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CSE 403

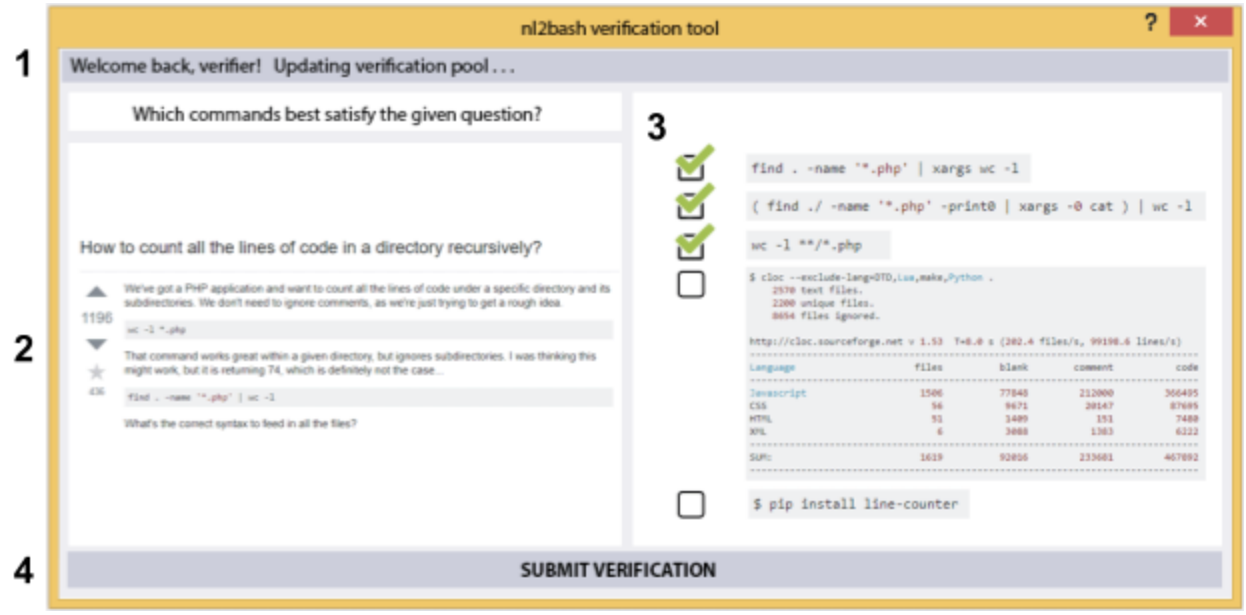
**NI2Bash User Manual**

NI2Bash, our project to improve the Tellina English-to-Bash translation tool by expanding its database, is still a work in progress. Please remember that this section for validation testers and its mockup above will be updated as we progress. Other useful sections, such as FAQ and troubleshooting, may be added as needed. Build instructions can be found in the repository's README.

Our project focuses on improving the accuracy of Tellina by adding to its dataset. It divides user behavior into two roles:

1. Tester: Someone who uses the verification windows application to help associate Bash commands to natural language descriptions.
2. End-user: Someone who uses the improved Tellina webpage to translate natural language descriptions into Bash one-liners.

<u>Validation Tester Guide:</u>



Like most machine learned models, Tellina is only as good as its training data. We aim to expand Tellina's training data by offering a user interface to crowdsource with.

Our interface above has four main features:

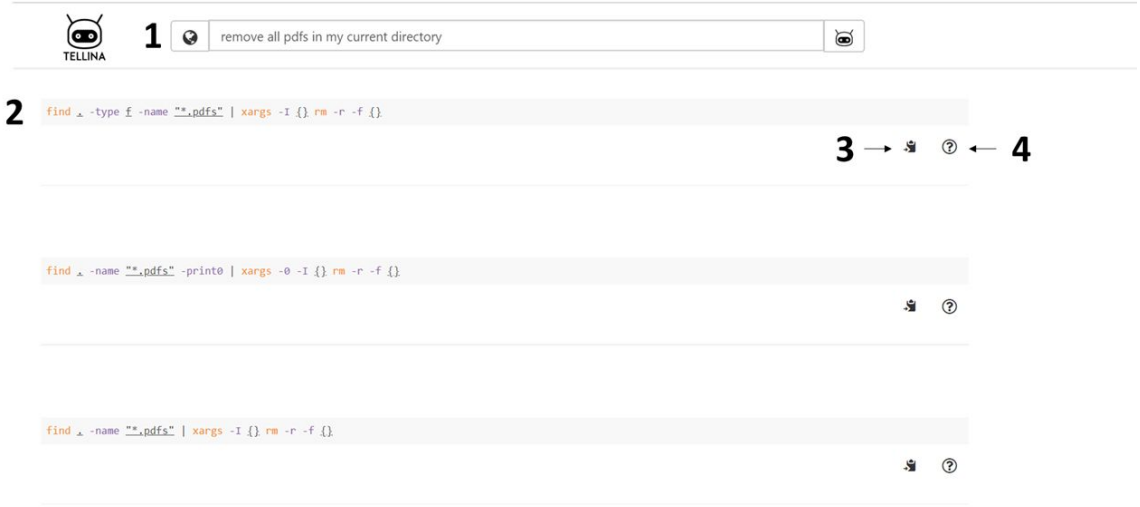
1. **The status bar.** At the top of the main view, the status bar displays how many verifications the tester has available. It will display when the program is updating, usually at startup. If the tester has no validations left, it will be written there and the other features will be greyed out.
2. **The description.** On the left side of the main view, the description defines what the bash command is supposed to do. The description will either be in the form of a question or multiple statements, depending on the source. The surrounding context will also be given, if available, although this should not be necessary to perform the validation.
3. **The validation hub.** On the right side of the main view, the validation hub contains bash commands along with their corresponding checkboxes. The tester will select the bash commands that either answering the question or fit the statements, depending on the type of description. After the selection is done here, the tester will submit the validation.
4. **The submit button.** At the bottom of the main view, the submit button allows the tester to send their selections to the NI2Bash server. Note: as validations without any bash commands that satisfy the description are possible, entirely unselected validations are allowed; be careful not to click the submit button before you are ready.

When the tester starts the application, the system fetches a potential English/Bash key pairs for them to test. The description will present them with the English question and one or more potential answers in Bash, with the opportunity for the tester to select or clear each answer:

- Each answer is a one-liner in Bash, and the user is free to verify, either from memory or with their own Bash shell, whether or not each Bash one-liner presented implements the English description.
- If an answer does implement the English description, the tester can mark it as such using the corresponding checkbox. If an answer does not implement the command (or is not even valid Bash) the tester may indicate this by not marking the answer. It is entirely possible that multiple answers match the description (since there is more than one way to implement the same specification), and it is also possible that no proposed answer matches the English description, either because none of them are correct or the question itself is bad - in either case, the tester indicates this by leaving no marks whatsoever.

Once the tester is satisfied with their verification, they can click the submit button to send the verification back to us and retrieve another.

Tellina User Guide:




The Tellina web application, found at http://tellina.rocks, is the interface for a natural language processing system that converts English phrases to bash commands.

The main features of the interface are:

1. **The search bar**. The search bar is where the user may type an English phrase. Submitting an English phrase here will cause a list of resulting bash commands to be generated below.
2. **The results list.** This is a list of bash commands that Tellina predicts will execute the task(s) described in the English phrase, sorted from top to bottom in decreasing probability of accuracy. That is, the higher a command is in the list, the more accurate it is predicted to be. Note that Tellina is a machine learned system, and so its predictions are only as good as its dataset. This means that the English to bash translations listed here will not always be accurate, so use them with caution. Additionally, hovering above any of the terms in the bash commands will cause an explanation of that part of the command to pop up.
3. **Copy to clipboard.** Copy the bash command to the clipboard. The user can then easily paste the command into a terminal to use it.
4. **Explain the command.** Clicking this button for a given bash command will open a page at explainshell.com explaining that command in detail. The page is opened in a new tab.

Users interact with this webpage in a way similar to a traditional search engine like Google or Yahoo:

- On the front page, to obtain a Bash command that implements an English description, the user can input that English description into the search bar and submit it. The results list will then appear, presenting the user with potential Bash implementations in decreasing order of confidence.
- To use a result, the user can copy it to their clipboard (manually or using the copy to clipboard button) in order to paste it into their Bash terminal or shell script file.

- A user can also have a result explained further to them. By clicking an additional button next to a result, they will be taken to a webpage that parses the Bash command and explains each utility used.