

CSC148 Worksheet 10 Solution

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Question 1

a. The following code must be changed.

- *self._items.append(item)* in *push()* method must be changed to *self._items.insert(0,item)*
- *self._items.pop()* in *pop()* method must be changed to *self._items.pop(0)*.

```
b1 class Stack:
2     """A last-in-first-out (LIFO) stack of items.
3     Stores data in first-in, last-out order. When removing an item
    from the
4     stack, the most recently-added item is the one that is removed.
5     """
6     # === Private Attributes ===
7     # _items:
8     # The items stored in the stack. The end of the list represents
9     # the top of the stack.
10    _items: List
11
12    def __init__(self) -> None:
13        """Initialize a new empty stack.
14        """
15        self._items = []
16
17    def is_empty(self) -> bool:
18        """Return whether this stack contains no items.
19        >>> s = Stack()
20        >>> s.is_empty()
21        True
22        >>> s.push(
23        hello
24        )
25        >>> s.is_empty()
26        False
27        """
28
29        return self._items == []
30
31    def push(self, item: Any) -> None:
```

```

32         """Add a new element to the top of this stack.
33         """
34         # ===== Solution (Question 1.b) =====
35         self._items.insert(0,item)
36         # =====
37
38     def pop(self) -> Any:
39         """Remove and return the element at the top of this stack.
40         >>> s = Stack()
41         >>> s.push(
42         hello
43         )
44         >>> s.push(
45         goodbye
46         )
47         >>> s.pop()
48
49         goodbye
50
51         """
52         # ===== Solution (Question 1.b) =====
53         self._items.pop(0)
54         # =====
55

```

Listing 1: worksheet_10_q1b_solution.py

Question 2

Question 3

Question 4