

1 Meet

When meeting up with the participant in person I will shake hands. Next, I will thank them for their interest and their time. While getting coffee or something else to drink I will make small talk with them. Furthermore, I will offer them a cookie that I brought.

2 Preparation study

When we sit down I will take out the information and consent form which I have already sent them before. I will ask if they have questions, want a quick recap, or want to dive right in. I will confirm the duration of our meeting with them and let them read and sign the forms. Furthermore, I will take out a notebook and recording equipment.

3 Preparation reenactment

Before starting with the reenactment I will check with them whether they chose an optimization process. Next, I will explain the process to them:

“I would like you to relive the optimization process and talk me through it step by step. I will sometimes interrupt you to ask for clarification. I am specifically curious about which subgoals you pursue and which tasks you do to achieve them. I am also very curious about which information you consult and which tools you use to do so. Feel invited to show the source code, information, and tools you used to refresh your memory and give me an even more detailed idea. We have in total 50 minutes and I would like to reserve the last 20 minutes for some questions that I prepared in advance. If you would like to take a break, feel free to let me know. Of course, you can always stop with this research without giving a reason for your withdrawal.”

After the explanation, I will ask if anything is still unclear and/or if they have any questions. If so, I will try to clarify and/or answer their questions. Next, I will start the recording and note down the recording start time to ensure that I can keep track of time during the interview using my wristwatch.

4 Reenactment

During the reenactment, I will let the participant explain and I will ask them for clarification when I do not understand something. If it is unclear why they are doing something, I will ask about it. Specifically, I might ask about what subgoal they are pursuing. Furthermore, I will ask questions to know specifically which tools and information they consulted.

5 Interview

After 30 minutes I will round off the reenactment and ask the following questions in order:

1. Have you optimized embedded systems software for [metric] before?
(Yes) Was the optimization process comparable to the one you just relived?
(No) In which sense did it differ?
2. Are there subgoals that you pursued during this/these optimization process(es) that you did not mention yet?
3. Are there challenges that you faced during this/these optimization process(es)?
(...) Were there parts that took long or were difficult?
4. Is there information that you wanted to see that would have been valuable in this/these optimization process(es)?

6 Break

After the interview, I will stop the audio recording. I will thank the participant for their explanations and tell them that a 15-minute questionnaire will be next, but that I first propose to take a 5-minute break.

7 Questionnaire

I will give the following explanation regarding the questionnaire:

“The questionnaire takes approximately 15 minutes. The focus of the questionnaire is on optimizing embedded systems software for energy consumption. It focuses on estimating or measuring energy consumption specifically. If you are unsure about your answer, follow your intuition. If possible, explaining your answers to the open questions is really valuable to me. Feel free to keep this explanation short and refer to the reenactment and the interview. If something is unclear, feel free to ask me for clarification, that is what I am here for.”

After the explanation, I will ask if anything is still unclear and/or if they have any questions. If so, I will try to clarify and/or answer their questions. Then I will ask them to start the questionnaire.

8 Closing

Afterward, I thank the participant for sharing their insights and their time. I ask them whether they are interested in a summary of their optimization process and/or the eventual thesis. Next, I ask them whether they know others that I could ask to participate and thank them for their interest and their time.