Forky definition:

\[
data \text{ Forky } a = \text{ Tip } a \mid \text{ Branch (Forky } a) (\text{Forky } a)
\]

In the pictures, \texttt{Branch} is shown as a branching point with a “B”, and \texttt{Tip} is shown as a leaf with a “T” and an element. For example

\[
\begin{array}{c}
    \text{B} \\
    \text{T 2} \quad \text{B} \\
    \quad \text{T 7} \quad \text{T 8}
\end{array}
\]

stands for \texttt{Branch (Tip 2) (Branch (Tip 7) (Tip 8))}.

\(ta \gg k\) begins with the tree shape of \(ta\), but then each of its \(\text{Tip } a\) is replaced by the result of \(k a\). Example:

\[
\begin{array}{c|c|c|c|c}
\text{ta} & \begin{array}{c}
    \text{B} \\
    \quad \text{T 2} \quad \text{B} \\
    \quad \quad \text{T 7} \quad \text{T 8}
\end{array} \\
\text{k 2} & \text{T 1} \\
\text{k 7} & \begin{array}{c}
    \text{B} \\
    \quad \text{T 3} \quad \text{T 4}
\end{array} \\
\text{k 8} & \text{T 4} \\
\text{ta} \gg k & \begin{array}{c}
    \text{B} \\
    \quad \text{T 1} \quad \text{B} \\
    \quad \quad \text{B} \quad \text{T 4} \\
    \quad \quad \quad \text{T 3} \quad \text{T 4}
\end{array}
\end{array}
\]

You can also think of \texttt{Forky} as modeling non-deterministic programs that, at each moment, can either split into two universes or finish with an answer; moreover, not only the multiple answers are recorded, but also the splitting histories of getting those answers are recorded as a tree. Then \(ta \gg k\) runs \(ta\), passes each answer to \(k\), and records all splitting histories and final answers.