When the \texttt{bussproofs.sty} code was first written, the only documentation for the \texttt{bussproofs} style was in the comments at the beginning of the style file \texttt{bussproofs.sty}. But recently (July 2004), Peter Smith has written an excellent exposition of \texttt{bussproofs.sty}, presently available at

http://www.phil.cam.ac.uk/teaching\_staff/Smith/LaTeX/nd.html

The present document is a sample \LaTeX\ file that was created for testing purposes while writing the \texttt{bussproofs} code and you might find that it useful as an example of how to use special features of the style.

Author: Sam Buss

Email: sbuss@ucsd.edu.

Here is some text.

$\begin{align*}
\text{Weakening} & : \frac{\Gamma' \rightarrow \Delta, A, A}{\neg A, \Gamma' \rightarrow \Delta, A} \\
\vdots & \frac{\neg A, \neg A, \Gamma' \rightarrow \Delta}{\forall: \text{right}} \\
\text{eigenvariable } x & \frac{\neg A, \neg A, \Gamma' \rightarrow \Delta}{\Gamma \rightarrow \Delta} \quad \forall: \text{right}
\end{align*}$

Here is more text.

$\begin{align*}
\cdots & \frac{\Gamma' \rightarrow \Delta, A}{\neg A, \Gamma' \rightarrow \Delta} \\
\cdots & \frac{\neg A, \neg A, \Gamma' \rightarrow \Delta}{\Delta \rightarrow \Pi} \\
\cdots & \frac{\neg A, \neg A, \Gamma' \rightarrow \Delta}{\Gamma' \rightarrow \Delta} \\
\cdots & \frac{\Gamma, \Pi, A \rightarrow \Delta, \Delta, B}{\Gamma \rightarrow \Delta} \quad \text{Hi there}
\end{align*}$

The above examples show `displayed' proofs. On the other hand, for putting proofs inline instead of displayed, it is also permissable to put proofs into text rather than into centered environments. For example, one can write a proof
right here: \[
\Gamma \rightarrow \Delta, A
\]
\[\neg A, \Gamma' \rightarrow \Delta\]
\[
\neg A, \neg A, \Gamma' \rightarrow \Delta
\]
although of course the proof is quite big compared to the text. There is no reason you could not add \texttt{\textbackslash subscriptstyle} or \texttt{\textbackslash small} commands to the lines of the proofs to shrink things down. The previous proof looks strange because it is illustrated the usage of \texttt{\textbackslash kernHyps} and \texttt{\textbackslash insertBetweenHyps}. Finally a 3-ary inference with a usage of \texttt{\textbackslash noLine} is:

\[
\begin{array}{ccc}
[A] & [B] \\
A \lor B & C & C
\end{array}
\]

Two more examples:

\[
\begin{array}{ccc}
A, B & C & \text{good} & \text{bad} \\
A \land B \land C & & \text{good} & \text{bad} \Rightarrow A \\
\end{array}
\]

Small labels can be created as in the third proof below:

\[
\begin{array}{ccc}
A \uparrow 1 & A \uparrow (2) & A \uparrow (3) & A \uparrow (4)
\end{array}
\]

Arnold’s example of inline proof: The figure \[
\Gamma, \ldots (i \in I), I
\] is called ...

**Upside down proofs** Proofs can be rendered upside down. For instance the proof above with a 3-ary inference can be made upside down by giving the command \texttt{\textbackslash rootAtTop}. This is useful if you want your proof trees to have their root at the top.

\[
\begin{array}{ccc}
C & C & C \\
A \lor B & [A] & [B]
\end{array}
\]
To make the change permanent for the rest of your document, use the command \alwaysRootAtTop

Another upside-down example, from Alex Hertel:

Testing of quaternary and quinary inferences (a bit scrunched due a use of \insertBetweenHyps):

$$A^B A_B \rightarrow A_B A^B \rightarrow A^B C A^B C \rightarrow A^B C D A^B C D \rightarrow A^B C D E A^B C D E$$

$$X \rightarrow XXXXX$$

$$YYY \rightarrow Y$$

$$A^B \rightarrow A^B C A^B C \rightarrow A^B C D A^B C D \rightarrow A^B C D E A^B C D E$$

$$X \rightarrow XXXXX$$

$$YYY \rightarrow Y$$

Testing of quaternary and quinary inferences (a bit scrunched due a use of \insertBetweenHyps):

$$YYYY \rightarrow Y$$

$$X \rightarrow XXXXX$$

$$YYYY \rightarrow Y$$

$$X \rightarrow XXXXX$$

$$ABA_B \rightarrow A_B A^B \rightarrow A^B C A^B C \rightarrow A^B C D A^B C D \rightarrow A^B C D E A^B C D E$$

$$X \rightarrow XXXXX$$

$$A^B \rightarrow A^B C A^B C \rightarrow A^B C D A^B C D \rightarrow A^B C D E A^B C D E$$

$$X \rightarrow XXXXX$$

$$A^B C \rightarrow A^B C D A^B C D \rightarrow A^B C D E A^B C D E$$

This last sentence has nothing to do with proof trees, but shows my macros for Gödel number delimeters: \(\Gamma A^\top, \Gamma B^\top, \Gamma s^\top\)