

- (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. The term 'informed consent' refers to:

- (a) potential study participants getting all the information they need to make a meaningful decision whether they want to participate in a study
- (b) researchers being informed by the study participants which of the participants' personal data they can or cannot use in their study
- (c) researchers consenting to respect and protect the privacy of the participants in their study
- (d) participants consenting to make their personal information available in publications by researchers about their study.

17. Which of the following statements about identifying study participants is true?

- (a) For any study, to ensure that the group of participants is appropriately general, they must be of different genders and come from different layers of society.
- (b) For controlled experiments, the number of participants must be large enough to produce statistically significant results.
- (c) Having students as study participants is fine, as long as the target group for the study is the general population.
- (d) The number of participants in an experiment is independent of the experimental design.

18. Which of the following information does **not** need to be mentioned in a consent form?

- (a) How the collected information will be used.
- (b) The procedures of the study.
- (c) Whether the institutional review board (ethical committee) has approved the study.
- (d) Which personally identifying information is collected.

## Open questions (about Interaction Design and Playtesting)

1. What is the essential drawback of using tissue testers for playtesting?
2. When you attend a playtest session as an observer, is it a good idea to spend most of the time looking at the players' faces? Explain your answer.
3. Give two examples of persuasive technology in non-commercial domains: one from traditional media (magazines, newspaper, television) and one from the web.
4. Give an example of the design principle 'feedback'.
5. Give one of the basic rules of Sacks' conversation analysis.
6. One of the types of pleasure in the Pleasure Model is psycho-pleasure. Which is the corresponding level of the Emotional Design Model?

**NB CreaTe students stop here: the remaining questions are not for them.**

7. The textbook *Interaction Design* distinguishes four interaction types. Give a short description of one of them.
8. Consider the following statement about memory.
  - (i) We remember more about objects when we have photographed them than when we observe them with the naked eye.Is this statement true? Explain why (not).
9. Consider the following statement about grouping information.
  - (i) Using contrasting colors is a more effective way to group information on a screen than using borders.Is this statement true? Explain why (not).
10. Observation is one of the techniques of data gathering during product development. Consider the following statement about observation.
  - (i) An observer should try to avoid to take any part in the study environment at all; for example, he/she should not become a member of the group he/she is studying.Is this statement true? Explain why (not).

11. Consider the following statement about scenarios and use cases.

- (i) A major difference between scenarios and use cases is that scenarios focus on the user's perspective and use cases on the system's perspective.

Is this statement true? Explain why (not).

12. What are plus and minus scenarios?

13. Consider the following statement about comparing hi fi and lo fi prototypes.

- (i) Low-fidelity prototypes are useful for proof-of-concept designs and high-fidelity prototypes are useful for exploration and usability tests.

Is this statement true? Explain why (not).

14. Consider the following statement about comparing field studies and studies in controlled settings.

- (i) It is more difficult to test specific hypotheses about an interface in studies in controlled settings than in field studies.

Is this statement true? Explain why (not).

15. Can design principles (such as making design consistent) be used as heuristics in heuristic evaluation? Explain your answer.