CSC148 Worksheet 12 Solution

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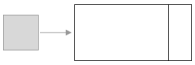
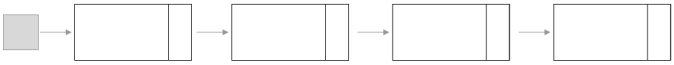
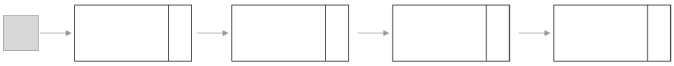
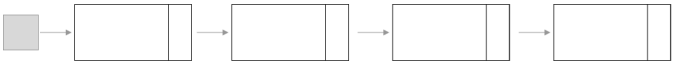
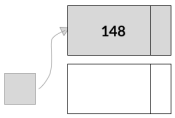
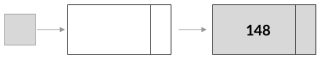
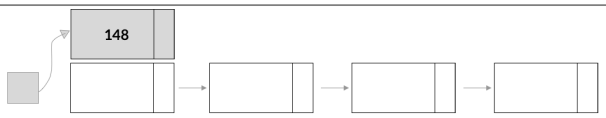
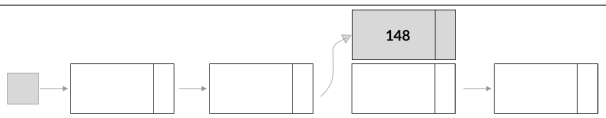
Question 1

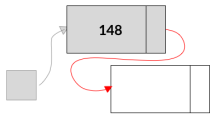
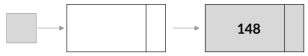
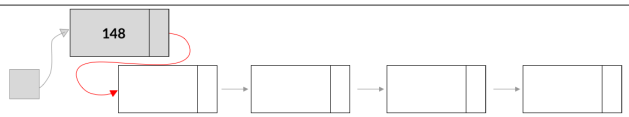
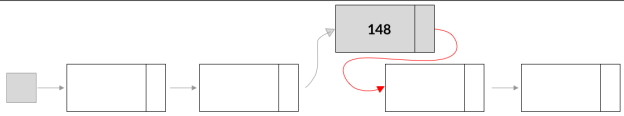
a.

Input description	Linked list diagram
`len(self) == 0, index == 0`	
`len(self) == 1, index == 0`	
`len(self) == 1, index == 1`	
`len(self) == 4, index == 0`	
`len(self) == 4, index == 2`	
`len(self) == 4, index == 4`	

b.

Input description	Linked list diagram
`len(self) == 0, index == 0`	
`len(self) == 1, index == 0`	
`len(self) == 1, index == 1`	
`len(self) == 4, index == 0`	
`len(self) == 4, index == 2`	
`len(self) == 4, index == 4`	

Correct Solution:

Input description	Linked list diagram
`len(self) == 0, index == 0`	
`len(self) == 1, index == 0`	
`len(self) == 1, index == 1`	
`len(self) == 4, index == 0`	
`len(self) == 4, index == 2`	
`len(self) == 4, index == 4`	

Question 2

a. To reassign *self._first* to something new, *len(self)* can be value, but *index* has to be at 0.

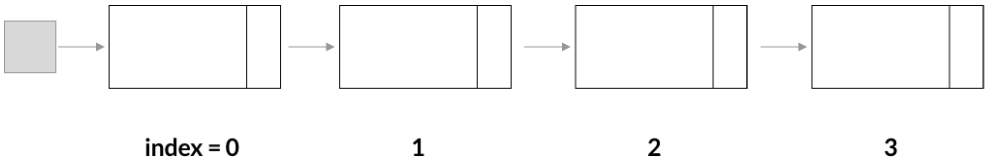
b. To make *insert* method to behave the same as *LinkedList.append*, *len(self)* can be any value, but $index = len(self) - 1$.

Correct Solution:

To make *insert* method to behave the same as *LinkedList.append*, *len(self)* can be any value, but $index = len(self)$.

Notes:

- Learned that the first node in linked list represents $index = 0$.



- Learned that *insert* operation for linked list is the same as the *insert* operation for lists.
  - If node doesn't exist at this index, then hook last node to the inserting node.
  - If node does exist, then hook current node to one end of the inserting node, and the other end to the next node

Question 3