User Study Questionnaire

11th February 2021

Before continuing with the questionnaire, please fill in the session id from the top right of your WebCorC application. The id can be copied by clicking on it if you have not stored it elsewhere in beforehand.

|  |  |
| --- | --- |
| **Session-ID** | 1A7329DBC0622E1A188B87F5ED64D068  31BD58FD7EC9088DFD9BCCA53AFFC3AB |

**General Information**

The questionnaire is set up in three sections:

* The first section will assess your programming experience.
* The second section will assess your user experience with WebCorC.
* The third section will contain some closed and open questions to WebCorC & KeY.

The questionnaire will mostly have a tabular format. You might not always have the answer directly in your mind. This is not a problem, try to stick to your first/intuitive impression if possible and fill **every** answer out. Especially the user experience questionnaire will have many different evaluation items, where you might feel like answering similar questions again. This is intended and part of a scientific evaluation approach, so please try to answer all of the items and especially honestly. There will be no right or wrong.

**Handing in Your Questionnaire**

**After filling out the questionnaire, please upload it to the evaluation CloudStorage folder, using the following upload formular link:**

<https://cloudstorage.tu-braunschweig.de/preparefilelink?folderID=2JkFkvfqmUbxhyurgZK3h>

**The link is password-protected with the following password: “WebCorC”.**

**After typing in the password, you are asked to type in a username and an e-mail address before being able to select a file for uploading. You can type in any username, using the session id that you have inserted some lines above might be the most unique and anonymous way. The e-mail address is only for verification purposes of CloudStorage and will not be stored (uploads via the formular link are anonymous). After filling out the data, you can select the file to be uploaded. Either you upload this .docx file, or you export a PDF and upload the PDF file. All data from the questionnaire will be only used for the user study.**

**Programming Experience**

**Please describe your programming experience according to the following questions. The answers will help determining the overall group experience for this user study.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Mark an answer with “X”.**  **(1: very inexperienced, 5: very experienced)** | **1** | **2** | **3** | **4** | **5** |
| **How do you estimate your programming experience compared to experts with 20 years of practical experience?** |  | **X** |  |  |  |
| **How do you estimate your programming experience compared to your classmates?** |  |  | **X** |  |  |
| **How experienced are you with the following languages: Java** |  |  | **X** |  |  |
| **How experienced are you with the following languages: C** | **X** |  |  |  |  |
| **How experienced are you with the following languages: Haskell** | **X** |  |  |  |  |
| **How experienced are you with the following languages: Prolog** | **X** |  |  |  |  |
| **How experienced are you with the following programming paradigms: functional programming?** |  |  | **X** |  |  |
| **How experienced are you with the following programming paradigms: imperative programming?** |  |  | **X** |  |  |
| **How experienced are you with the following programming paradigms: logical programming?** | **X** |  |  |  |  |
| **How experienced are you with the following programming paradigms: object-oriented programming?** |  |  | **X** |  |  |
| **On a scale from 1 (very inexperienced) to 10 (very experienced), how do you estimate your programming experience?** | **5** | | | | |
| **How many additional languages do you know (medium experience or better)? Answer with a number** | **3** | | | | |
| **For how many years have you been programming?** | **6** | | | | |
| **For how many years have you been programming for larger software projects, e.g., in a company?** | **1** | | | | |
| **What year did you enroll at university?** | **--** | | | | |
| **How many courses did you take in which you had to implement source code?** | **6** | | | | |
| **How large were the professional projects typically?** | **1k – 10k LoC** | | | | |
| **How old are you?** | **--** | | | | |

**User Experience Questionnaire**

**Please rate your user experience with WebCorC considering these 26 items. Tick the box with an “X” that describes your impression towards the two opposite words in each row. The middle (4) is the neutral answer. However, on which side a word stands, is not related to being a positive or negative term.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** |  |
| **annoying** |  | **X** |  |  |  |  |  | **enjoyable** |
| **not understandable** |  | **X** |  |  |  |  |  | **understandable** |
| **creative** |  |  |  |  |  | **X** |  | **dull** |
| **easy to learn** |  |  |  |  | **X** |  |  | **difficult to learn** |
| **valuable** |  |  |  |  | **X** |  |  | **inferior** |
| **boring** | **X** |  |  |  |  |  |  | **exciting** |
| **not interesting** |  |  | **X** |  |  |  |  | **interesting** |
| **unpredictable** |  |  | **X** |  |  |  |  | **predictable** |
| **fast** |  |  |  | **X** |  |  |  | **slow** |
| **inventive** |  |  |  | **X** |  |  |  | **conventional** |
| **obstructive** |  |  |  | **X** |  |  |  | **supportive** |
| **good** |  |  |  |  | **X** |  |  | **bad** |
| **complicated** |  |  |  | **X** |  |  |  | **easy** |
| **unlikeable** |  |  |  | **X** |  |  |  | **pleasing** |
| **usual** |  |  | **X** |  |  |  |  | **leading edge** |
| **unpleasant** |  |  | **X** |  |  |  |  | **pleasant** |
| **secure** |  |  |  | **X** |  |  |  | **not secure** |
| **motivating** |  |  |  | **X** |  |  |  | **demotivating** |
| **meets expectations** |  |  |  |  |  | **X** |  | **does not meet expectations** |
| **inefficient** |  |  |  | **X** |  |  |  | **efficient** |
| **clear** |  |  |  | **X** |  |  |  | **confusing** |
| **impractical** | **X** |  |  |  |  |  |  | **practical** |
| **organized** |  | **X** |  |  |  |  |  | **cluttered** |
| **attractive** |  |  |  | **X** |  |  |  | **unattractive** |
| **friendly** |  |  |  |  | **X** |  |  | **unfriendly** |
| **conservative** |  |  | **X** |  |  |  |  | **innovative** |

**General Questions**

**In the last part, some general questions around your implementation process are asked. There are also some open questions, where a short answer should be written. The questions containing a “and why” clause ask you for your opinion with a short reasoning.**

|  |  |
| --- | --- |
| **How do you rate your overall** work **with WebCorC from 1 (very bad) to 5 (very good)?** | **2** |
| **What is your general process when solving tasks with (Web)CorC/Key?** | * **Spezifikation lessen** * **Spezifikation interpretieren** * **Code entwerfen** * **Code implementieren** * **Code Prüfen** * **Ggfls. Reiterien & bugfixen** |
| **Do you prefer a web frontend over the Eclipse environment and why?** | **Eclipse ist besser als das Web Frontend, weil mehr Cross-Funktionalitäten zur Verfügung stehen** |
| **Were there any specific obstacles during the task execution process?** | **Insbesondere die Aufgabe zur Lösung mit CbC war für mich unverständlich, weil lediglich die formale Spezifikation gegeben war und man schlussendlich raten musste, was man unter den einzelnen variablen zu verstehen hat (Bsp.: ist die zu verwendende Schleifenvariable jetzt i, q oder j? Welche Semantik soll ein minSearch genau haben? Es fehlen alle intuititv verständlichen Informationen, die man sonst z.B. durch Pseudocode oder UML vermittelt bekommt)** |
| **Is the construction of a program by modeling through a refinement structure helpful and why?** | **Ich finde, dass CbC meinen Entwurf unnötigerweise einschränkt. Ich bin bei CbC nicht in einen kreativen Workflow geraten, wie es beim normalen Programmieren mit Java der Fall ist. Das „Baukastensystem“ von CbC empfand ich als bevormundend.** |
| **Do you prefer (Web)CorC or KeY in general and why?** | **Ich finde KeY ist im Gegensatz zu CorC ein wirklich tolles Tool, an dem ich sehr viel Spaß in der Bedienung empfinde und das meinen Entwurfsprozess auch unterstützt, ohne dass es meine Kreativität einschränkt** |
| **Which of these two tools would you use for verification and why?** | **Eindeutig KeY. Neben der besseren Bedienbarkeit ist es vor allem auch die Freiheit, die KeY einem im Gegensatz zu CbC im Entwurf lässt.** |
| **Which tool better supports avoiding or fixing defects and why?** | **KeY kann besser Bugs als CbC aufdecken, weil ich bei KeY die syntaktischen Beweisbäume tracken kann, um Fehler in meiner Spezifikation bzw. Implementierung ausfindig zu machen** |

**Raffle Participation**

**As a thank you for participating in the user study, a raffle will be held, and two people will receive 25 € each.**

**If you wish to enter the raffle, please provide your e-mail address below (where we will also contact you in case you win). The e-mail address will only be used for the raffle and once the winners are chosen, we will directly delete the e-mail information from the questionnaires.**

|  |  |
| --- | --- |
| **E-Mail** |  |

**As this is the end of the questionnaire, please hand in your filled documents considering the instructions at the beginning of this document.**