

CodeSparks Framework Survey

1 Introductory-Questions [Page-ID: 6832060] [L]

In which degree program were you studying at the time you implemented a CodeSparks plugin?

☐ Bachelor

☐ Master

☐ Other:

In what year did you start working on your CodeSparks plugin?

☐ 2018

☐ 2019

☐ 2020

☐ 2021

In what context did you implement a CodeSparks plugin?

☐ Bachelor's thesis

☐ Master's thesis

☐ Advanced Practical Course at the Software-Engineering Group

☐ Course or lecture (e.g. Advanced Software Engineering)

For which integrated development environment did you implement a CodeSparks plugin?

☐ IntelliJ IDEA

☐ PyCharm

☐ Android Studio

☐ Other, namely:

For which programming language did you implement a CodeSparks plugin?

☐ Java

☐ Python

☐ Java for Android

☐ Other, namely:

Please rate your experience in the development of IntelliJ plugins before you started the implementation of your CodeSparks plugin.

☐ 1 (No experience)

☐ 2

☐ 3

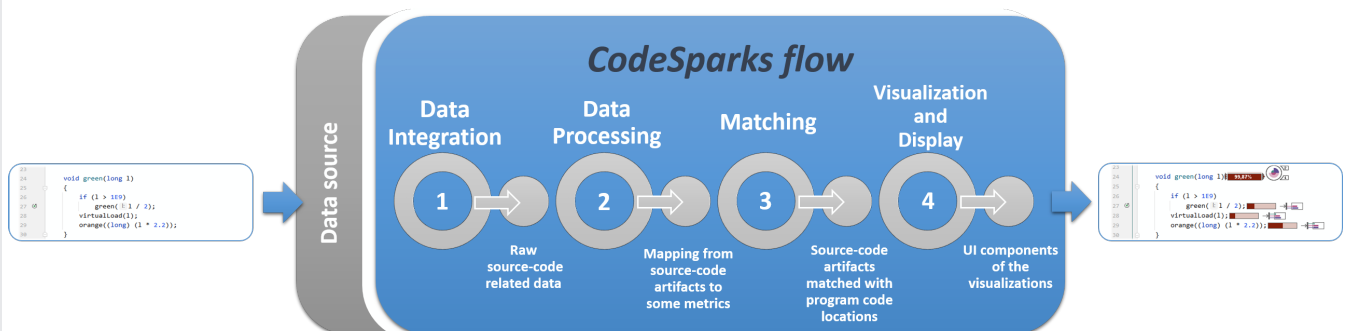
☐ 4

☐ 5

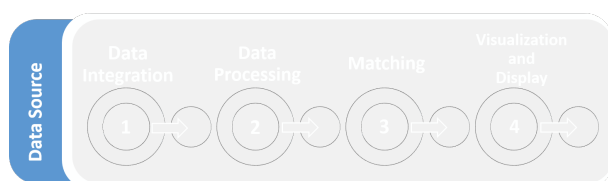
☐ 6 (Expert)

2 About-the-CodeSparks-flow [Page-ID: 6838009] [L]

In the center of the CodeSparks framework is the so-called **CodeSparks flow**. It describes the pipeline architecture used to process the source-code related data and consists of four main phases. First, there is the data integration phase, in which the raw data from the data source is integrated into the system. This is followed by the data processing phase in which the raw data is transformed into a mapping from source-code artifacts to some metric values. Afterwards the source-code matching is performed to match the source-code artifacts to its corresponding program-code locations in the source-code editors. Finally, in the visualization and display phase, the registered (interactive) in-situ visualizations are generated and displayed to the user.



3 Data-source [Page-ID: 6837512] [L]



Did you create your own data source or use an external data source?

☐ I created an own data source

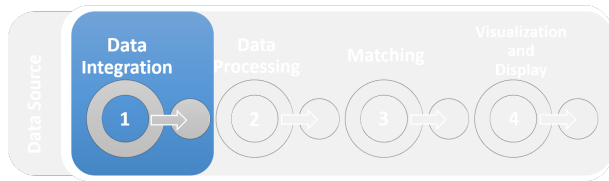
☐ I used an external data source (e.g. PMD or external profilers like PETrA)

☐ Other

Please briefly describe your data source.

Bullet points are sufficient. Please use a new line (press Enter) for each bullet point. For instance: the used profiling approach such as statistical profiling or the framework/tool with corresponding configuration used to collect what data?

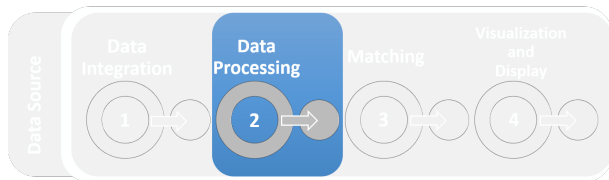
4 Data-Source-Integration [Page-ID: 6847687] [L]



Did you integrate the data source yourself or was an integration already provided?

- ☐ I integrated the data source myself
- ☐ The integration of the data source was already provided
- ☐ The integration of the data source was already provided but I had to customize it

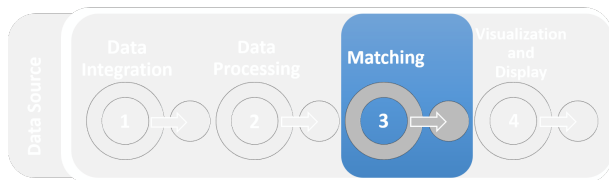
5 Data-Source-Processing [Page-ID: 6847693] [L]



Did you implement the processing of the data yourself or was it already provided?

- ☐ I implemented the data processing myself
- ☐ The data processing was already provided
- ☐ The data processing was already provided but I had to customize it

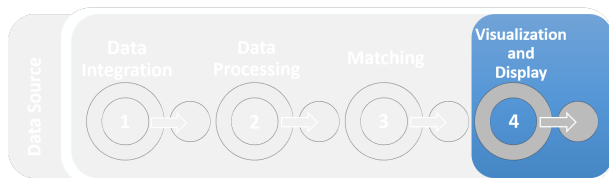
6 Matching [Page-ID: 6841637] [L]



Did you create a new approach for the matching of the source-code artifacts to their program-code location or did you use an existing one?

- ☐ I created a new approach
- ☐ I used an already existing one

7 Visualization [Page-ID: 6838037] [L]



Did you create novel visualizations or customize existing ones?

Creating a novel visualization means that you designed your visualization from scratch, while customization means that you took an existing visualization design and made only a few modifications to it.

- ☐ I created one or more novel visualizations
- ☐ I customized one or more existing ones
- ☐ Both

Please briefly describe each of your visualizations.

Bullet points are sufficient. Please use a new line (press Enter) for each bullet point. For instance: "A three-valued scale colored bar chart showing the Cyclomatic Complexity of a method relative to its class".

8 Visualization-Interaction [Page-ID: 6838081] [L]



Did you implement any user interactions for your visualizations?

For instance: a popup window or a tool-tip

- ☐ Yes
☐ No

9 Filter Visualization-Interaction-Filter [Filter-ID: 6838084]

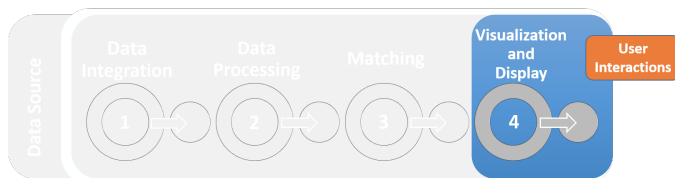
v_73 Einfachauswahl
untereinander



gleich 1

Did you implement any user interactions for your visualizations? - Einfachauswahl untereinander (von Seite 8: [Visualization-Interaction](#))

9.1 Viz-Interaction-Details [Page-ID: 6838089] [L]



Did you create novel user interactions for your visualizations or customize existing ones?

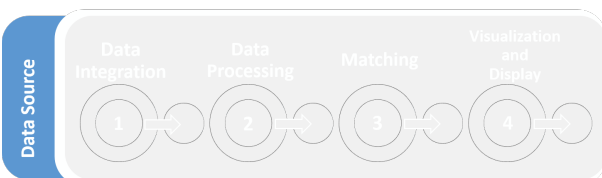
Create a novel user interaction means that you designed your user interaction from scratch, while customization means that you took the existing user-interaction classes, e.g. MouseListeners, and made only a few modifications to it.

- ☐ I created one or more novel user interactions
☐ I customized one or more existing ones
☐ Both

Please briefly describe your intention behind each user interaction for your visualizations.

Bullet points are sufficient. Please use a new line (press Enter) for each bullet point. For instance: for source-code navigation, to display detailed data, to explore the data, to filter the data etc.

10 Code-size [Page-ID: 6843412] [L]



How much program code did you write to implement the data source excluding the code for its integration into the CodeSparks flow?

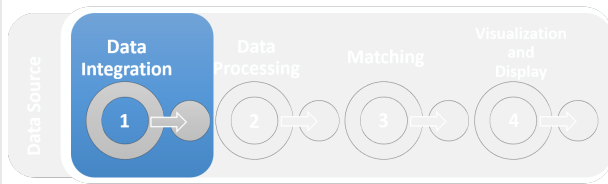
Lines of code (approx.)

- ☐ less than 100
☐ 100-499
☐ 500-999
☐ 1.000-4.999
☐ 5.000-9.999
☐ 10.000 or more

Source files (approx.)

- ☐ 1-4
☐ 5-9

- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more



How much program code did you write to integrate your data source into the CodeSparks flow?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Source files (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more

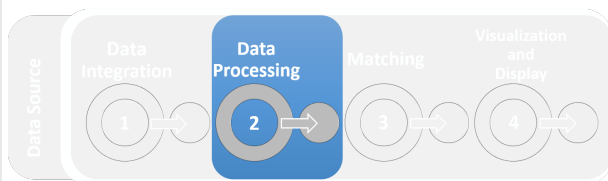
How much program code did you write or edit to customize the provided integration of the data source?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more



How much program code did you write to process the data?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more

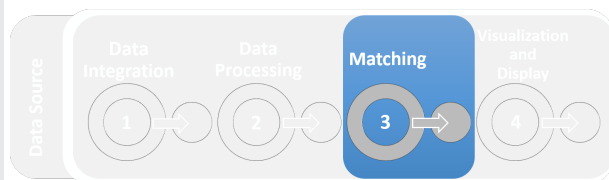
How much program code did you write or edit to customize the provided processing of the data?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more



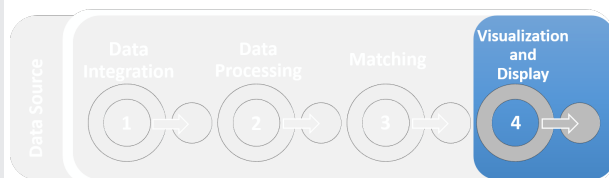
How much program code did you write to implement the new approach for the matching of the source-code artifacts?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more



How much program code did you write to implement your novel visualizations?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more

How much program code did you write or edit to customize existing visualizations for your purpose?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more



How much program code did you write to implement your novel user interactions for your visualizations excluding the code for the visualizations itself?

Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more

How much program code did you write or edit to customize existing user interactions for your visualizations?

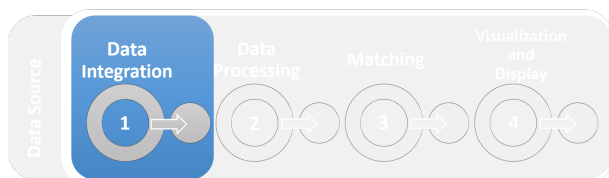
Lines of code (approx.)

- ☐ less than 100
- ☐ 100-499
- ☐ 500-999
- ☐ 1.000-4.999
- ☐ 5.000-9.999
- ☐ 10.000 or more

Java classes (approx.)

- ☐ 1-4
- ☐ 5-9
- ☐ 10-19
- ☐ 20-49
- ☐ 50-99
- ☐ 100 or more

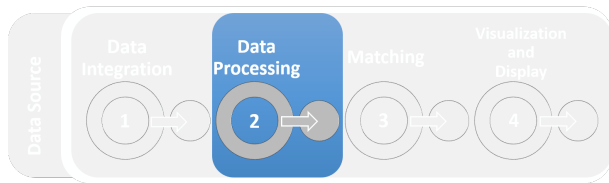
11 Time-effort [Page-ID: 6843505] [L]



How much time did you spend on the integration of your data source into the CodeSparks flow?

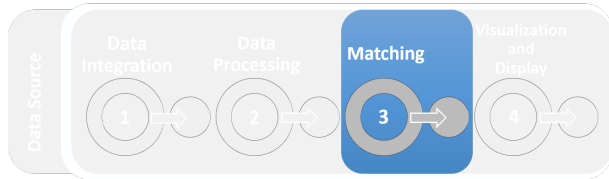
Note, the integration of the data source does not comprise the implementation of the data source itself!

- ☐ A few minutes
- ☐ About an hour
- ☐ Several hours
- ☐ A work day
- ☐ Several work days
- ☐ A work week or more



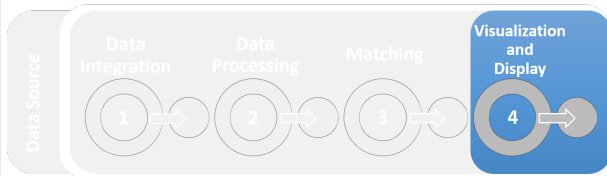
How much time did you spend on the implementation of the data processing?

- ☐ A few minutes
- ☐ About an hour
- ☐ Several hours
- ☐ A work day
- ☐ Several work days
- ☐ A work week or more



How much time did you spend on the matching of the source-code artifacts to their program-code locations?

- ☐ A few minutes
- ☐ About an hour
- ☐ Several hours
- ☐ A work day
- ☐ Several work days
- ☐ A work week or more

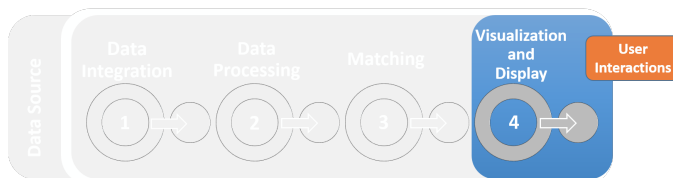


How much time did you spend on the implementation of your visualizations excluding possible interactions?

- ☐ A few minutes
- ☐ About an hour
- ☐ Several hours
- ☐ A work day
- ☐ Several work days
- ☐ A work week or more

How much time did you need to register your visualizations with the CodeSparks flow?

- ☐ A few minutes
- ☐ About an hour
- ☐ Several hours
- ☐ A work day
- ☐ Several work days
- ☐ A work week or more

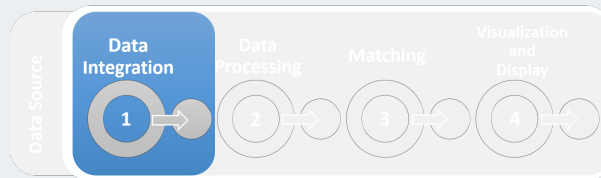


How much time did you spend on the implementation of the user interactions for your visualizations?

- ☐ A few minutes
- ☐ About an hour
- ☐ Several hours
- ☐ A work day
- ☐ Several work days
- ☐ A work week or more

12 Filter Data-Source-Integration-Filter [Filter-ID: 6852523]

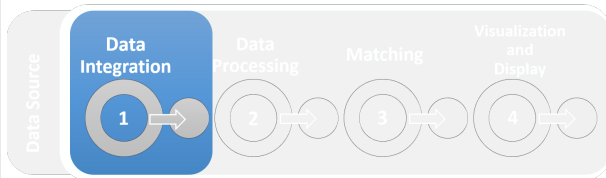
v_89 Einfachauswahl
untereinander



ungleich 2

Did you integrate the data source yourself or was an integration already provided? - Einfachauswahl untereinander (von Seite 4: [Data-Source-Integration](#))

12.1 CC-Data-Source-Integration [Page-ID: 6843716] [L]



How would you rate the number of interfaces that need to be implemented to integrate your data source into the CodeSparks flow?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

How would you rate the comprehensibility of the interfaces for integrating your data source into the CodeSparks flow?

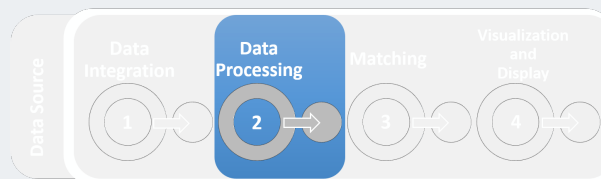
- ☐ Very easy
- ☐ Easy
- ☐ Rather easy
- ☐ Rather difficult
- ☐ Difficult
- ☐ Very difficult

How would you rate the programming effort required to integrate your data source into the CodeSparks flow?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

13 Filter Data-Source-Processing-Filter [Filter-ID: 6852525]

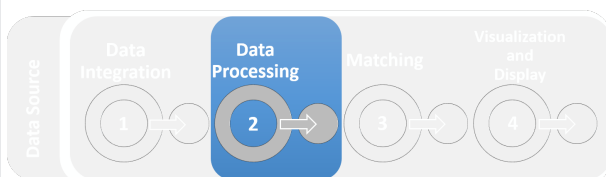
v_92 Einfachauswahl
untereinander



ungleich 2

Did you implement the processing of the data yourself or was it already provided? - Einfachauswahl untereinander (von Seite 5: [Data-Source-Processing](#))

13.1 CC-Data-Processing [Page-ID: 6849339] [L]



How would you rate the number of interfaces that need to be implemented to process the data?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate

- ☐ Inappropriate
- ☐ Absolutely inappropriate

How would you rate the comprehensibility of the interfaces for processing the data?

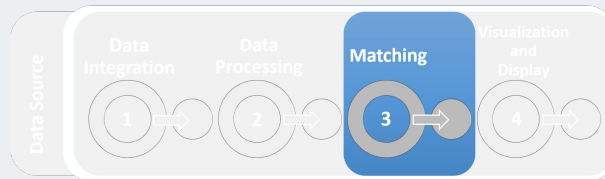
- ☐ Very easy
- ☐ Easy
- ☐ Rather easy
- ☐ Rather difficult
- ☐ Difficult
- ☐ Very difficult

How would you rate the programming effort required to process the data?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

14 Filter Matching-Filter [Filter-ID: 6852589]

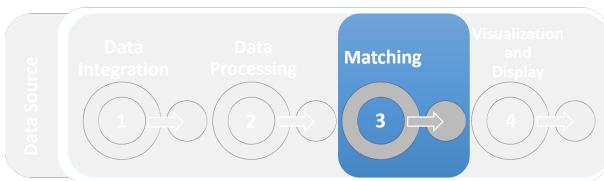
v_58 Einfachauswahl untereinander



gleich 1

Did you create a new approach for the matching of the source-code artifacts to their program-code location or did you use an existing one? - Einfachauswahl untereinander (von Seite 6: [Matching](#))

14.1 CC-Matching [Page-ID: 6852590] [L]



How would you rate the number of interfaces that need to be implemented to match the source-code artifacts to their program-code locations?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

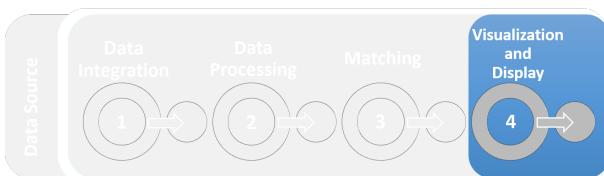
How would you rate the comprehensibility of the interfaces for the matching of the source-code artifacts to their program-code locations?

- ☐ Very easy
- ☐ Easy
- ☐ Rather easy
- ☐ Rather difficult
- ☐ Difficult
- ☐ Very difficult

How would you rate the programming effort required to match the source-code artifacts to their program-code locations?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

15 CC-Visualization [Page-ID: 6843718] [L]



How would you rate the number of interfaces that need to be implemented to create the visualizations?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

How would you rate the comprehensibility of the interfaces for the creation of the visualizations?

- ☐ Very easy
- ☐ Easy
- ☐ Rather easy
- ☐ Rather difficult
- ☐ Difficult
- ☐ Very difficult

How would you rate the programming effort required to create the visualizations?

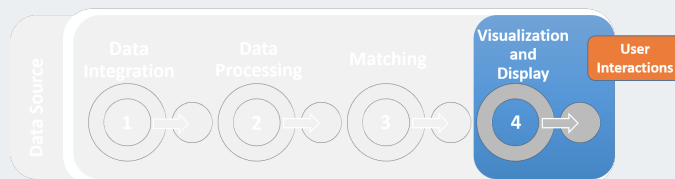
- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

How would you rate the programming effort required to register the visualizations with the CodeSparks flow?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

16 Filter Visualization-Interaction-Filter [Filter-ID: 6852527]

v_73 Einfachauswahl untereinander



gleich 1

Did you implement any user interactions for your visualizations? - Einfachauswahl untereinander (von Seite 8: Visualization-Interaction)

16.1 CC-Visualization-Interaction [Page-ID: 6843720] [L]



How would you rate the number of interfaces that need to be implemented to create the user interactions with the visualizations?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate
- ☐ Inappropriate
- ☐ Absolutely inappropriate

How would you rate the comprehensibility of the interfaces for the creation of the user interactions with the visualizations?

- ☐ Very easy
- ☐ Easy
- ☐ Rather easy
- ☐ Rather difficult
- ☐ Difficult
- ☐ Very difficult

How would you rate the programming effort required to create the user interactions with the visualizations?

- ☐ Absolutely appropriate
- ☐ Appropriate
- ☐ Slightly appropriate
- ☐ Slightly inappropriate

- ☐ Inappropriate
- ☐ Absolutely inappropriate

17 Intro-Experience [Page-ID: 6842081] [L]

Good job! We knew you would make it! The end is within reach!

In the following, you will be asked a few more questions regarding your general experience with the CodeSparks framework.

18 Experience-with-the-framework [Page-ID: 6838572] [L]

How would you rate the overall comprehensibility of the architecture of the CodeSparks framework?

- ☐ Very easy
- ☐ Easy
- ☐ Rather easy
- ☐ Rather difficult
- ☐ Difficult
- ☐ Very difficult

How would you rate the duration it took until (intermediate) results became visible?

For instance as console output, in the CodeSparks log view or as preliminary visualizations

- ☐ Very short
- ☐ Short
- ☐ Rather short
- ☐ Rather long
- ☐ Long
- ☐ Very long

How often was a deeper understanding of IntelliJ Plugin Development critical to the implementation of your CodeSparks project?

- ☐ Never
- ☐ Rarely
- ☐ Rather rarely
- ☐ Rather often
- ☐ Often
- ☐ Always

How much were internals of the IntelliJ Plugin Development a problem for your progress on implementing your CodeSparks plugin?

- ☐ Not at all a problem
- ☐ Minor problem
- ☐ Moderate problem
- ☐ Serious problem

Please rate how internals of IntelliJ Plugin Development were hidden by the CodeSparks framework?

- ☐ Completely hidden
- ☐ Very well hidden
- ☐ Well hidden
- ☐ Fairly hidden
- ☐ Poorly hidden
- ☐ Not hidden at all

How often did you need expert support, e.g. by one of the members of the Software-Engineering Group, regarding ...

... internals of IntelliJ Plugin Development?

- ☐ Never
- ☐ Rarely
- ☐ Rather rarely
- ☐ Rather often
- ☐ Often
- ☐ Always

... details of the CodeSparks framework?

- ☐ Never
- ☐ Rarely
- ☐ Rather rarely
- ☐ Rather often
- ☐ Often
- ☐ Always

What functionality of the CodeSparks framework has been most helpful to you?

For example, something that you are glad was already there and possibly saved you a lot of work.

Was there any functionality missing?

For example, a functionality that you needed or expected to be there, but just wasn't there

Which aspect of the CodeSparks flow was ...

... the most difficult to deal with?

The data-source integration (exluding a possible implementation of the data source)
The processing of the data
The matching of the source-code artifacts to their program-code locations
The creation of the visualizations of the source-code artifacts
The user interactions with the visualizations
Other:

Other:

... the easiest to deal with?

The data-source integration (exluding a possible implementation of the data source)
The processing of the data
The matching of the source-code artifacts to their program-code locations
The creation of the visualization of the source-code artifacts
The user interactions with the visualizations
Other:

Other:

19 Future [Page-ID: 6838589] [L]

After completing your CodeSparks project, have you experienced any programming situation where you wished you had an in-situ visualization for it? Please describe.

20 Additional-Comments [Page-ID: 6838187] [L]

Do you have any additional comments on the CodeSparks framework you want to share with us?

21 Soziodemographisch [Page-ID: 6831892] [L]

What is your age group?

- ☐ under 18
☐ 18-24
☐ 25-34
☐ 35 and older

What semester are you in?

- 1
2
3
4
5
6
7
8
9
10
11
12
13 and more

What subject are you studying?

- ☐ Computer Science
☐ Business Informatics
☐ Mathematics
☐ Other:

Have you successfully completed the module "Programming II / Advanced Programming"?

- ☐ Yes
☐ No
☐ not applicable

Do you have any non-academic programming experience?

For example: private software projects, contributions to open source software, activity in a software company etc.

☐ Yes, in years:

☐ No

Please rate your experience in the usage of third-party programming libraries and frameworks.

- ☐ 1 (No experience)
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 (Expert)

Please rate your Java programming skill level.

- ☐ 1 (Novice)
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 (Expert)

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You have reached the end of the survey. Thank you very much for your participation!