

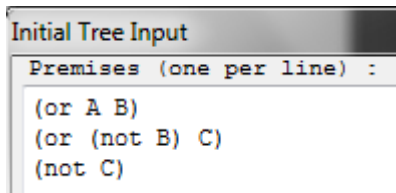
# How To Use TruthTree

## A Simple Example

Say we wanted to prove the following argument:

$A \vee B$   
 $\neg B \vee C$   
 $\neg C$   
 $\therefore A$

1. Open TruthTree.
2. Press the "Set Root" button.
3. Enter the premises into the upper text box:

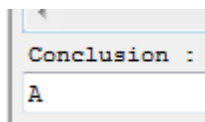


Initial Tree Input

Premises (one per line) :

(or A B)  
(or (not B) C)  
(not C)

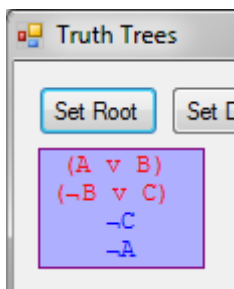
4. Enter the conclusion into the lower text box:



Conclusion :

A

5. Press the "Accept" button.
6. Select the root node of the tree by clicking on it:

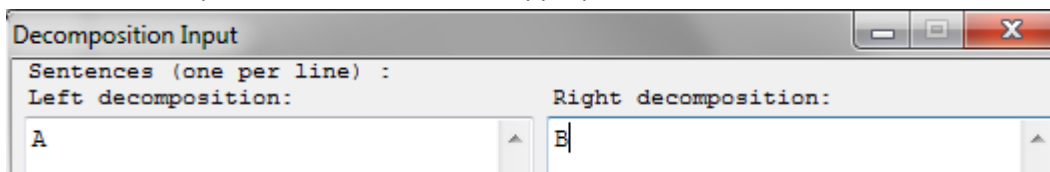


Truth Trees

Set Root Set D

(A  $\vee$  B)  
( $\neg$ B  $\vee$  C)  
 $\neg$ C  
 $\neg$ A

7. Press the "Set Decomp" button.
8. Enter the decomposition of  $A \vee B$  into the appropriate text boxes:



Decomposition Input

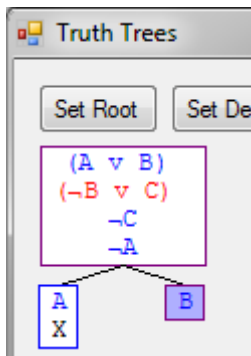
Sentences (one per line) :

Left decomposition: Right decomposition:

A B

9. Press the "Accept" button.

10. Select the first right child node:



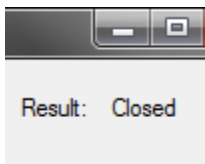
11. Press the "Set Decomp" button.

12. Enter the decomposition of  $\neg B \vee C$  into the appropriate text boxes:

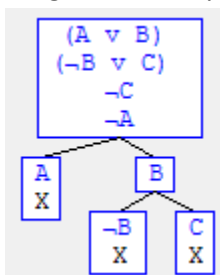
The screenshot shows a window titled "Decomposition Input". It has two text boxes. The first text box is labeled "Left decomposition:" and contains the text "(not B)". The second text box is labeled "Right decomposition:" and contains the text "C".

13. Press the "Accept" button.

14. The result should now say closed:



15. Congratulations, you have now proven the above argument using a truth tree.



## A More Complex Example

Say you want TruthTree to generate a proof for the following argument:

$$K \rightarrow ((L \vee M) \rightarrow R)$$

$$(R \vee S) \rightarrow T$$

$$\therefore K \rightarrow (M \rightarrow T)$$

1. Open TruthTree.
2. Press the "Set Root" button.
3. Enter the premises into the upper text box:

Initial Tree Input

Premises (one per line) :

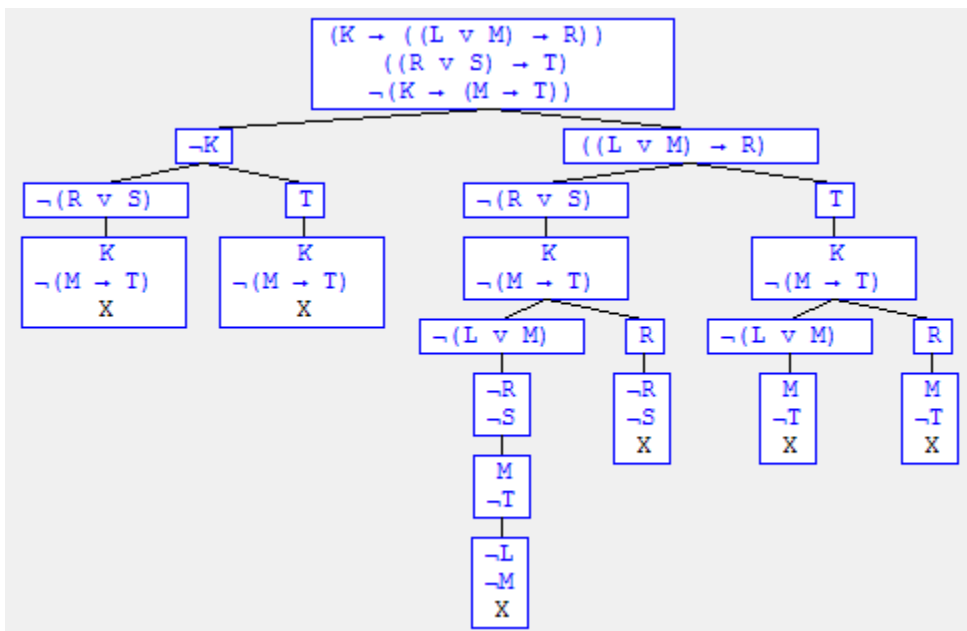
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(if K (if (or L M) R))  
(if (or R S) T)
```

4. Enter the conclusion into the lower text box:

Conclusion :

```
(if K (if M T))
```

5. Press the "Accept" button.
6. Press the "Grow Tree" button.
7. TruthTree has now generated a proof for the above argument:



## Other Stuff

- When entering sentences, any combination of prefix, infix, and postfix may be used:
  - ♦ (if (a or b) (c d and)) results in  $((a \vee b) \rightarrow (c \wedge d))$
  - ♦ If an entered sentence is unrecognizable by the parser then it is ignored
- If you attempt to enter a decomposition that is incorrect, you will get an error message and the tree will not be changed.