99 questions/Solutions/62B

From HaskellWiki

< 99 questions | Solutions

Collect the nodes at a given level in a list

A node of a binary tree is at level N if the path from the root to the node has length N-1. The root node is at level 1. Write a predicate atlevel/3 to collect all nodes at a given level in a list.

```
atLevel :: Tree a -> Int -> [a]
atLevel Empty _ = []
atLevel (Branch v l r) n
    | n == 1 = [v]
    | n > 1  = atlevel l (n-1) ++ atlevel r (n-1)
    | otherwise = []
```

Another possibility is to decompose the problem:

```
levels :: Tree a -> [[a]]
levels Empty          = repeat []
levels (Branch a l r) = [a] : zipWith (++) (levels l) (levels r)

atLevel :: Tree a -> Int -> [a]
atLevel t n = levels t !! (n-1)
```