Report: WikiFunctions Usability Research (Bangla)

Prepared for

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Introduction

WikiFunctions is a new platform by the Wikimedia Foundation for the developer community. It facilitates the developers and programmers to create and share custom functions with the community. Userhub was assigned to conduct a usability study with the Bangladeshi developer and programmers to ensure WikiFunctions messaging is understandable, and the workflows of the 'define function', 'view function', and 'edit function' are intuitive for the users.

Method

We selected 5 participants (n=5) from the Bangladeshi developer community. The qualitative usability study was performed in moderated sessions through online video calls with individual participants. The study was done in two parts; in the first part, we presented two sets of Bangla prototypes to the participants and requested them to share their screens. While they use the interfaces, we asked them some semi-structured questions and recorded their responses. The second part was a comparison test, where we let the participants browse the English prototypes and answer questions about their language preferences.

The language of the sessions was Bangla. The sessions were recorded and transcribed. Thematic analysis of the session data was done to compile the findings.

Participants

The participants were beginner, intermediate, expert, and advanced level programmers (Java, Kotlin, C#, and C++) with 7 and over 10 years of experience. Most of the participants belong to the 18-34 age group and others belong to the 35-54 age group. All participants are male. Most of them are fluent in both English and Bangla. None of the participants are Wikipedia contributors.

The participants like gaming, listening to music, spending time with friends and families, workouts, touring, reading articles, and watching tutorials for fun. They browse the internet primarily in English and most of them use Bangla sometimes. For using the internet, they use desktops, laptops, and mobile. They find their interest in communication systems, Facebook, YouTube, research, movies, news, etc.

Most of the participants use Wikipedia primarily in English, and Bangla contextually. Most of the participants use Wikipedia on laptops and others use desktops and mobile.

Findings

Bangla Artifact 1

Homepage

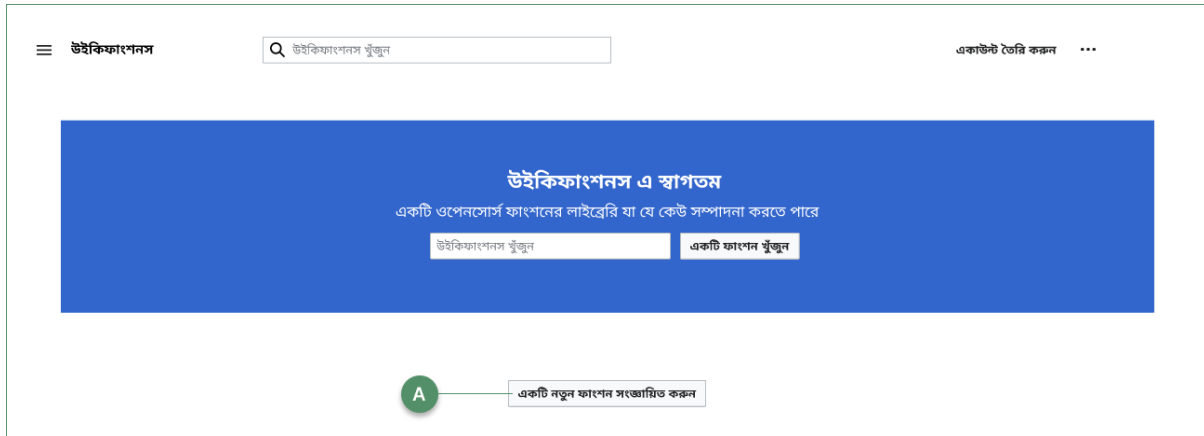Most of the participants did not notice the "Define a new Function" button.

Figure 1: A) Define a new function button

Define Function

Most of the participants did not notice the search bar. All the participants noticed "Define a function".
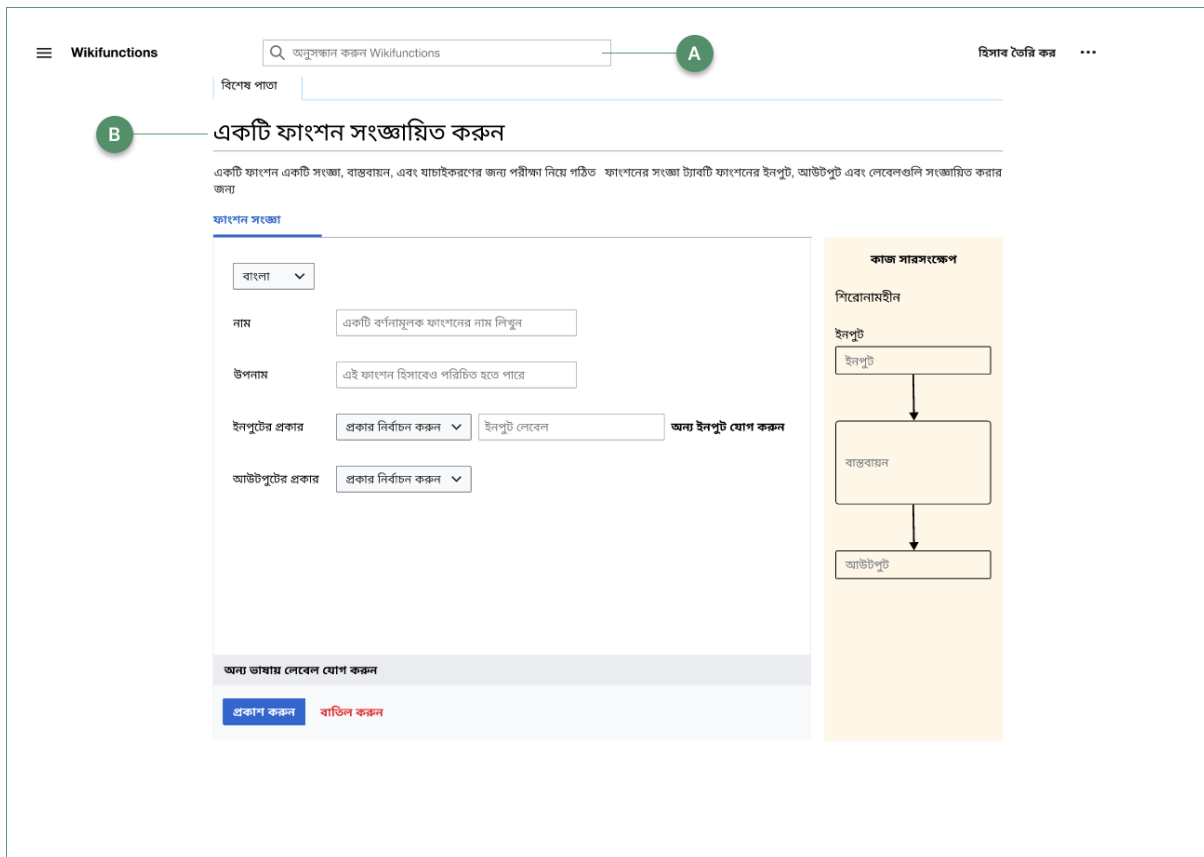Most of the participants understood its purpose.

Figure 2: A) Search bar   B) Define a function

Most of the participants did not notice the description, whereas one participant suggested that the description should be clearer.

Most of the participants noticed the language switching dropdown and understood its purpose.

All participants noticed the function definition form. Most of the participants noticed the function name had been changed.

Figure 3: A) Description B) Language Dropdown C) Change of function name

All participants understood the input types. One participant suggested adding "Integer" in input types. Another participant suggested adding stars beside "Input Type" to indicate it is required. One participant did not understand List (function).

Most of the participants noticed "Give me any string".

Most of the participants did not notice the "Add another input" button. One participant did not notice it at first but he noticed it later.
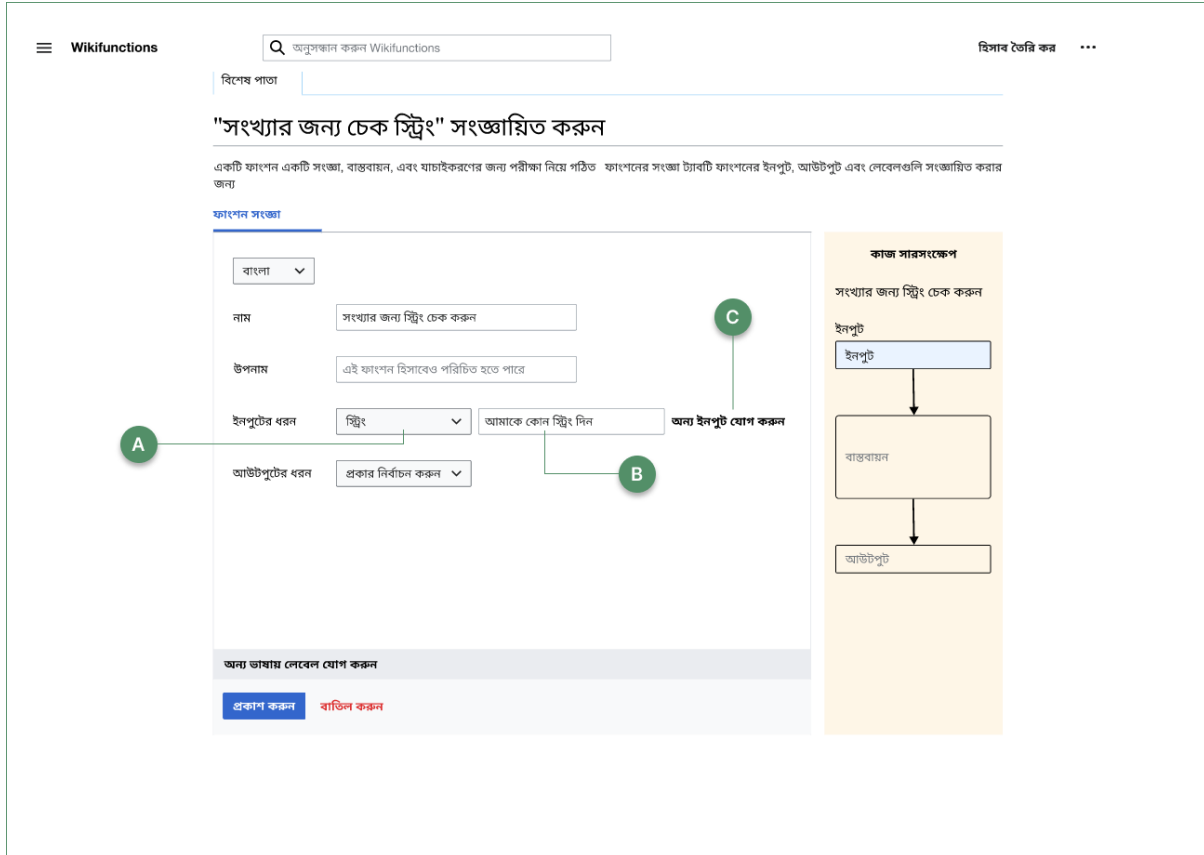
Figure 4: A) Input types B) Give me any string C) Add another input

Most of the participants understood the workflow. All participants understood the output types.

Most of the participants noticed the Work Summary and understood its functionality. Some participants suggested displaying string in the input node. Most of the participants did not notice the live preview of the work progress. Some of them noticed it later. One participant suggested adding the function (codes) in the implementation node of the Work Summary.

None of the participants noticed the "Add labels in another language" button first but some of them noticed it later. Some participants did not realize it was a button.

Most of the participants did not notice the "Publish" and "Cancel" buttons. Later when they were asked about the buttons, they understood their purpose.
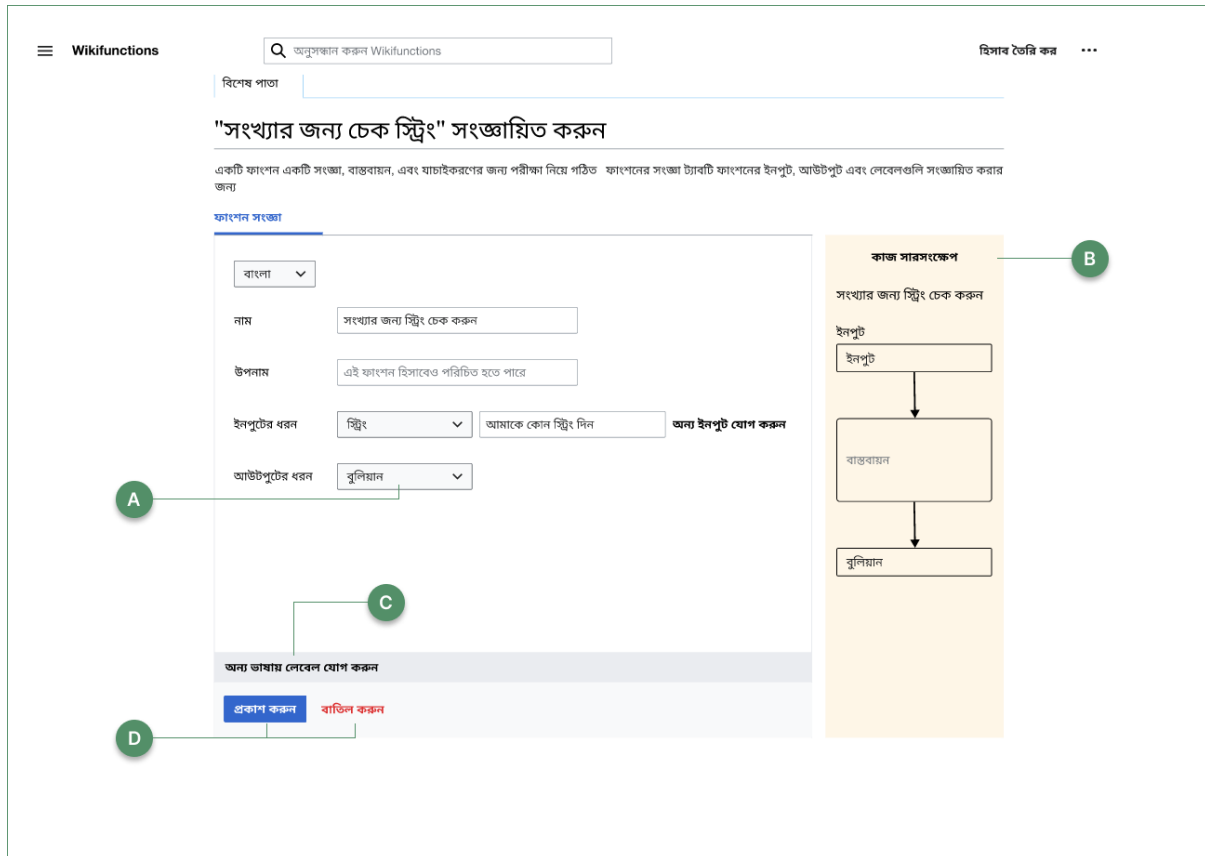
Figure 5: A) Output types B) Work Summary C) Add labels in another language D) Publish and Cancel Buttons

View Function
Function About
Most of the participants were confused about of this page. One participant thought this page is for editing. Most of the participants did not notice the header menu. Most of the participants did not notice the page title and the change after renaming the function definition.

All participants noticed the Details tab and all of them wanted to click on it to see the function definition.

Most of the participants noticed the placeholder for using the function but they were confused about its purpose. One participant found this section difficult in Bangla. Another participant expected an expand button to see the whole function. He suggested a button to write the function and a copy button on the right so that he can easily copy the function to use it in his work.
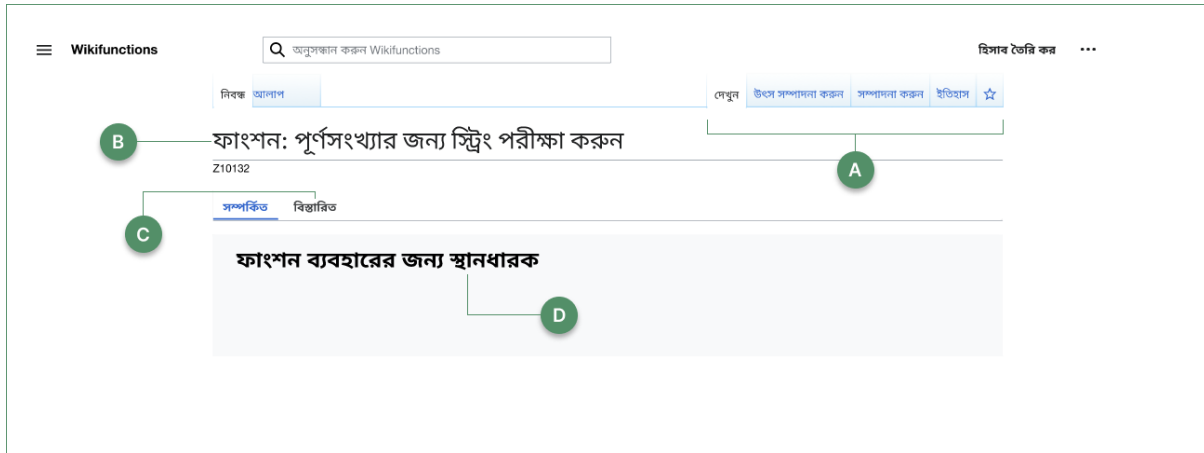
Figure 6: A) Header menu B) Page Title C) Details Tab D) Placeholder for using function

Function Details

Most of the participants did not notice the header menu. One participant was confused about its functionality. Most of the participants did not notice the page title. Most of the participants did not notice the description area.

Most of the participants noticed input, input label, output, and Function Edit. Most of them wanted to click on "Edit" to change the name whereas one participant wanted to click on "Edit Source". One participant did not understand the edit option and suggested adding some examples for it. Another participant was confused about the edit link (D) and the edit tab on the header area (A).
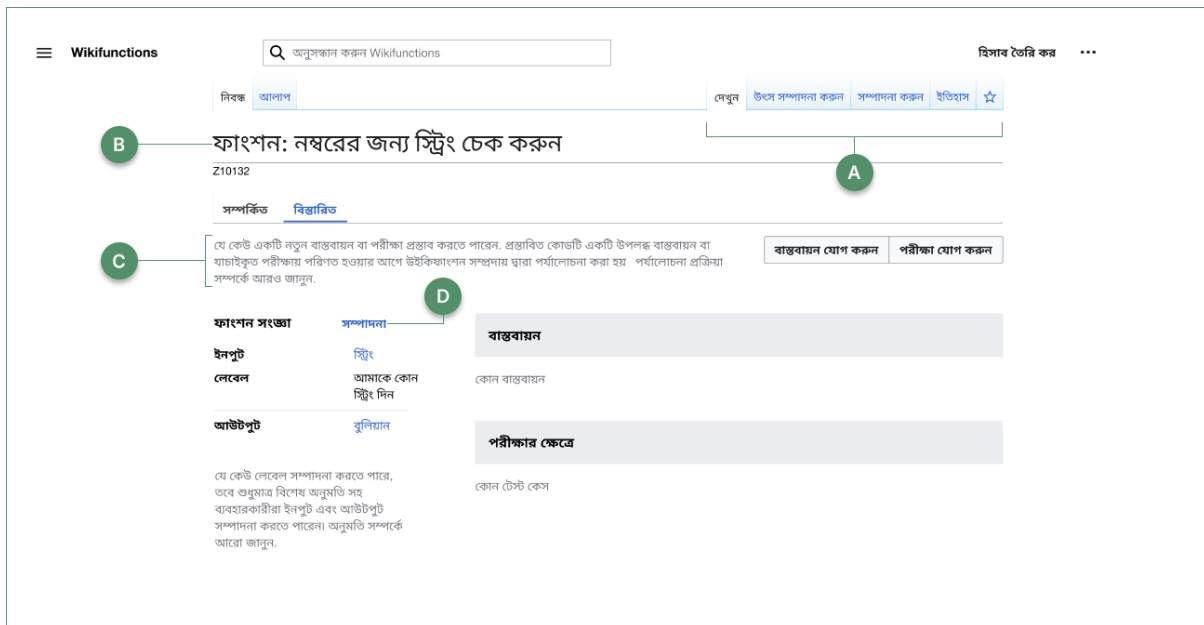

Figure 7: A) Header menu B) Page Title C) Description D) Edit

Most of the participants noticed the "Add implementation" and "Add Test" buttons. Some of them understood the functionality of these buttons.

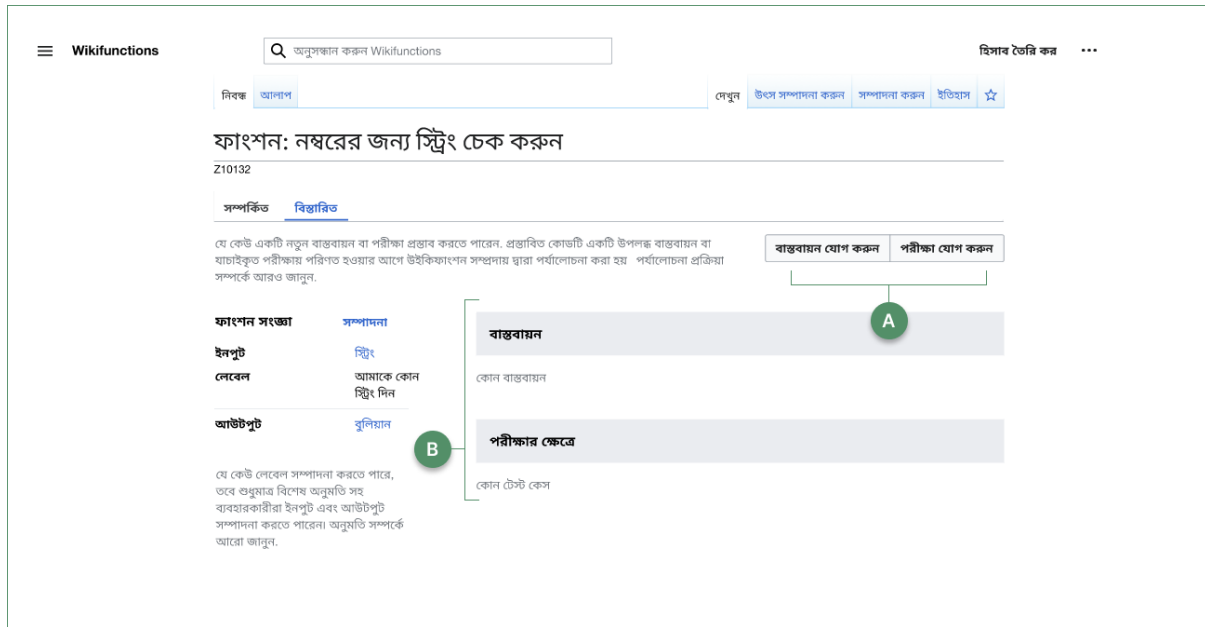Most of the participants noticed the Implementation and Test case area.

Figure 8: A) Add implementation and Add test B) Implementation and test case area

Function Edit

Most of the participants did not notice the page title. They also did not notice it was updated after changing the function name.

Most of the participants noticed the input field for changing the function name. One participant was confused if he could change the name on the form. He wanted to use the Edit tab on the header area to change the name. The participant found the Bangla words difficult. Another participant thought the change of name would be held for review and he would get notifications after each change.

All participants noticed the function name was changed in the input field, but most of them did not notice the change in the title.

Most of the participants did not notice the "Add label in another language" button. Most of the participants noticed the "Edit summary'' and understood its purpose.
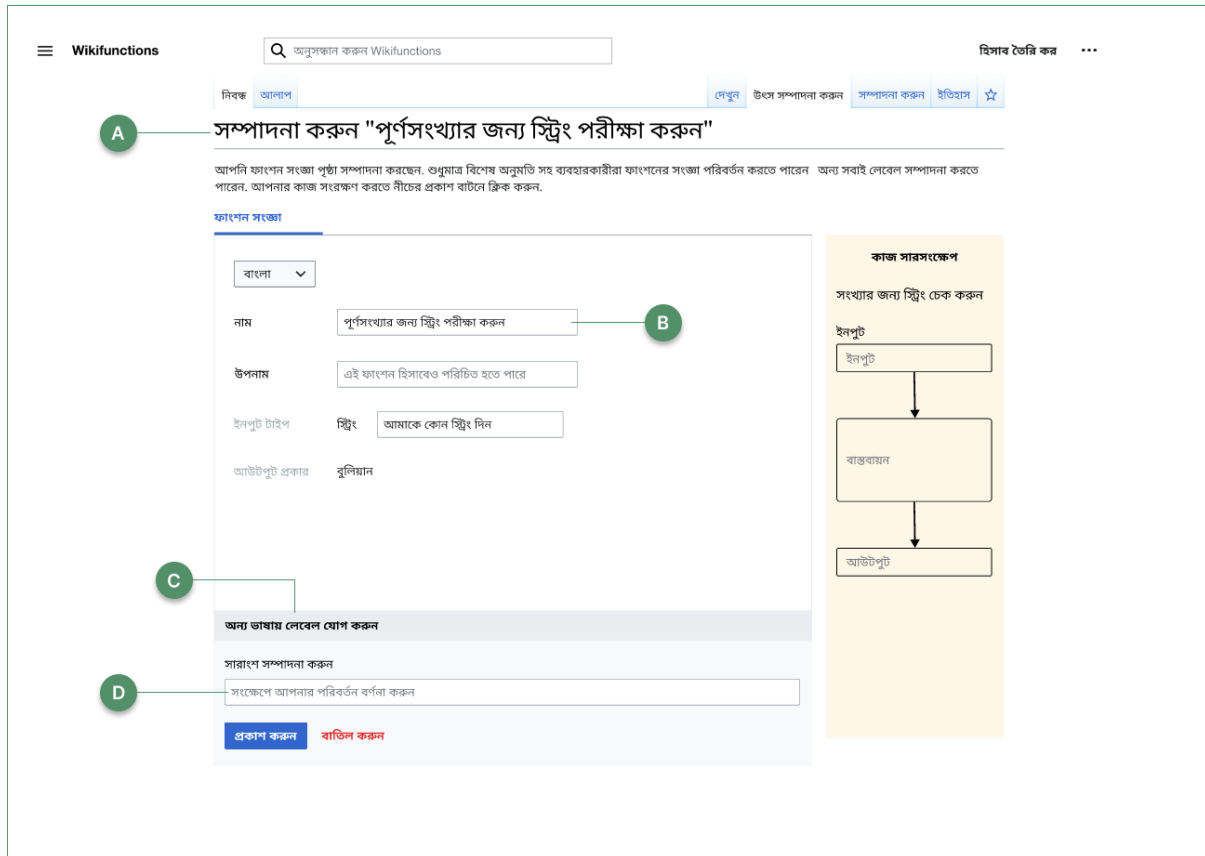
Figure 9: A) Page title B) Name Input field C) Add label in another language D) Edit summary

Bangla Artifact 2

View Function: About

Most of the participants did not notice the "Create new account" button. Most of the participants did not notice the header menu. All participants noticed the page title.

Some participants noticed the details tab and wanted to click on it to see the function definition. All participants noticed the examples with inputs and results.

Most of the participants noticed "Placeholder for using the function". Some participants were confused about this area. One participant suggested moving this area to the left.

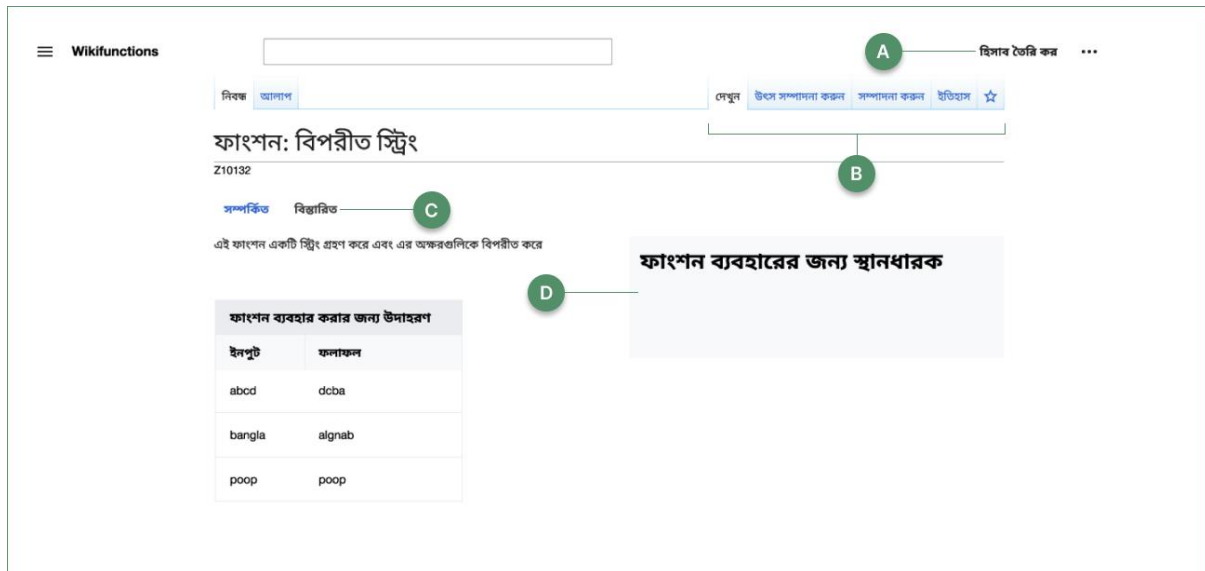Most of the participants did not understand where to write code.

Figure 10: A) Create account B) Header menu C) Details tab D) Placeholder for using function

View Function: Details

The participants did not notice the header menu, and most of them did not notice the page title.

Most of the participants did not notice the "Add implementation" and "Add Test" buttons, and their purpose. One participant suggested moving these buttons to the header area.

Most of the participants did not notice input, input label, and output in the function definition section.

All participants noticed the implementation and test case tables.

Most of the participants did not understand available and proposed implementations. One participant suggested adding more details about these states for clarification.

Most of the participants did not understand the verified and proposed tests. One participant suggested adding another layer of information to see how the test cases were verified.

Most of the participants wanted to click on the names to review implementation and test cases.

Most of the participants did not understand where to write code. One participant suggested adding a new button for writing code for the function.
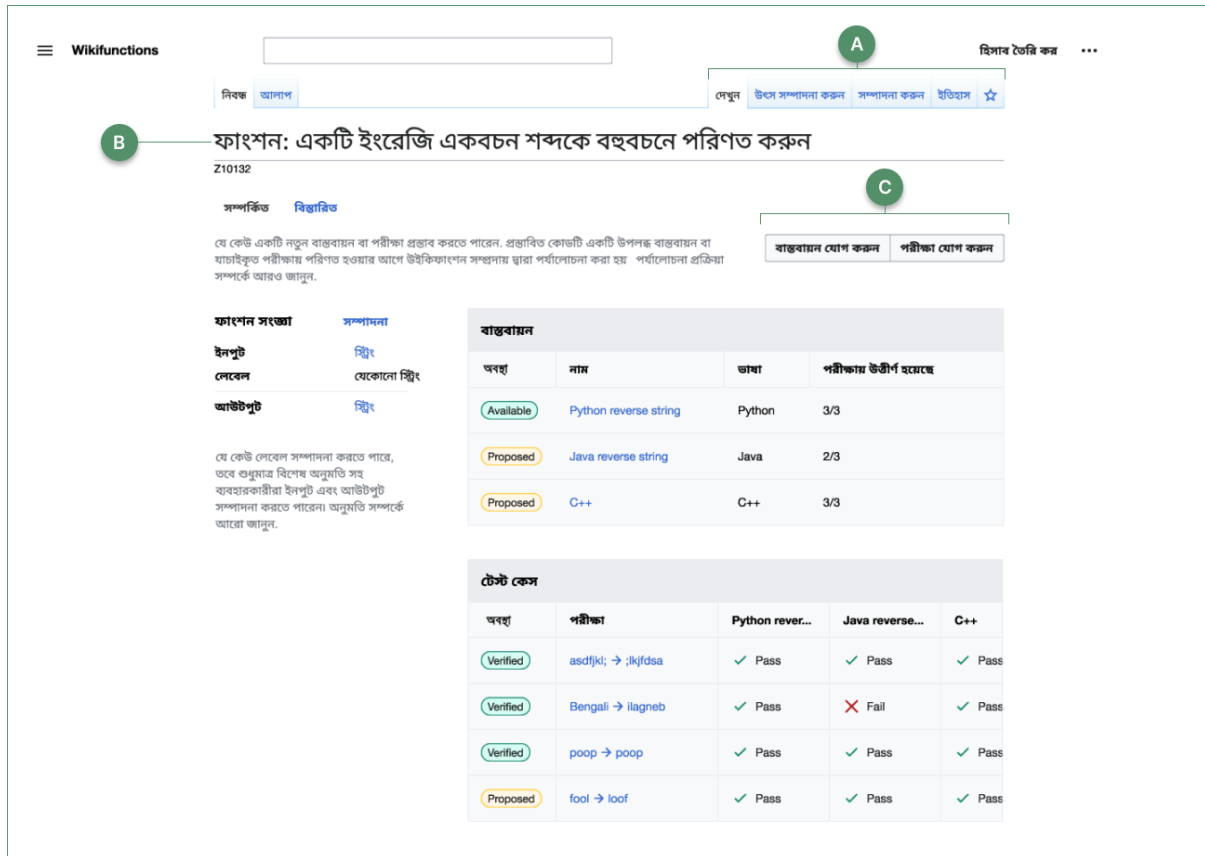
Figure 11: A) Header menu B) Page title C) Add implementation and Add test

Comparison Test

English Artifacts Walkthrough

Most of the participants understood the alias. One participant was confused about function pages in both languages. One participant noticed the "Add implementation" and "Add test" buttons. Most of the participants did not notice the "Create an account" button. One participant suggested changing "New implementation" and "New test" to "Add implementation" and "Add test". One participant suggested adding a plus (+) icon beside "Add labels in another language".

Most of the participants did not notice the descriptions. When requested, one participant, after reading the description on the function details page, understood the available /proposed implementation and proposed/verified test.

Most of the participants did not notice the "Add another input" button.

Language Preferences

When we asked the participants about their language preference for using WikiFunctions, all of them wanted to choose English over Bangla. One participant mentioned he would choose Bangla if the words are easier. The participants said the reason they would choose English is that it is easier, and they are

habituated to using English in their work and studies. Some participants suggested using words that they use in their daily life. One participant suggested choosing an easier label for "Placeholder to use the function".

Discussion

Findings of the usability study suggest that most of the participants understood the overall workflow. The issues the participants experienced were related to the discoverability, accessibility, and mental model of the participants.

Grouping and labeling the buttons and other interface elements based on their types and function, and using an accessible color-contrast ratio can make the interface more discoverable. Accessible font size and colors of the section descriptions, labels, form fields, instructions, and hints will aid comprehension.

The fidelity of the elements (e.g. the code editor placeholder) can be increased to make the prototype look close to the actual product. Taking into account the conventions of different programming languages and the developer community can make the workflow more usable. Suggestions from the participants can be considered to improve the overall user experience.

We recommend performing a multi-phase iteration to produce an activity-centered minimalist design with user behavior in mind. The revised design needs to be validated in a usability study with different participants from the target user group. Conducting the usability testing with high-fidelity prototypes will be more effective in collecting user feedback effectively.

The findings also suggest that the developer community in Bangladesh is more comfortable using development platforms in English rather than in Bangla. This is because they use English for technology studies and collaborate with their clients and peers. Hence, they understand technology-related terms better in English, and interpreting translated and unfamiliar words in Bangla creates extra cognitive loads on them. Instead of using translated words and phrases, pronunciation in Bangla may make the interfaces more comprehensible. Feedback from the local developer community on the appropriate implementation of the Bangla language in WikiFunctions would be helpful. Focus Group sessions might be an effective way of resolving the language-related issues of WikiFunctions Bangla.

Conclusion

The usability study aimed to understand the perceptions and responses of the Bangladeshi developers from using the WikiFunctions platform in the Bangla language. Findings from the study suggest that most of the participants understood the workflow, with exception of experiencing issues with discoverability and comprehension. The participants preferred English to the Bangla version of WikiFunctions, which is influenced by their environment. We recommend doing Focus Group Discussion (FGD) sessions with the local developers to improve the labeling and messaging of the Bangla interfaces. Iterating the design to fix the discovered issues, and performing usability studies to validate their effectiveness can improve the overall user experience of the WikiFunctions platform.