A tree macro

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1 Setup

Include epic.sty and ecltree.sty\(^1\) in your document as below:

\documentclass{article}
\usepackage{epic,ecltree}

If your printer driver accepts tpic commands, you should specify eepic.sty after epic.sty.

\usepackage{epic,eepic,ecltree}

As eepic.sty redefines some macros defined in epic.sty, Do not reverse this order.

2 bundle environment

A tree is drawn by bundle environment. The bundle environment has one argument. This argument specifies the top node label. Leaves should be specified by \texttt{chunk} in this environment.

If you write

\begin{bundle}{xxx}
\chunk{aaa}
\chunk{bbb}
\chunk{ccc}
\end{bundle}

you get

\[ \begin{array}{c}
\text{xxx} \\
\text{aaa} \quad \text{bbb} \quad \text{ccc}
\end{array} \]

You can nest the bundle environment. If you write

\(^1\)Electrical Communications Labs
\begin{bundle}{xxx}
\chunk{aaa}
\chunk{
\begin{bundle}{yyy}
\chunk{bbb}
\chunk{ddd}
\end{bundle}}
\chunk{ccc}
\end{bundle}

you get \begin{tikzpicture}
\node (aaa) at (0,0) {aaa};
\node (yyy) at (1,1) {yyy};
\node (ccc) at (1,-1) {ccc};
\node (bbb) at (-1,1) {bbb};
\node (ddd) at (-1,-1) {ddd};
\draw (aaa) -- (yyy);
\draw (aaa) -- (ccc);
\draw (bbb) -- (ddd);
\end{tikzpicture} .

3 Line attribute

You can draw not only solid lines but also dotted lines and dash lines. epic.sty and eepic.sty define several commands for them. If you want to use
\example{\dashline[65]{3}(x1,y1)(x2,y2)}
to draw lines, use \texttt{\drawwith} command before (or in) the bundle environment.
\example{\drawwith{\drawline}}

Then you get \begin{tikzpicture}
\node (aaa) at (0,0) {aaa};
\node (yyy) at (1,1) {yyy};
\node (ccc) at (1,-1) {ccc};
\node (bbb) at (-1,1) {bbb};
\node (ddd) at (-1,-1) {ddd};
\draw (aaa) -- (yyy);
\draw (aaa) -- (ccc);
\draw (bbb) -- (ddd);
\end{tikzpicture} .

The argument of \texttt{\drawwith} is evaluated at \texttt{\end{bundle}}. Hence, if you write
\begin{bundle}{xxx}
\chunk{aaa}
\chunk{
\begin{bundle}{yyy}
\drawwith{\drawline}
\chunk{bbb}
\drawwith{\dashline[65]{3}}
\chunk{ddd}
\end{bundle}}
\drawwith{\dottedline{3}}
\chunk{ccc}
\end{bundle}
You can nest the \drawwith. If you write

\begin{bundle}{xxx}
\chunk{aaa}
\chunk{
  \begin{bundle}{yyy}
  \chunk{bbb}
  \chunk{ddd}
  \chunk{eee}
  \end{bundle}
}
\chunk{ccc}
\chunk{fff}
\end{bundle}

\begin{bundle}{xxx}
\chunk[left]{aaa}
\chunk{
  \begin{bundle}{yyy}
  \chunk{bbb}
  \chunk{ddd}
  \end{bundle}
}
\chunk[right]{ccc}
\end{bundle}

Thus the nested \drawwith is used in the reverse order.

4 Edge labels

You can write edge labels. They should be specified as the optional argument of \chunk. Note that the width of an edge label is neglected. If you write

\begin{bundle}{xxx}
\chunk{aaa}
\chunk{
  \begin{bundle}{yyy}
  \chunk{bbb}
  \chunk{ddd}
  \end{bundle}
}
\chunk{ccc}
\end{bundle}
5 Spacing

The *bundle* environment has three parameters for spacing.

- \texttt{\textbackslash GapDepth} means minimum height of gaps between adjacent nodes.
- \texttt{\textbackslash GapWidth} means minimum width of gaps between adjacent nodes.
- \texttt{\textbackslash EdgeLabelSep} means height of an edge label from the lower node of the edge.

You should set these parameters before the *bundle* environment if you dislike default values.

If you write

\begin{verbatim}
\begin{bundle}{xxx}
  \chunk{aaa}
  \chunk{
    \setlength{\textbackslash GapDepth}{5pt}
    \setlength{\textbackslash GapWidth}{5pt}
    \begin{bundle}{yyy}
      \chunk{bbb}
      \chunk{ddd}
    \end{bundle}
  }
  \chunk{ccc}
\end{bundle}
\end{verbatim}

you get

\[
\begin{tikzpicture}
  \node (aaa) at (0,0) {aaa};
  \node (yyy) at (1,0) {yyy};
  \node (ccc) at (2,0) {ccc};
  \node (bbb) at (1,-1) {bbb};
  \node (ddd) at (2,-1) {ddd};
  \draw (aaa) -- (yyy) -- (ccc);
  \draw (aaa) -- (bbb);
  \draw (aaa) -- (ddd);
\end{tikzpicture}
\]