Red Hat

Materials for User Feedback Round #2

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Summary of Research to Date

Thus far, we have created two designs that integrate AI into the developer IDE space. The first is a documentation tool that initially helps the user figure out who authored the code and functions as a citation tool. However, based on feedback from our concept testing, we plan to adjust this tool to focus on creating concise documentation for the header of your file, as this use case matches more closely with the true developer experience as opposed to a student coder experience.

Our second tool is called SummarizerAI and is used to summarize confusing bits of code if someone needs to learn about code they're unfamiliar and need to build off of, or are tasked with refactoring old code that's confusing or in a language they're less familiar with. It functions as a "code summarizer" chatbot used to better understand code and develop recommendations for how it can be refactored. In our past concept testing, we found that users particularly struggled with understanding certain lines of copy like "Scan for patterns" or how the summaries are presented. Therefore, we intend to make sure that these features are clarified with clear headers, and descriptions, and are formatted in concise sentences.

After designing these tools we conducted concept testing with three users, Emma, Sanjana, and Kristin. These users aligned with our student user persona, given that they are computer science students and have demonstrated knowledge and experience in the developer space via internships and/or student classwork. We learned that our initial designs were too small for our users to see, especially if they were to be displayed on a 13-inch laptop as opposed to a larger monitor. We also gained insights into our language use, for example using the word Citation in the name of our documentation tool, previously titled CitationAI, was confusing to users as well as the terms "style" and "type" in our first design.

Additionally, given that the wireframes were not fully interactive and gave the user limited ability to explore unique routes, our users were not able to provide specific feedback on interface interactions. As such, moving forward into the next user feedback round, we aim to create fully interactive, high-fidelity prototypes that allow users to interact with all components of the interface.

Insights: Documentation Tool

Our participants found the purpose of the documentation and citation tool unclear. For instance, two out of three participants interviewed mentioned that the categories under the style and types (e.g. "numpy" and "DocStrings") did not make sense. Additionally, users generally rated the usability as in the 2-3 range on a Likert Scale, denoting it as difficult to use or neutral. It was also discovered that the word "citation" did not match with user mental models because they don't usually see it used in a computer science context. They suggested changing the wording to something like "DocumentationAI" or "Documentation Generator". Additionally, the neon popup did not stand out immediately to some users, mentioning that it was relatively small, especially on a larger monitor.

Insights: Summarizer AI Tool

Overall, users rated the summarizer AI tool a 4 and 5 on the Likert scale, indicating that they found the tool very simple and intuitive to use. However, while users found the summarizer tool to be helpful, they were confused about what the scope of the tool was. For instance, users found it unclear whether the tool could summarize individual lines of code, entire sections of code, or functions. Additionally, when thinking about the output, users preferred seeing the information displayed as a few bullet points rather than a small paragraph. There were also suggestions of having a split screen option for this tool and a search feature to navigate or parse through previously saved summaries. We plan on testing this feedback in our next iteration.

Additionally, users were confused about whether this tool was specifically focused on "refactoring" or "summarization." As a clarification, we decided to change the tool name to "Summarizer AI" rather than simply "Refactoring Tool" given that users found the refactoring tool to be a smaller use case in the umbrella category of summarizing.

Research Goals

In our concept test our research goals centered around refining our concepts and further confirming the pain points. We now have a better idea of what users expect from each feature.

In our second round of user testing, we want to focus more on testing the flow and interactions of the experience our tool creates and evaluate the effectiveness of our prototype. Our methodology reflects this as we are now asking users to complete

different types of tasks in addition to probing them to learn about their expectations. In our research, we aim to understand:

1. How users interact with the tool
2. Road bumps and areas of friction in the user journey
3. Learn about what's working well in our design
4. Clarify anything that's still confusing to the user
5. Learn about how frequently the user may implement the tool
6. Understanding where users would use each of these tools, if at all?

Methodology

We will be conducting usability testing to confirm the updates and fixes we've made to our initial prototype. The first round of tests helped us narrow down our various designs to one design in each concept. The second round of testing will help us get a better idea of any roadblocks developers face when interacting with the design, learn how users feel about the flow, and see if there are any points of confusion left in our design. Artifacts that we will create from our research will be our interview findings, data from our SUS scale, and usability testing results.

Agenda for the Usability Testing Session

1. Introduction
2. Pre-test Interview
3. Design 1 Usability Testing
4. Post Usability Testing Interview & SUS Questionnaire
5. Design 2 Usability Testing
6. Post Usability Testing Interview & SUS Questionnaire

Introduction [3 min]

"Hi [participant name], thanks for taking the time to participate in our Usability testing session today. We're going to show you a few designs of ideas we're working on for our project. If you have questions at any point, please feel free to stop us and ask. Before we get started, I want to ask if I have your consent to participate in the research study? I want to also remind you that you are also able to stop at any point during the study. Ok, let's get started!"

Pre-test Interview

- Ask participants to record the session.
- What is your level of experience with AI tools/technologies for developers?
- Can you describe your typical workflow for documentation?
- Can you describe your typical workflow for refactoring?
- What are your expectations for a tool that helps with documentation?
- What are your expectations for a tool that helps with refactoring?

Usability Testing:

"My colleague has made different designs to integrate AI into the developer workflow, and we would like to see how you can navigate them. Please give us your honest opinions on the concepts so we can optimize our product, and let us know at any point if you are confused or need clarification! Okay, let's get started! We will be asking you to complete a series of tasks to better understand how our current designs can improve your coding experience. We did not design these wireframes, we're testing our teammates' designs, so feel free to be harsh with your criticisms! Just another reminder that we're testing the usability of the design, and your experiences here aren't a reflection of your abilities. We want your honest opinion!"

Design 1 - Documentation AI

DevHub

1. You are new to the project and you want to see how the project has been set up. Where would you go? (Ask: does this graph make sense to you?)
2. You want to see the existing files. How might you check the files? (Ask: does the information make sense to you?)

IDE

1. You are done with coding and you're asked to write a summary to document what your code does in the project. There is an AI tool built inside this IDE. How might you access it?

Post Usability Interview

1. What were you expecting when you pressed "generate code"?
2. Can you walk us through a piece of code you documented that you are proud of, if there's any?

3. Can you walk us through a piece of code someone documented and you thought was helpful, if there's any?
4. Do you find anything confusing about the design? If so, what and why?
5. Do you find anything missing in the design? If so, what and why?
6. How might this tool contribute to collaborating with other developers?

Post Usability Questionnaire (SUS)

System Usability Scale Questionnaire	Strongly Disagree				Strongly Agree
1. I think that I would like to use this product frequently.	1	2	3	4	5
2. I found the product unnecessarily complex.	1	2	3	4	5
3. I thought the product was easy to use.	1	2	3	4	5
4. I think that I would need the support of a technical person to be able to use this product.	1	2	3	4	5
5. I found the various functions in the product were well integrated.	1	2	3	4	5
6. I thought there was too much inconsistency in this product.	1	2	3	4	5
7. I imagine that most people would learn to use this product very quickly.	1	2	3	4	5
8. I found the product very awkward to use.	1	2	3	4	5
9. I felt very confident using the product.	1	2	3	4	5
10. I needed to learn a lot of things before I could get going with this product.	1	2	3	4	5

Design 2 - Summarizer AI

1. Use Summarizer AI to generate a summary of the "factorial" function.
2. Save the summary.
3. How can you get to your old summaries?
    a. Delete a summary?

4. Use Summarizer AI to generate refactoring suggestions for the “factorial” function.
5. How would you navigate to the summary glossary?

Post Usability Interview

7. Can you walk us through how a piece of code you have refactored, if there’s any?
8. Do you find anything confusing about the design? If so, what and why?
9. Do you find anything missing in the design? If so, what and why?

Post Usability Questionnaire (SUS)

System Usability Scale Questionnaire	Strongly Disagree				Strongly Agree
1. I think that I would like to use this product frequently.	1	2	3	4	5
2. I found the product unnecessarily complex.	1	2	3	4	5
3. I thought the product was easy to use.	1	2	3	4	5
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General Probing Questions:

“Thanks again for participating in our usability test! Your feedback is super helpful and will help us move forward with a product design that is best suited for developers like you. If you think of any other feedback you’d like to tell us, feel free to contact us in the

future and we'd be happy to keep the conversation going. Before we wrap this session up, we'd like to ask a few quick questions:

1. What do you expect to see/happen? Why?
2. Can I ask, why you think ____?
3. Is there anything you find unclear?