LogicAssistant User Guide

June 20, 2017

Contents

This user guide has been created to assist users of the LogicAssistant Natural Deduction Proof solving tool. The steps below will assist users with the use of the main features of this application.

1 Proof Validity

In order to check whether a proof you have written is valid please follow the following steps:

1. Log-on to the LogicAssistant website, and you should see the main page of the application

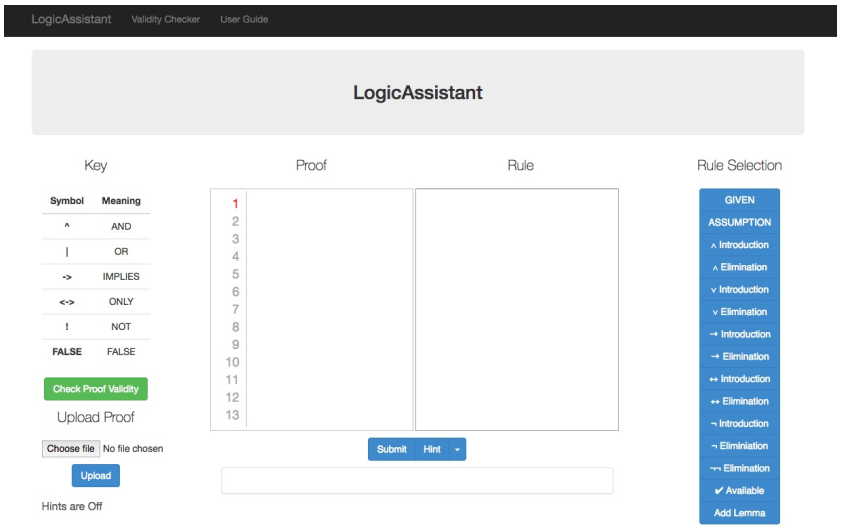

Figure 1: LogicAssistant home page

2. Type your proof into the left text box

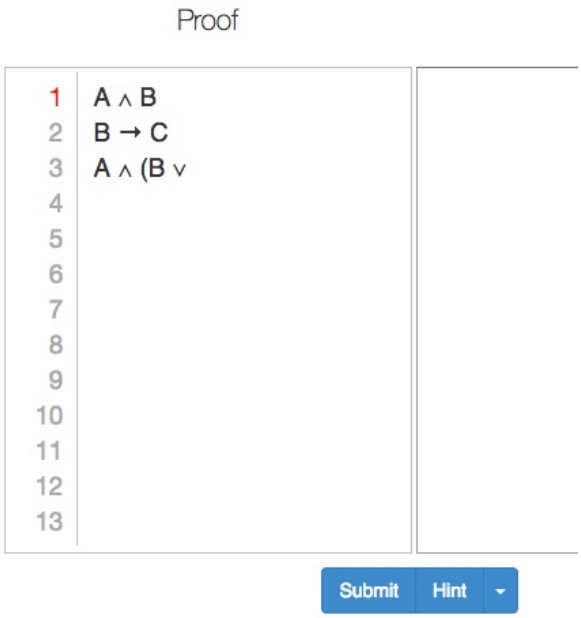

Figure 2: Proof box

3. Using the buttons on the right hand side of the page, add an associated rule to each line of your proof. Type in any line references required, indicated by '?'.

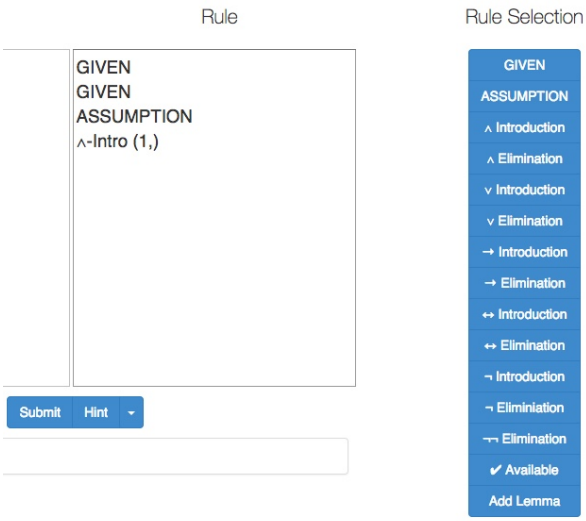

Figure 3: Proof rules

4. Once you are happy with your proof click on the "Submit" button at the bottom of the page

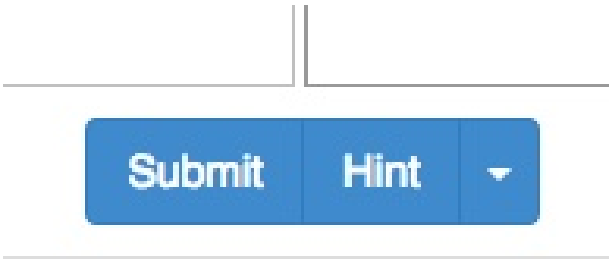

Figure 4: Submit Button

5. The box at the bottom of the page will notify you as to whether your proof is valid, or a mistake has been made in the proof

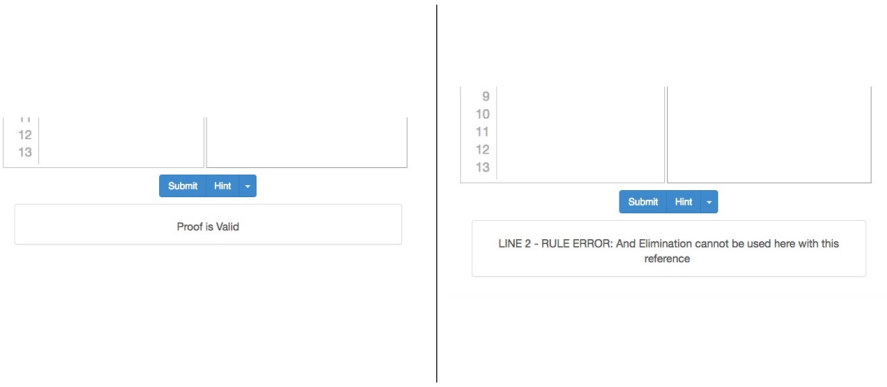

Figure 5: System Messages

6. If an error has occurred go back to step 2. Otherwise you have successfully solved your proof.

2 Goal Validity

Before solving a proof, in order to check whether it is valid follow the following steps:

1. Click on the "Check Proof Validity" button on the left hand side of the page (this can be done even in the middle of solving a proof)

Figure 6: Button to validity page

2. The Validity Checker Page should now be displayed

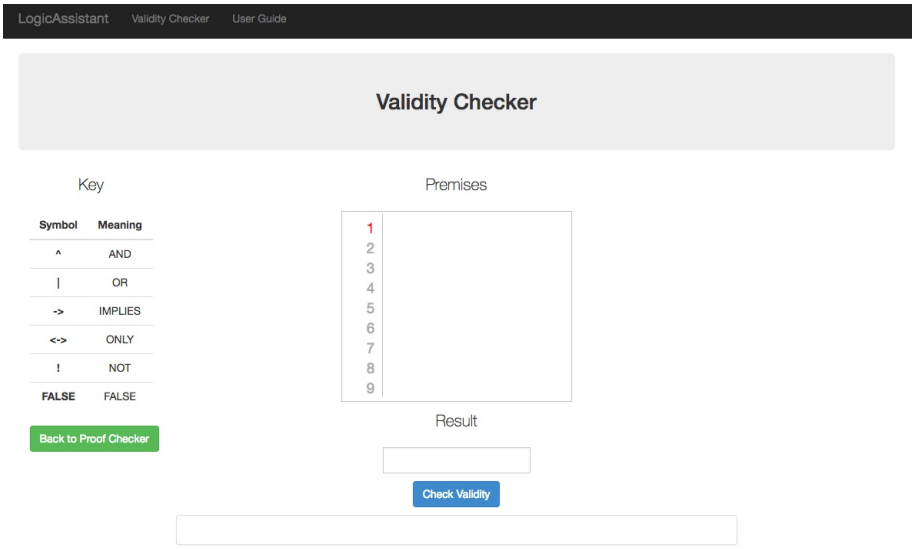

Figure 7: Validity Checker Page

3. Type your desired premises into the top box (if you have any), and result into the bottom box

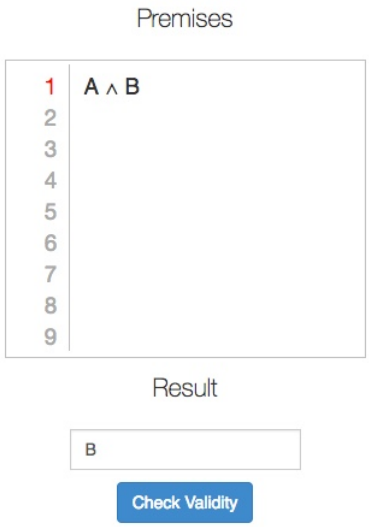

Figure 8: Enter your premises and result

4. Click on the "Check Validity" button, and the result of the validity check will be displayed in the box at the bottom of the page

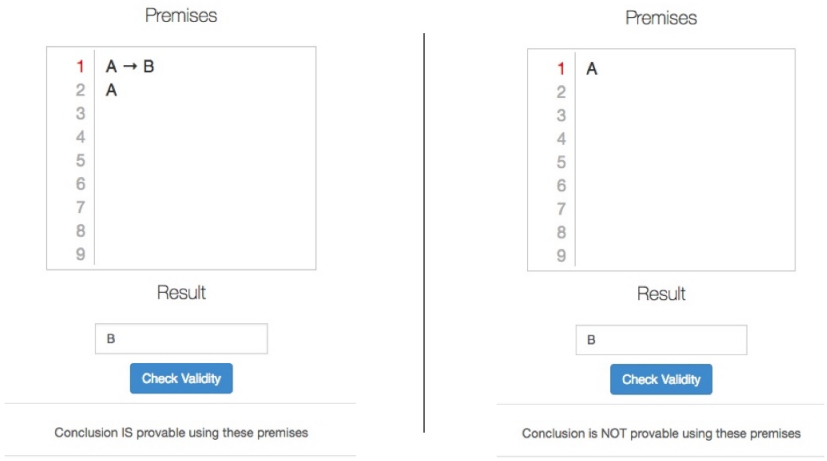

Figure 9: Validity Checker results

5. To navigate back to the main proof page, click on the "Back to Proof Checker" button on the left hand side of the page

Figure 10: Navigate home

3 Hints

If you become stuck at any point in the proof, hints can be generated as follows:

1. Type as much of your proof as you can (this could mean leaving a gap in the middle), and leave a space before typing your resulting expression

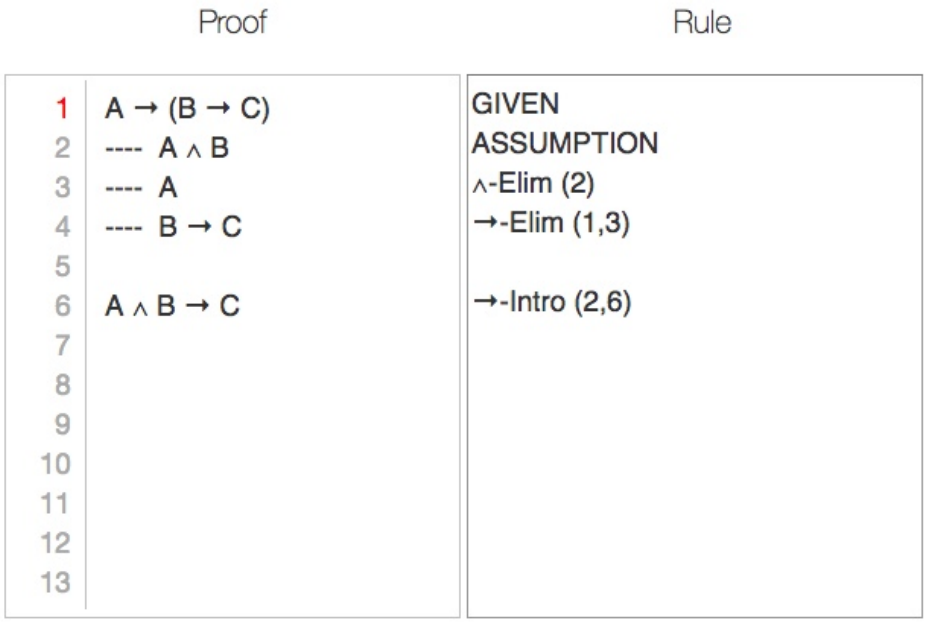

Figure 11: Type your partial proof

2. To turn on basic hints, click the "Hint" button once so that it turns orange

Figure 12: Turn on hints

3. Press the "Submit" button, and your hint should be displayed in the box at the bottom

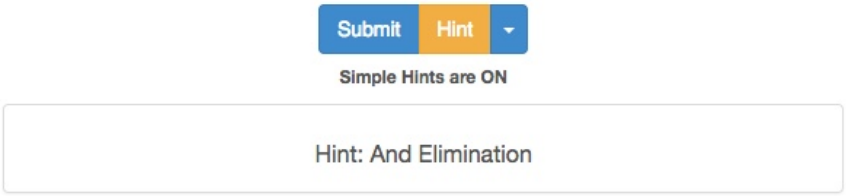

Figure 13: Hint output

4. To turn on advanced hints, click the "Hint" button twice so that it turns green

Figure 14: Turn on advanced hints

5. Press the "Submit" button, and your advanced hint should be displayed in the box at the bottom

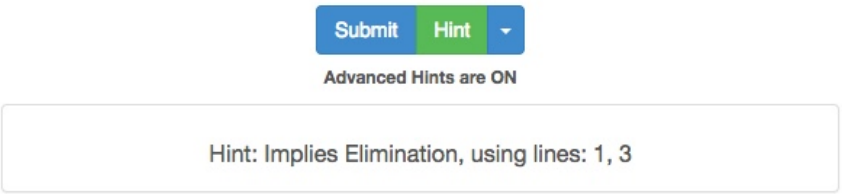

Figure 15: Advanced hint output

4 Lemmas

In order to add a Lemma to your proof, follow these instructions:

1. Click the "Add Lemma" button on the button bar on the right hand side of the page

Figure 16: Add Lemma Button

2. Type your required premises (if there are any) and lemma result into the "Lemma Checker"

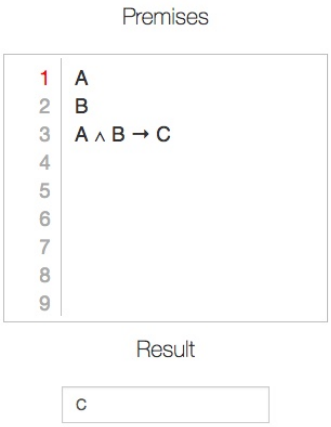

Figure 17: Lemma inputs

3. Press the "Add Lemma" button at the bottom of the page

Figure 18: Lemma Button

4. If the lemma is valid, it will automatically be added to your proof, and can be referenced using the "Available" rule

5 Saving & Loading Proofs

In order to save a proof:

1. Make sure you have fully inserted the proof you want to save
2. Press the "Save Proof As" button in the sub-menu at the bottom of the page

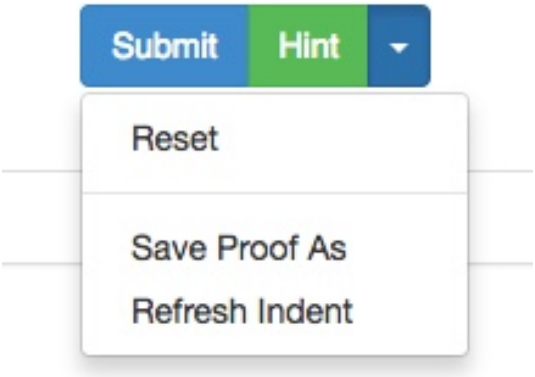

Figure 19: Save Proof As button

3. Choose your desired file destination folder and name

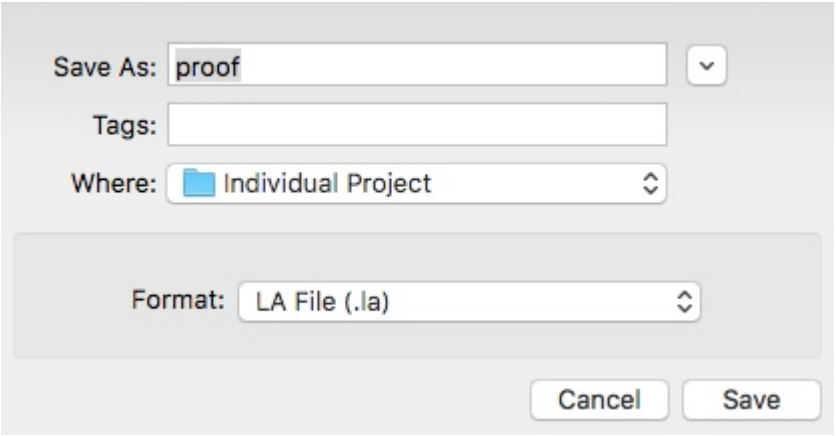

Figure 20: Select directory to save proof

4. Press "Save"

In order to load a proof:

1. Click the "Choose File" button on the left hand side of the page

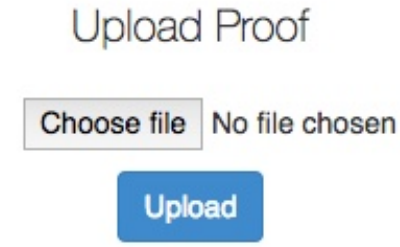

Figure 21: Upload proof button

2. Find the saved proof in your file directory

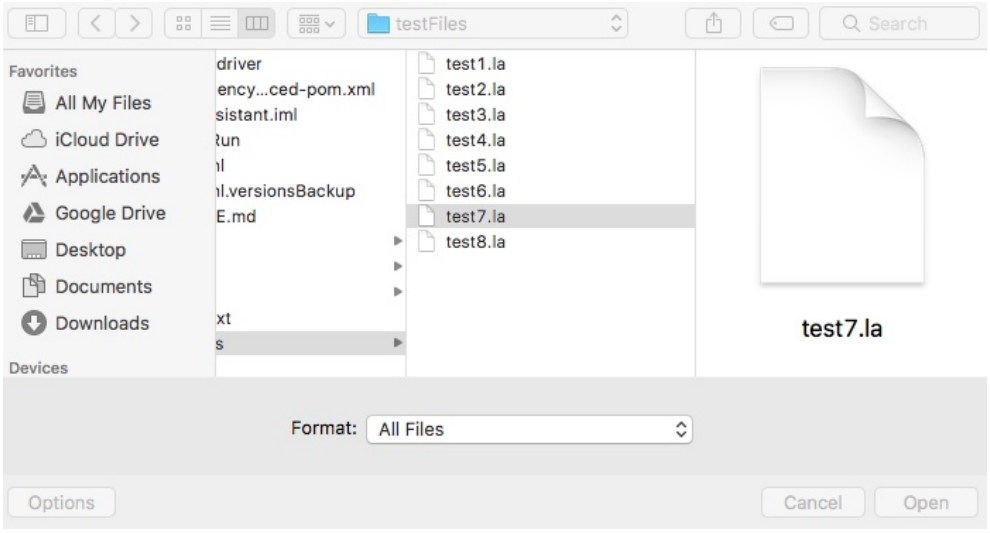

Figure 22: Select file to upload

3. Click "Open"
4. Click the "Upload" button below
5. Your proof will be inserted into the main proof boxes on the page