

Recursion Exercises

```
def sum_list(L):  
    """  
    (int or arbitrarily nested list of int) -> int  
  
    Return the sum of all ints in L.  
  
    >>> sum_list([1, [2, 3], [4, 5, [6, 7], 8]])  
    36  
    """  
  
    if isinstance(L, list):  
        return sum([sum_list(x) for x in L])  
    else:  
        return L
```

I am convinced that `sum_list` works for:

1. What helper methods does this function call?
2. So far, we haven't confirmed that the function works in any cases. Trace this call: `sum_list(27)`
3. Complete the following trace of this call: `sum_list([4, 1, 8])`

```
sum_list([4, 1, 8]) --> sum( [ sum_list(4), sum_list(1), sum_list(8) ] )  
                        --> sum( [  
                        -->
```
4. Trace this call: `sum_list([4])`
5. Trace this call: `sum_list([])`

6. Trace this call: `sum_list([4, [1, 2, 3], 8])`

7. Trace this call: `sum_list([[1, 2, 3], [4, 5], 8])`

8. Trace this call: `sum_list([1, [2, 2], [2, [3, 3, 3], 2]])`

9. Trace this call: `sum_list([1, [2, 2], [2, [3, [4, 4], 3, 3], 2]])`

10. Are you a believer yet?