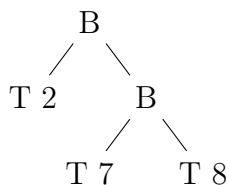


Forky definition:

```
data Forky a = Tip a | Branch (Forky a) (Forky a)
```

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



stands for `Branch (Tip 2) (Branch (Tip 7) (Tip 8))`.

$ta \gg= k$ begins with the tree shape of ta , but then each of its $Tip\ a$ is replaced by the result of $k\ a$. Example:

ta	<pre> B / \ T 2 B / \ T 7 T 8 </pre>
$k\ 2$	T 1
$k\ 7$	<pre> B / \ T 3 T 4 </pre>
$k\ 8$	T 4
$ta \gg= k$	<pre> B / \ T 1 B / \ B T 4 / \ T 3 T 4 </pre>

You can also think of *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.