C   User Guide

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.

C.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 LogicAssitant website, and you should see the main page of the application
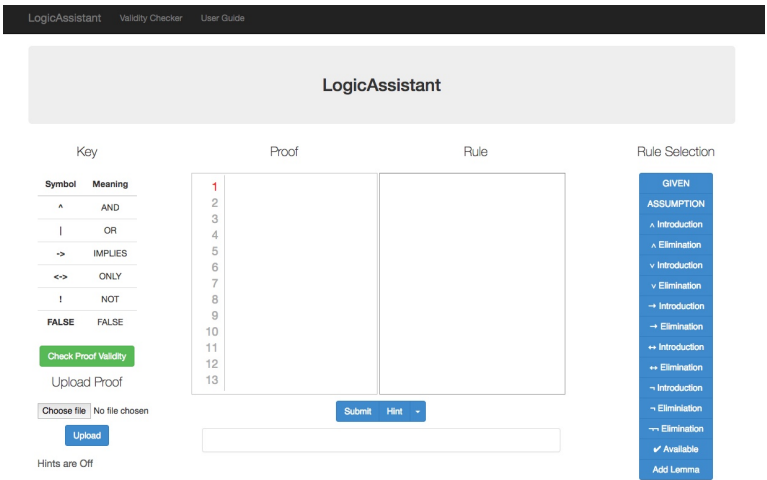

Figure 26: LogicAssistant homepage
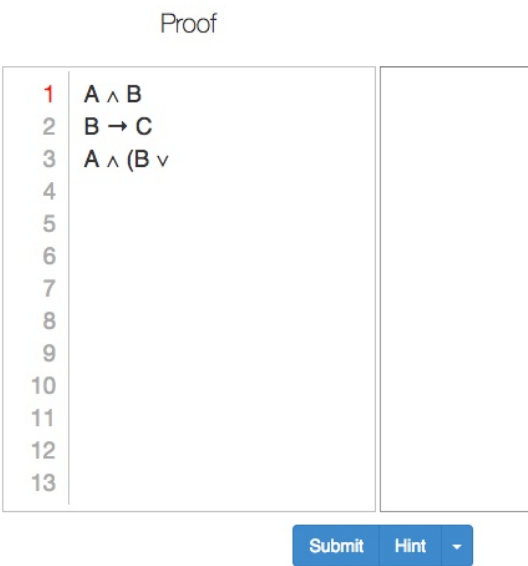
2. Type your proof into the left text box

Figure 27: Proof box

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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 28: Proof rules

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

Figure 29: 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

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

Figure 30: System Messages

C.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 31: Button to validity page

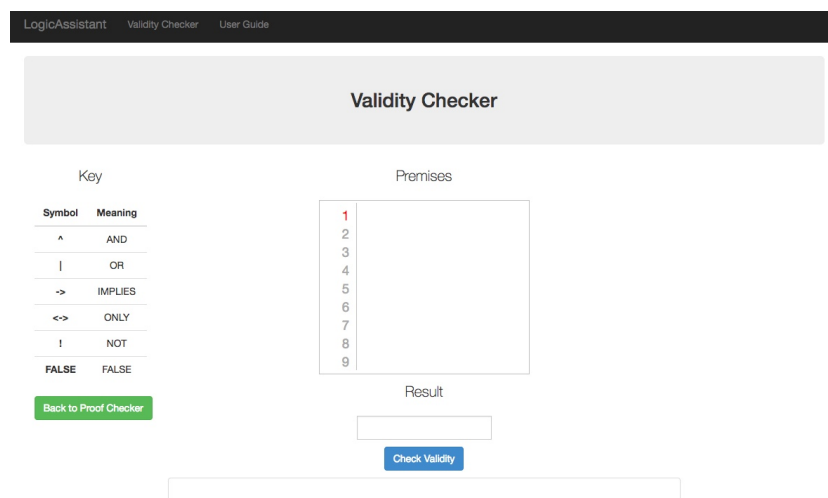2. The Validity Checker Page should now be displayed

Figure 32: Validity Checker Page

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

Figure 33: 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 34: 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 35: Navigate home

C.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 36: Type your partial proof

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

Figure 37: Turn on hints

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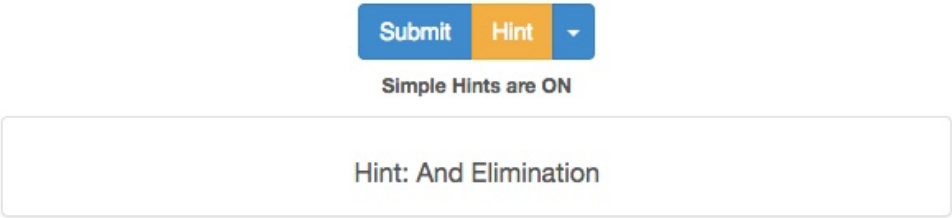

Figure 38: Hint output

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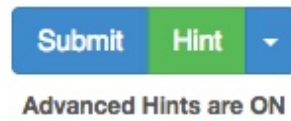

Figure 39: Turn on advanced hints

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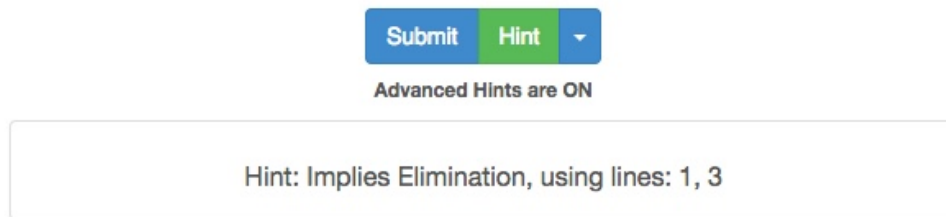

Figure 40: Advanced hint output

C.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 41: Add Lemma Button

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

Figure 42: Lemma inputs

Figure 43: Lemma Button

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

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

C.5 Saving & Loading Proofs

In order to save a proof:

1. Make sure you have fully inserted the proof you want to save

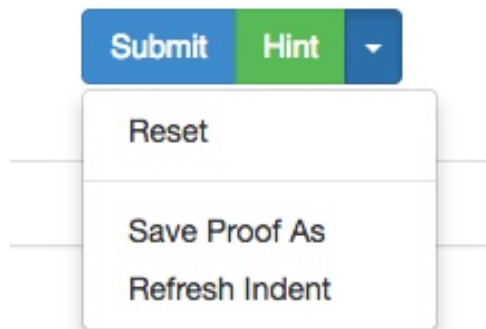2. Press the "Save Proof As" button in the sub-menu at the bottom of the page

Figure 44: Save Proof As button

3. Choose your desired file destination folder and name

Figure 45: Select directory to save proof

4. Press "Save"

In order to load a proof:

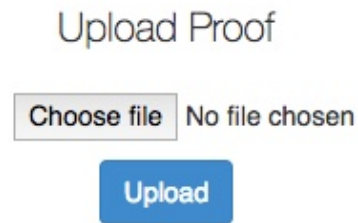1. Click the "Choose File" button on the left hand side of the page

Figure 46: Upload proof button

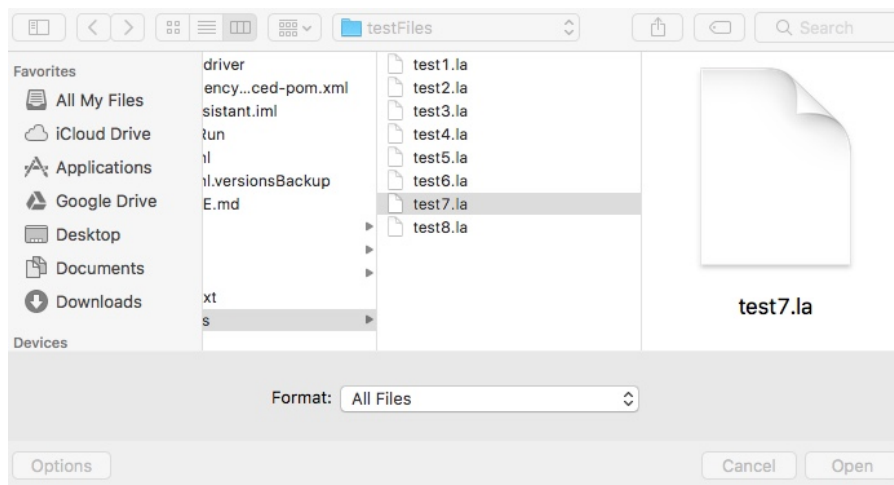2. Find the saved proof in your file directory

Figure 47: 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