Q1: How to find the middle node of a linked list?

N1 --> N2 --> N3 --> N4 --> N5 --> N6 --> null

Q2: 判断一个 LinkedList 是否有环?

用快慢指针的方式查找单链表的中间节点，快指针一次走两步，慢指针一次走一步，当快指针走完时，慢指针刚好到达中间节点。

Q3: How to reverse a listed list?

Q4: Insert a node in a sorted linked list(simple)

1 --> 3 --> 6 --> 9 --> null target == 7
1 --> 3 --> 6 --> 7 –> 9 --> null

Q5: How to merge two sorted linked list into one long sorted linked list?

N1 --> N2 --> N5 --> null
N1 --> N3 --> N6 --> N7 --> null
1 --> 1 --> 2 --> 3 --> 5 --> 6 --> 7 --> null

Q6: Partition List?

Given a linked list and a target value x, partition it such that all nodes less than x are listed before the nodes larger than or equal to target value x. keep the **original relative order** of the nodes in each of the two partitions.

For example

Input: 1 → 6 →3 → 2 → 5 → 2 and target x = 4
Result: 1 → 3 → 2 → 2 → 6→ 5