

## 61A-125 Spring 2016

### Discussion Quiz 05

This quiz will **not** affect your grade. (You aren't even going to turn it in.)  
It only serves to give you a sense of your own understanding. Have fun!

#### 1. Trees

Fill in the function according to the following specification. You can assume that the tree ADT has already been implemented (i.e. you can use `label`, `children`, and `is_leaf`).

---

```
def tree_path(t, num, directions):
    """Given a tree T that is filled with numbers, mutates DIRECTIONS
    so that it contains a path to NUM. DIRECTIONS is given as a
    list of child indices to follow.
```

Note: If NUM is at the root (or NUM is not in the tree),  
DIRECTIONS should be empty.

```
>>> t = tree(1, [tree(2, \
                    tree(3, [tree(4, [tree(5)]), \
                                tree(6)]), \
                    tree(7, [tree(8)]))])
```

```
>>> directions = []
>>> tree_path(t, 5, directions)
```

```
>>> directions
[1, 0, 0]
```

```
>>> tree_path(t, 1, directions)
>>> directions
```

```
[]
"""
```

```
while directions:
    directions.pop()
def helper(t):
    if label(t) == num:
        return True
    elif is_leaf(t):
        return False
    for i in range(len(children(t))):
        directions.append(i)
        if helper(children(t)[i]):
            return True
    else:
        directions.pop()
helper(t)
```

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