

99 questions/Solutions/62B

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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)
```

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