

Course "Empirische Bewertung in der Informatik"

Freie Universität Berlin, Institut für Informatik, Arbeitsgruppe Software Engineering

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Practice sheet 4

SoSe 2014

due on 2014-05-19 and 2014-05-26

Please make sure to always prepare your solutions in a way that you are able to present them to your class mates and discuss your solution process effectively.

Project: Survey

The remainder of this semester's tutorial will consist of a small project. You will conduct a survey in small project groups.

Learning aims (for this practice sheet):

1. Developing a research question from a chosen topic.
2. Designing a questionnaire based on the research question.
3. Contemplating on a study's work steps and effort.

Task 4-1: (Literature Research – Questionnaire Design) due on 2014-05-19

Answer the following questions / tasks:

1. Which considerations concerning which aspects/ problems do you have to make when planning a questionnaire?
2. Search for and explain methods of how to develop a research question / hypothesis and to operationalize its aspects.
3. What are the kinds of questions in a questionnaire and what are their respective pros and cons.
4. Read about the question wording in a questionnaire. What are the criteria for good questions in a questionnaire. List the Do's and Dont's and use an example to explain them.

Task 4-2: (Choose topic) due on 2014-05-19

We are in the first step of the research process. Here, you

- decide on the topic of interest
- formulate the research question (hypothesis)
- think about how to operationalize the research question / hypothesis
- select a target population

In the following phases (tasks and practice sheets) you will

- design the survey instrument (questionnaire)
 - administer the survey
 - collect, validate and analyze the data
 - answer the research questions
 - present the results
1. Select the topic of interest you would like to investigate in your group.
 2. Familiarize yourself with your topic. Only then you can design a good survey. Investigate whether there are already comparable studies to the one you plan.
 3. Develop and formulate research questions / hypothesis and decide which one to answer with the questionnaire. As the scope of most topics is quite broad and

diverse, *you need to focus with your survey*. Note down your considerations. Also note those aspects you decided to drop, and why.

4. Use the method you found in Task 4-1 2. and note down how you want to operationalize which aspects of your research question.
5. **Finally delimit your specific aim and decide on your research question.** Also form some early ideas regarding the form and conduct of the survey: group of participants to be targeted, form and distribution of the questionnaire (should be web-based), gathering of answers for the evaluation.
6. Create a **wiki-page** in the KVV for your survey project. Put **each task concerning the survey project** on this wiki-page.
 - Name the page according to the following scheme: [ProjectName -Surname1, Surname2]

Task 4-3: (Design of questionnaire) due on 2014-05-26

- Put this task on the wiki-page

Design and implement a matching questionnaire. In the interest of finding many participants, it should be as short as possible. To be evaluated easily and unambiguously, it should ask for as highly structured information as possible.

Consider and note for the *discussion in the next tutorial*:

- a. When choosing the questions: how do these contribute to answering the research question.
- b. Information as to the participants: General experience, specific experience, skills, work environment, domain of use and other demographic information.
- c. How to obtain a high number of participants and return rate. High numbers of participants are almost always an important quality feature for survey.

Your questionnaire should finally be web-based. Research and choose a platform for conducting an online survey. Consider, however, that another group is going to review and run pilot tests with your questionnaire.

- The closer the version now created is to the final version, the more helpful are the results of the pilot tests!

On the wiki-page provide the **following additional information**:

- d. Complete names of all of your team members.
- e. Topic area of the survey (*overall goal*).
- f. Research question (clearly formulated in one to two sentences).
- g. Roughly the group of participants to be addressed.
- h. Link to your online survey

Some advice

Here you find some advice concerning possible topic areas, conduct, and effort.

Topic areas

Possible areas for survey topics have already been presented. These are:

- Consequences of the change to the Bachelor/Master system for the studies of computer science (lecture's organization).
- Contents of Informatics courses of study.
- Preconceptions of computer science (in cooperation with working group Didaktik der Informatik, Prof. Carsten Schulte).
- Software engineering: theory and reality of different activities or problem areas.
- Security-awareness of suppliers of web applications.

You can also pick your topic from a different Informatics-related area.

Further course of events in the project, a short overview of the remaining weeks:

CW 20/21: Decide on a topic and design the questionnaire (this practice sheet)

You determine the concrete aim and focus of your survey (concrete research question(s)), design an adequate catalogue of questions, develop the concrete questionnaire and implement it as a web form.

CW 22: Validate and improve the questionnaire

You hand your questionnaire to another team and receive theirs in return. You review it, run a pilot test, and give helpful feedback. In the pilot test, three to five suitable participants fill in the questionnaire while under observation (but without receiving help) and document its strengths and weaknesses. After receiving the results, you improve your questionnaire by stressing its strengths and reducing or avoiding its weaknesses.

CW 23: Recruit participants

You look for and choose forums in which to present your survey and ask for participation. Possible sources for participants are university lectures (via the lecturers), relevant mailing lists and possibly others. You formulate a suitable recruitment letter.

CW 24/25: Conduct the survey (with interim report)

You send off your recruitment letter; the survey starts. Duration: 2 weeks. Before the end of the first week you prepare an interim report: How many questionnaires have been completed? How complete? Who are the participants?

CW 26: Evaluate the survey's results & present the results

You compile the answers from all questionnaires in machine-readable form. You evaluate them: characterization of the respondent's population; global overview of the results; analysis of the correlations between answers and respondent/domain/etc. You summarize the most interesting results on slides to present them within 5 minutes.

Total effort

This course supplies 5 credit points. One credit point is worth 30 hours of work (2 full hours per week). The total effort (including lecture, tutorial, and exam) therefore sums up to 10 hours per week.

Per week (and person) you need to invest about 5 hours of work for the tutorial apart from being present.

- Split the work sensibly within your group.
- Work as a team (that is, help each other).
- Start early enough.