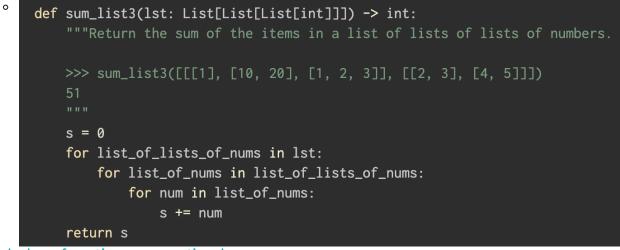
5.1 Motivation: Adding Up Numbers

RECURSION:

Powerful way of thinking!!! 😎 🦾 🦾

POSSIBLE APPROACHES TO ADDING UP NUMBERS?

- 1. Every new nesting list layer = new layer to for loop
 - The structure of data is mirrored in the structure of the code which operates it



- 2. A helper function per nesting layer...
 - You have to hard code every layer as a helper function

```
def sum_list(lst: List[int]) -> int:
    s = 0
    for num in 1st:
        # num is an int
       s += num
    return s
def sum_list2(lst: List[List[int]]) -> int:
    """Return the sum of the items in a list of lists of numbers.
    s = 0
    for list_of_nums in lst:
       # list_of_nums is a List[int]
        s += sum_list(list_of_nums)
    return s
def sum_list3(lst: List[List[List[int]]]) -> int:
    s = 0
    for list_of_lists_of_nums in lst:
       # list_of_lists_of_nums is a List[List[int]]
        s+ = sum_list2(list_of_lists_of_nums)
    return s
```

CONCLUSION:

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- HMMMM... guess there must be smth else that can do this more efficiently.....
- Drumrolll Please RECURSIONNNNNN!!!