



# Floyd's Tortoise and Hare Algorithm

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Why?

- Finding a cycle in a sequence of iterated function values
- 2, 0, 6, 3, 1, 6, 3, 1, 6, 3, 1, ....  
The cycle in this value sequence is 6, 3, 1



# Algorithm

- Pointer algorithm that uses only two pointers, which move through the sequence at different speeds

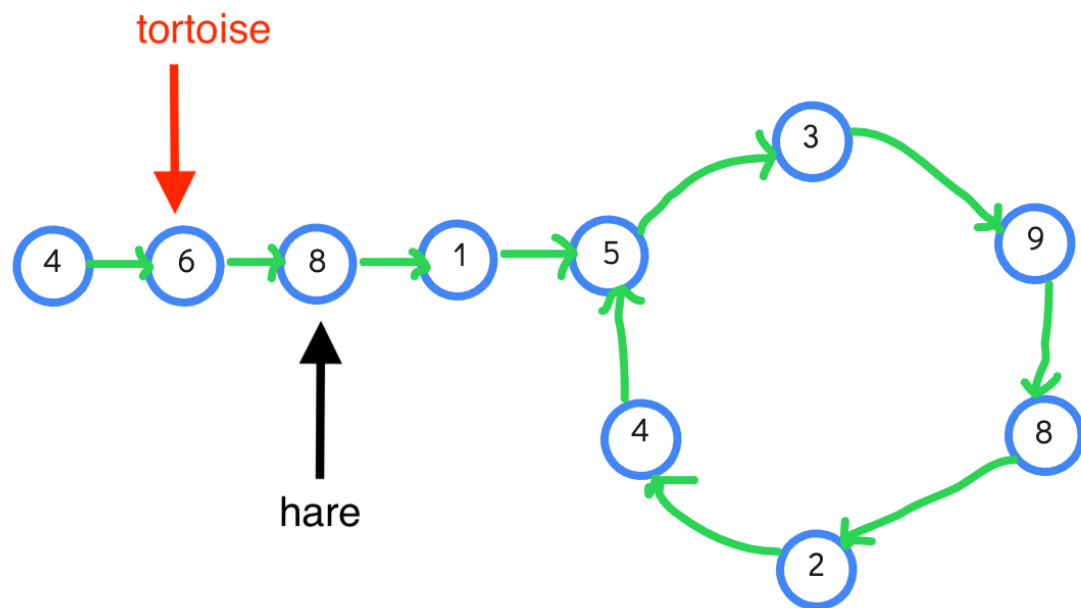


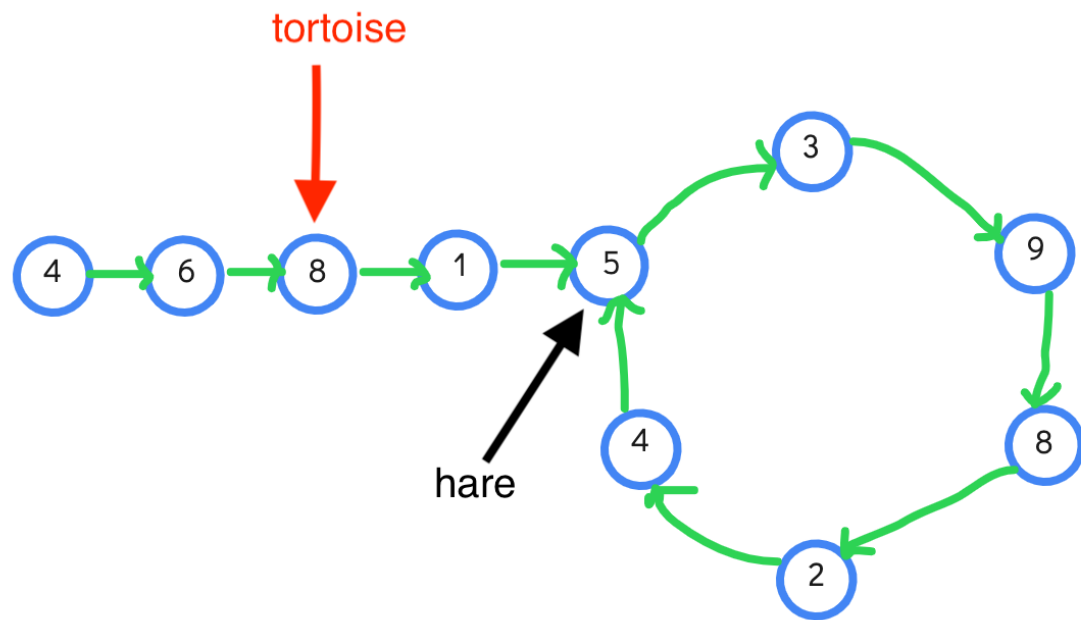
tortoise

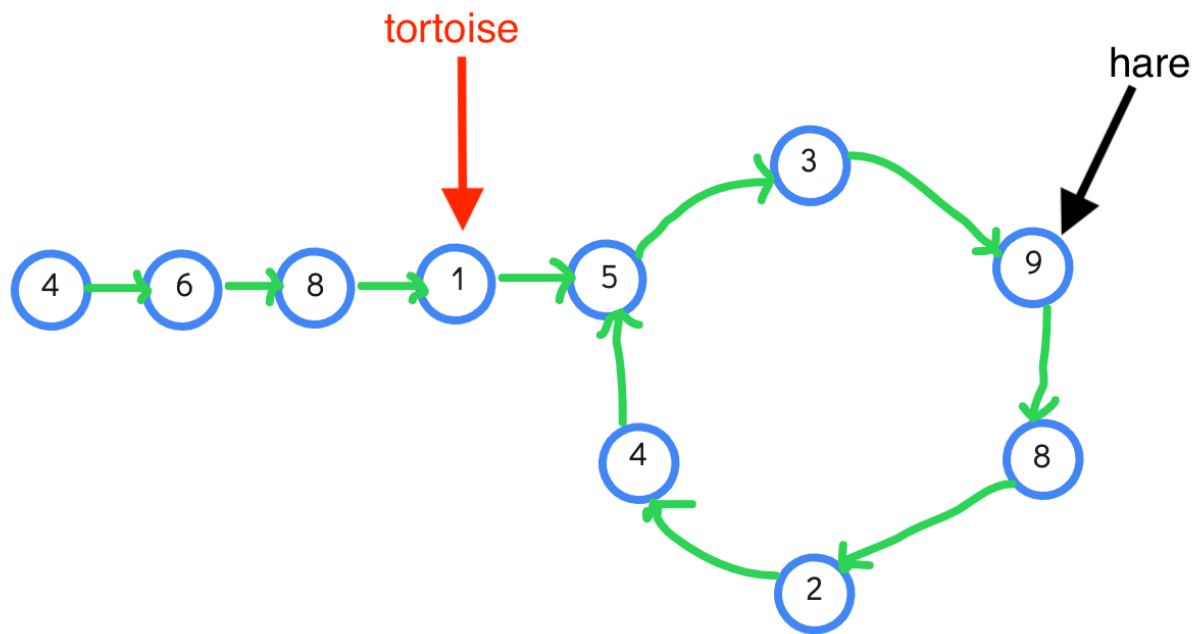


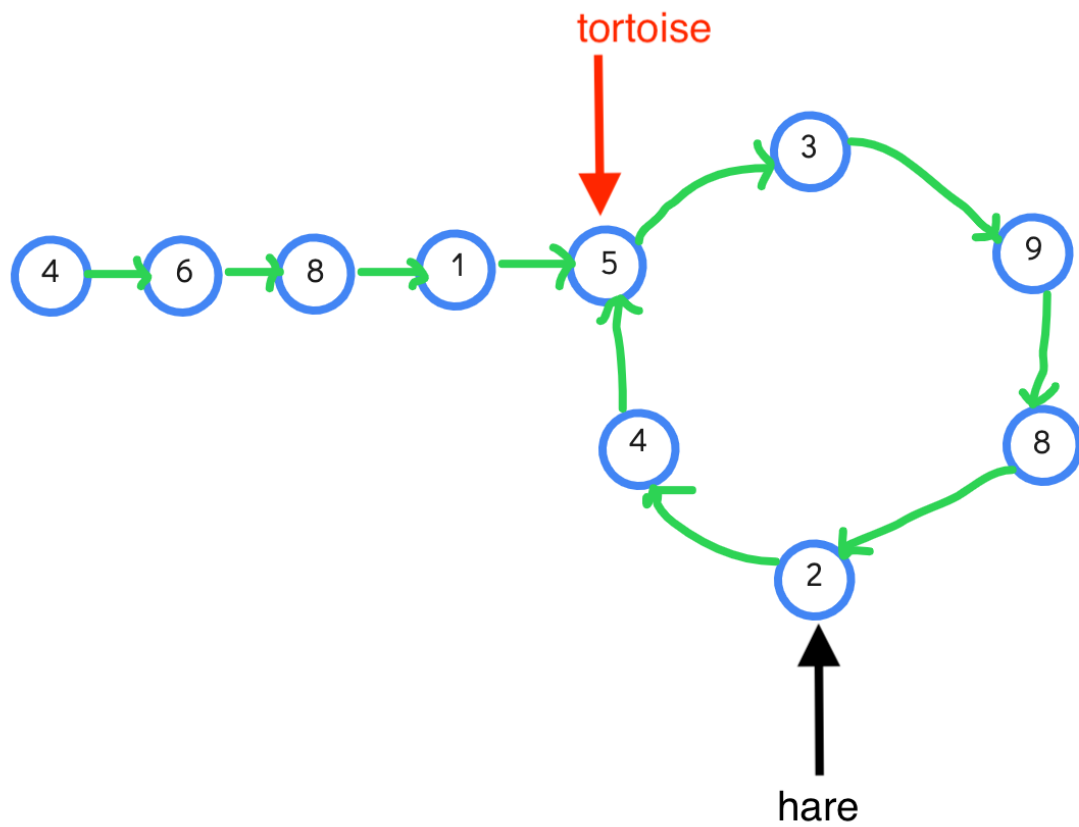
hare



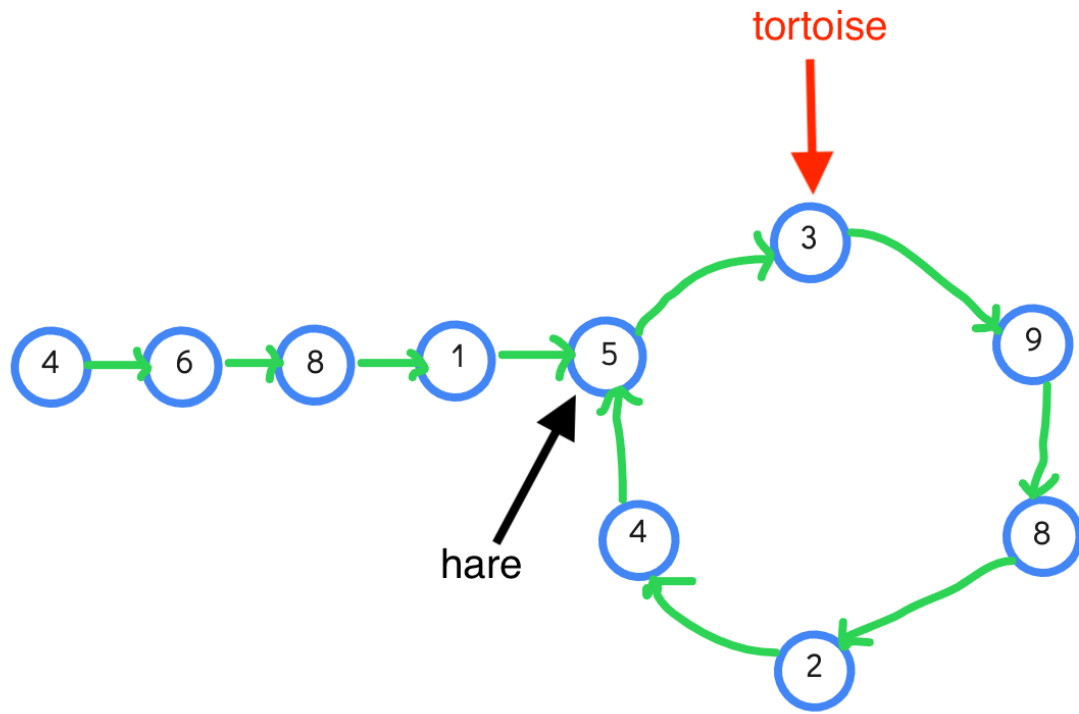


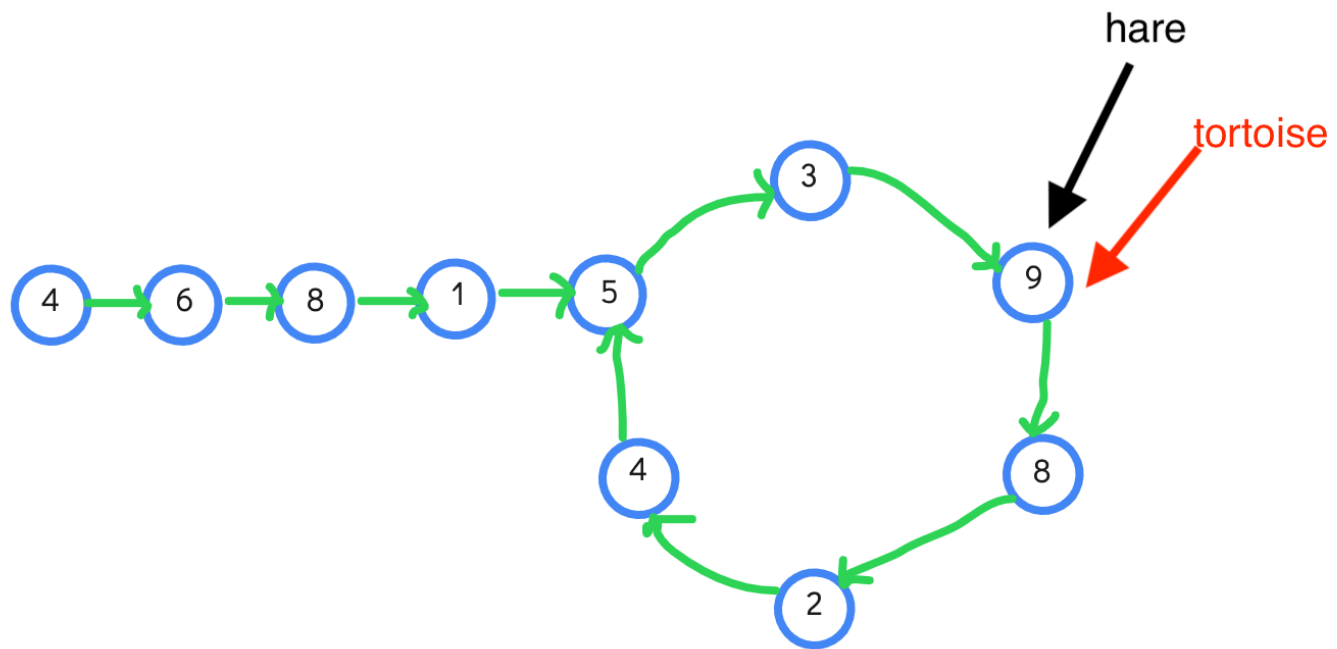












# Python Code

```
class Solution:
    def hasCycle(self, head: ListNode) -> bool:
        if (head == None):
            return False

        tortoise = head
        hare = head.next

        while (tortoise != hare):
            if (hare == None or hare.next == None):
                return False

            tortoise = tortoise.next
            hare = hare.next.next
        return True
```



THANK YOU