Example. For each integer $n \geq 1$ we define a tree $T_n$, recursively, as follows. $T_1$ consists of only a single node. For $n \geq 2$, $T_n$ is obtained from three copies of $T_\lceil n/2 \rceil$ and two additional nodes, by connecting them as follows:

Note that in this example $n/2$ is rounded up, not down as in the homework problem.

So $T_1$ is a single node. Below we show $T_2$, $T_3$, $T_4$ and $T_5$. For clarity, each recursive subtree is shown within a shaded region.

Here is $T_2$. It is constructed from 2 new nodes and 3 copies of $T_1$:

Here is $T_3$ and $T_4$. They are constructed from 2 new nodes and 3 copies of $T_2$:

Here is $T_5$. It is constructed from 2 new nodes and 3 copies of $T_3$: 