Quiz 4 Solution

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1. **What Would Python Display?** Draw box-and-pointer diagrams!

```
>>> L = [1, 2, 3]
>>> B = L
>>> B
[1, 2, 3]
>>> A = L[1:3]
>>> L[0] = A
>>> L = L + A
>>> B
[[2, 3], 2, 3]
>>> B[0] = A[:]
>>> L[0][0] = A
>>> L[0][0][0][0][1]
3
>>> B
[[2, 3], 2, 3]
```

   What would happen if we changed the line `L = L + A` to read `L += A`?

   It would mutate the original list, L, instead of making a shallow copy.

2. Implement `running_total`, a function that mutates a list of numbers such that the i^{th} element is the sum of the first $i + 1$ elements.

```
def running_total(lst):
    """ Computes a running total over a list of numbers.
    >>> lst = [1, 2, 3]
    >>> total = running_total(lst)
    >>> lst # [1, 1+2, 1+2+3]
    [1, 3, 6]
    >>> total
    6
    """
    total = 0
    for i in range(len(lst)):
        total += lst[i]
        lst[i] = total
    return total
```

3. **Environment Diagrams**

```
def world(series):
    if len(series) % 2 == 0:
        series[0] = series[:2]
        return[series.pop(1)]
    else:
        return series[:2]

blue_jays = [1, 2, 3, 4]
cardinals = world(blue_jays)
cubs = world(blue_jays)
royals = world(cubs)
```

http://goo.gl/G6Oufw