trees.sty: A Macro for Drawing Binary or Ternary Trees

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The following macros let you draw a (binary or ternary) tree of any size. For each "internal node", you only have to specify which are the descending nodes, with a \branch command (\tbranch for ternary node.). To this end, nodes are given a label (only used internally!). These macros will give you some ideas on designing similar things for, e.g., digital circuits.

Trees are constructed with labels on the branches (default 0 and 1), and with text (e.g., its name or value) on the nodes. The first parameter to \branch (0, 1, 2 or 3) determines the steepness of the branches.

Example:

\begin{picture}(100,100)(-50,10)
\unitlength=2mm
\branchlabels ABC \% 012 is the default
\root(2,10) 0. \% root at absolute coordinate (2,10)
\% its (internally used) label is 0
\% the space before the 0 is obligatory
\branch2{16} 0:1,2. \% node 0 (i.e., the root) has children 1 and 2
\% the text "1.00" is written above it
\% space is optional, :,. are obligatory
\leaf{4}{$u_1$} 1. \% node 1 is a leaf
\% "0.45" written above, "$u_1$" to the right
\branch2{12} 2:3,7. \% branch to node 3 goes up, and has label A
\tbranch2{9} 3:4,5,6.
\leaf{4}{$u_3$}4. \% branch to node 3 goes up, and has label A
\leaff{4}{$u_3$}4. \% the symbols 0--7 can be replaced by anything
\leaf{3}{$u_4$}5.
\leaf{2}{$u_5$}6.
\leaf{3}{$u_2$} 7.
\end{picture}

will typeset something like:

![Diagram of a ternary tree with labeled nodes and branches]