Quiz 5 Solution

Kevin Lin

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1. Implement a class `LoopList` that has a method `index(i)`. If `index(i)`is called with an index that is too large, `LoopList` will loop around back to the beginning.

```
class LoopList:
    """
    >>> x = LoopList([3, 1, 4])
    >>> [x.at_index(i) for i in range(9)] # loops around
    !
    [3, 1, 4, 3, 1, 4, 3, 1, 4, 3]
    """
    def __init__(self, lst):
        self.lst = lst

    def index(self, i):
        return self.data[i % len(self.data)]
```

2. **Asymptotic Analysis** Find the $\Theta(\cdot)$ runtime bound for `hiya(n)`.

   Remember that Python strings are immutable: when we add two strings together, we need to make a copy.

```
def hello(m):
    word = "h"
    for i in range(m):
        word += "i"
    return word

def hiya(n):
    i = 1
    while i < n:
        print(hello(i))
        i *= 2
```

   $\Theta(N^2)$

3. **Environment Diagrams**

```
def campa(nile):
    def ding(ding):
        nonlocal nile
        def nile(ring):
            return ding
    return nile(ding(1914)) + nile(1917)

ring = campa(lambda nile: 100)
```

http://goo.gl/rZJG1P