

CSC148 Worksheet 15 Solution

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Question 1

a. According to docstring, *flatten*(*[[0, -1], -2, [[-3, [-5], -7]]]*) should return

$[0, -1, -2, -3, -5, -7]$

b.

sublist	flatten(sublist)	Value of s at the end of the iteration
N/A	N/A	\square (initial value of a)
$[0, -1]$	$[0, -1]$	
2	2	
$[-3, [-5], -7]$	$[-3, -5, -7]$	

Correct Solution:

sublist	flatten(sublist)	Value of s at the end of the iteration
N/A	N/A	\square (initial value of a)
$[0, -1]$	$[0, -1]$	
2	[2]	
$[-3, [-5], -7]$	$[-3, -5, -7]$	

c.

sublist	flatten(sublist)	Value of s at the end of the iteration
N/A	N/A	\square (initial value of a)
$[0, -1]$	$[0, -1]$	$[0, -1]$
2	$[2]$	$[0, -1, 2]$
$[-3, [-5], -7]$	$[-3, -5, -7]$	$[0, -1, 2, -3, -5, -7]$

d. Yes, the final value of s in previous problem matches the solution of $[0, -1, 2, -3, -5, -7]$ in problem 1.a.

```

e1  def flatten(obj: Union[int, List]) -> List[int]:
    2      """Return a (non-nested) list of the integers in <obj>.
    3      The integers are returned in the left-to-right order they appear
    4      in <obj>."""
    5
    6      >>> flatten(6)
    7      [6]
    8      >>> flatten([1, [-2, 3], -4])
    9      [1, -2, 3, -4]
   10      >>> flatten([[0, -1], -2, [[-3, [-5]]]])
   11      [0, -1, -2, -3, -5]
   12      """
   13      if isinstance(obj, int):
   14          return [obj]
   15      else:
   16          s = []
   17          for sublist in obj:
   18              s.extend(flatten(sublist))
   19          return s
   20

```

Question 2

a. Input that does NOT reveal an error: [1, [2, 3, [4]], 5]

Expected output: [1, 2, 3, 4]

sublist	flatten(sublist)	Value of s at the end of the iteration
N/A	N/A	[] (initial value of a)
1	[1]	[1]
[2,3,[4]]	[2,3,4]	[1,2,3,4]
5	[5]	[1,2,3,4,5]

b. Input that does reveal an error: [1, 2, [2, 2, 3], 4]

Expected output: [1, 2, 3, 4]

sublist	flatten(sublist)	Value of s at the end of the iteration
N/A	N/A	[] (initial value of a)
1	[1]	[1]
2	[2]	[1,2]
[2,2,3]	[2,3]	[1,2,2,3]
4	[4]	[1,2,2,3,4]

Correct Solution:

Input that does reveal an error: [1, 2, [2, 2, 3], 4]

Expected output: [1, 2, 3, 4]

sublist	flatten(sublist)	Value of s at the end of the iteration
N/A	N/A	[] (initial value of a)
1	[1]	[1]
2	[2]	[1,2]
[2,2,3]	[2,2,3]	[1,2,2,2,3]
4	[4]	[1,2,2,2,3,4]

Question 3

- The checking of the uniqueness of elements stops at sublist when it needs to be done a level higher.