

CSC148 Worksheet 17 Solution

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Question 1

- We need to implement the base case for this function.

The docstring tells us the function does nothing if <obj >is an int.

Using this fact, we can write that

```
1  def add_one(obj: Union[int, List]) -> None:
2      """Add one to every number stored in <obj>. Do nothing if <obj>
   > is an int.
   If <obj> is a list, *mutate* it to change the numbers stored.
3      >>> lst0 = 1
4      >>> add_one(lst0)
5      >>> lst0
6      1
7      >>> lst1 = []
8      >>> add_one(lst1)
9      >>> lst1
10     []
11     >>> lst2 = [1, [2, 3], [[[5]]]]
12     >>> add_one(lst2)
13     >>> lst2
14     [2, [3, 4], [[[6]]]]
15     """
16
17     if isinstance(obj, int):
18         return obj
19
20
```

Listing 1: worksheet_17_q1_solution.py

Correct Solution:

We need to implement the base case for this function.

The docstring tells us the function does nothing if <obj >is an int.

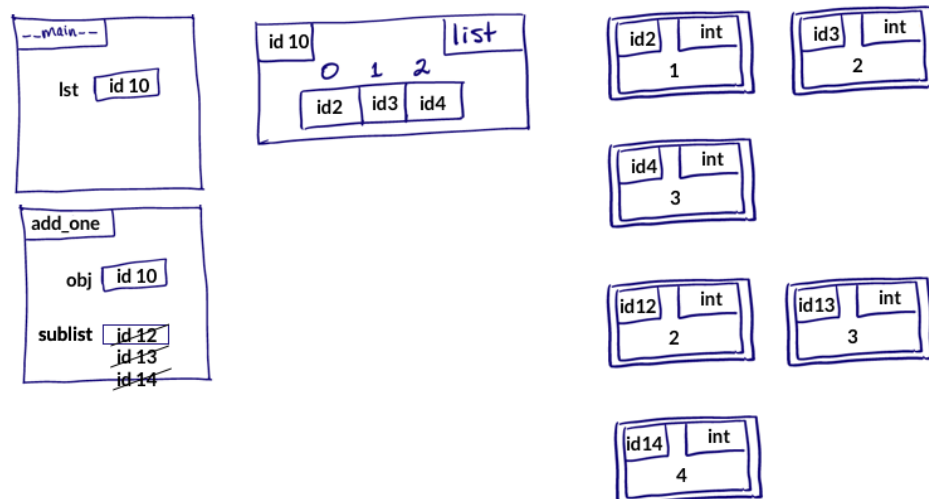
Using this fact, we can write that

```
1      from typing import Union, List, Optional
2
3      def add_one(obj: Union[int, List]) -> None:
4          """Add one to every number stored in <obj>. Do nothing
5          if <obj> is an int.
6          If <obj> is a list, *mutate* it to change the numbers
7          stored.
8
9          >>> lst0 = 1
10          >>> add_one(lst0)
11          >>> lst0
12          1
13          >>> lst1 = []
14          >>> add_one(lst1)
15          >>> lst1
16          []
17          >>> lst2 = [1, [2, 3], [[[5]]]]
18          >>> add_one(lst2)
19          >>> lst2
20          [2, [3, 4], [[[6]]]]
21          """
22
23          if isinstance(obj, int):
24              # ===== Correction =====
25              pass
26
27          if __name__ == '__main__':
28              import doctest
29              doctest.testmod()
30          # =====
```

Listing 2: worksheet_17_q1_solution.py

Question 2

- No values in *obj* would change.



Question 3

```

1  from typing import Union, List, Optional
2
3  def add_one(obj: Union[int, List]) -> None:
4      """Add one to every number stored in <obj>. Do nothing if <obj> is
5      an int.
6      If <obj> is a list, *mutate* it to change the numbers stored.
7      >>> lst0 = 1
8      >>> add_one(lst0)
9      >>> lst0
10     1
11     >>> lst1 = []
12     >>> add_one(lst1)
13     >>> lst1
14     []
15     >>> lst2 = [1, [2, 3], [[[5]]]]
16     >>> add_one(lst2)
17     >>> lst2
18     [2, [3, 4], [[[6]]]]
19     """
20
21     if isinstance(obj, int):
22         pass
23     else:
24         for i in range(len(obj)):
25             if isinstance(obj[i], int):
26                 obj[i] += 1
27             else:
28                 add_one(obj[i])
29
30 if __name__ == '__main__':
31     import doctest

```

```
doctest.testmod()
```

Listing 3: worksheet_17_q3_solution.py