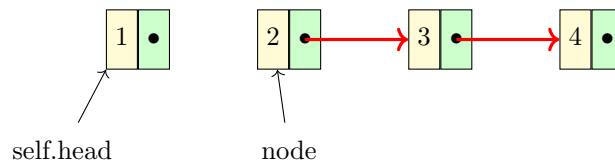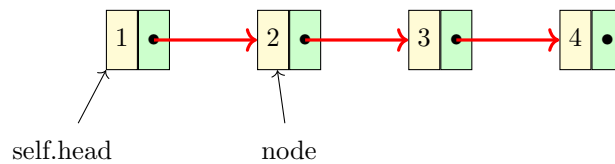# NOTES ON REVERSING A LINKED LIST
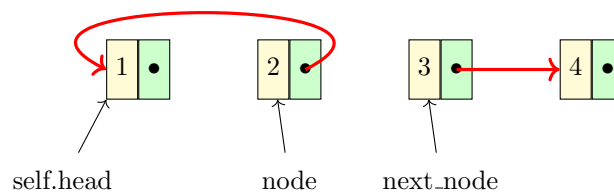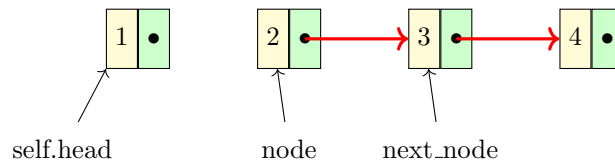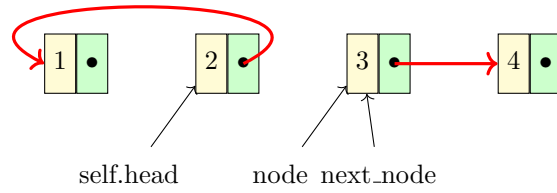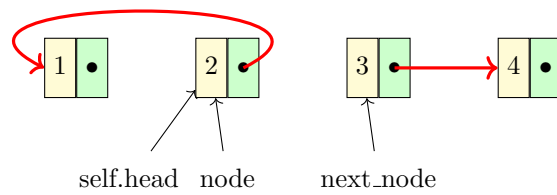
ERIC MARTIN

1. ITERATIVE VERSION (LINEAR)

```
if not self.head:
    return
node = self.head.next_node
self.head.next_node = None
while node:
    next_node = node.next_node
    node.next_node = self.head
    self.head = node
    node = next_node
```
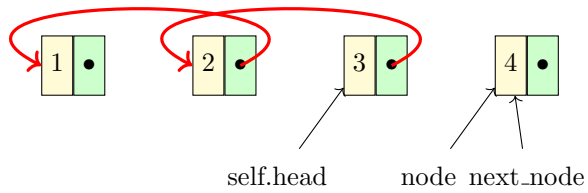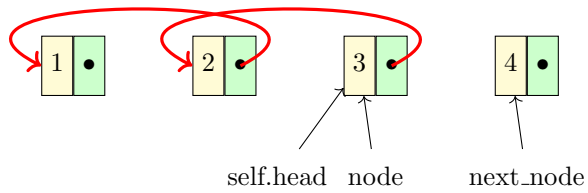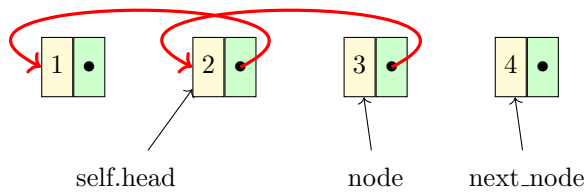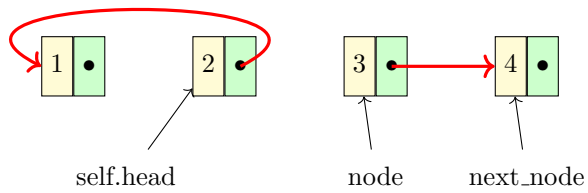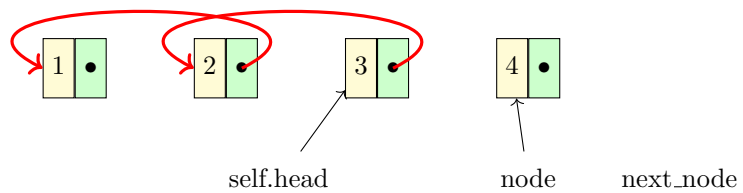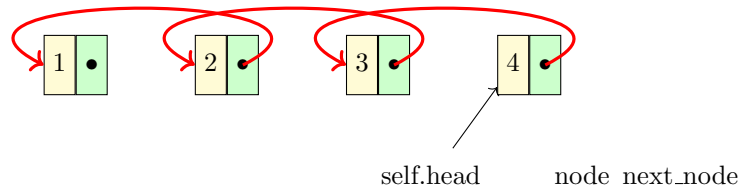

First execution of the loop

Second execution of the loop

Third execution of the loop

self.head node next_node

self.head node next_node

self.head node next_node
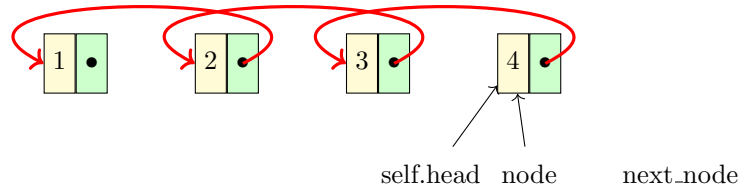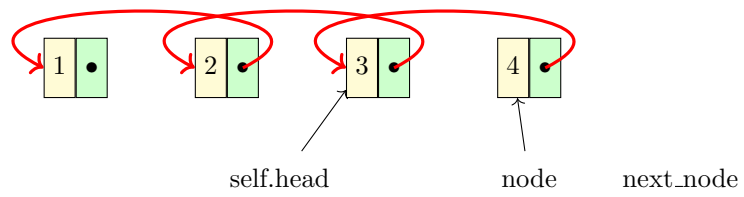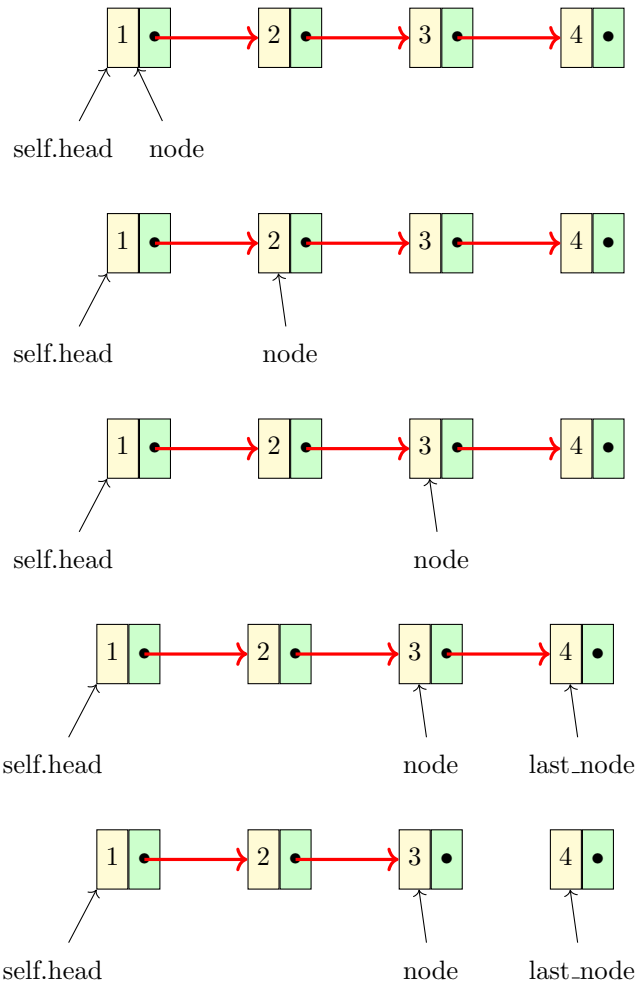
2. Recursive version (quadratic)
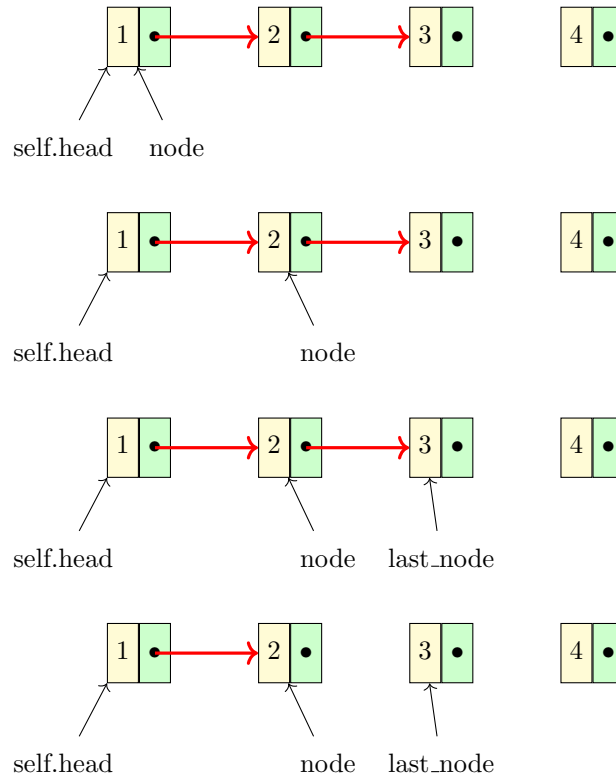
```
def recursive_reverse(self):
    if not self.head or not self.head.next_node:
        return
    node = self.head
    while node.next_node.next_node:
        node = node.next_node
    last_node = node.next_node
    node.next_node = None
    self.recursive_reverse()
    last_node.next_node = self.head
    self.head = last_node
```
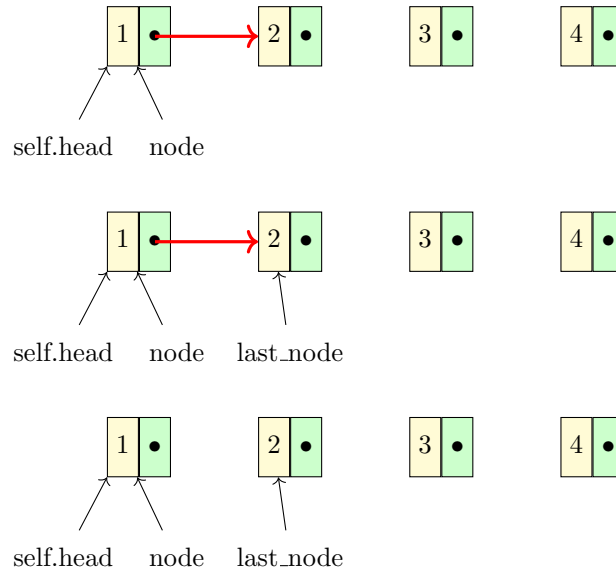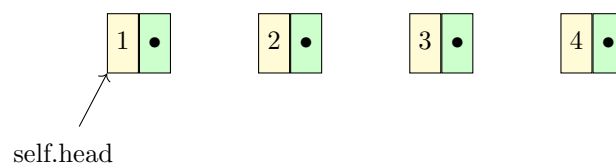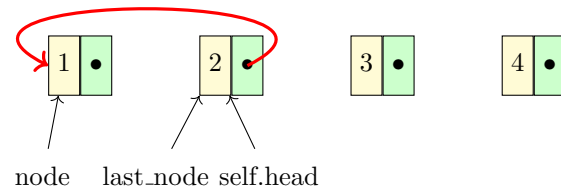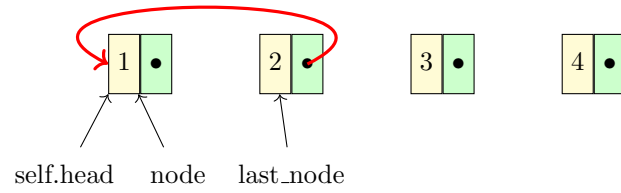
First call to `reverse()`

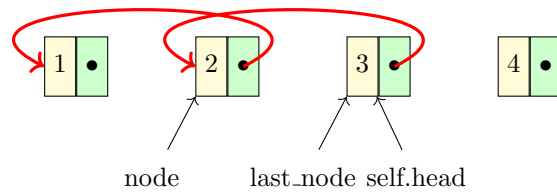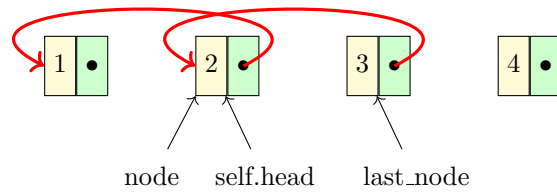Second call to reverse()

Third call to reverse()

Fourth call to reverse()

Back to third call to `reverse()`

Back to second call to `reverse()`

Back to first call to `reverse()`