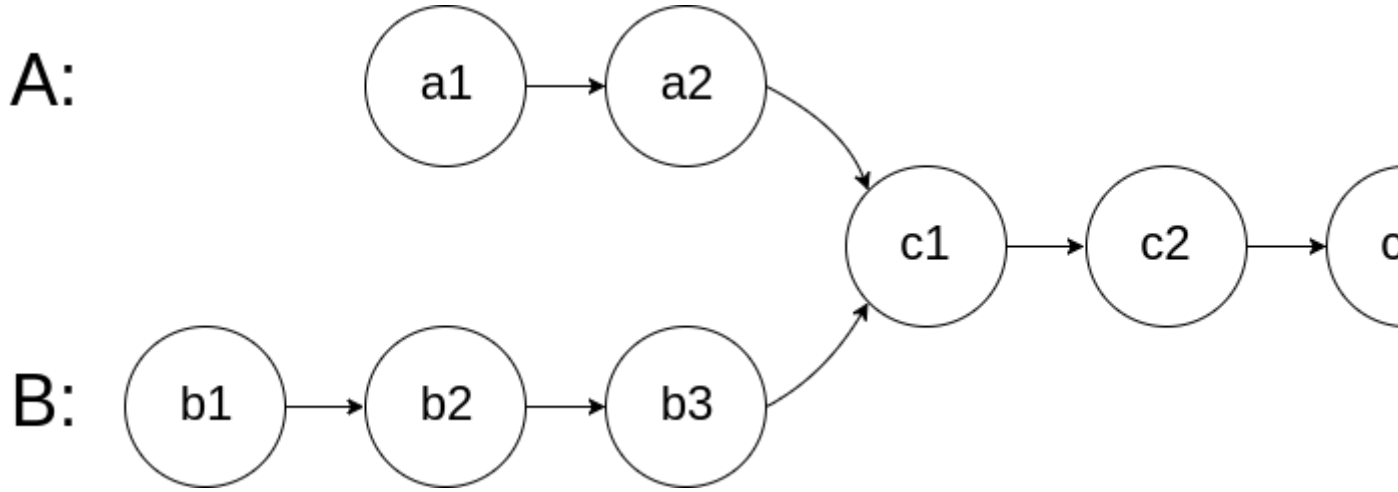
LeetCode

Day-11 Q-05: Intersection of Two Linked Lists

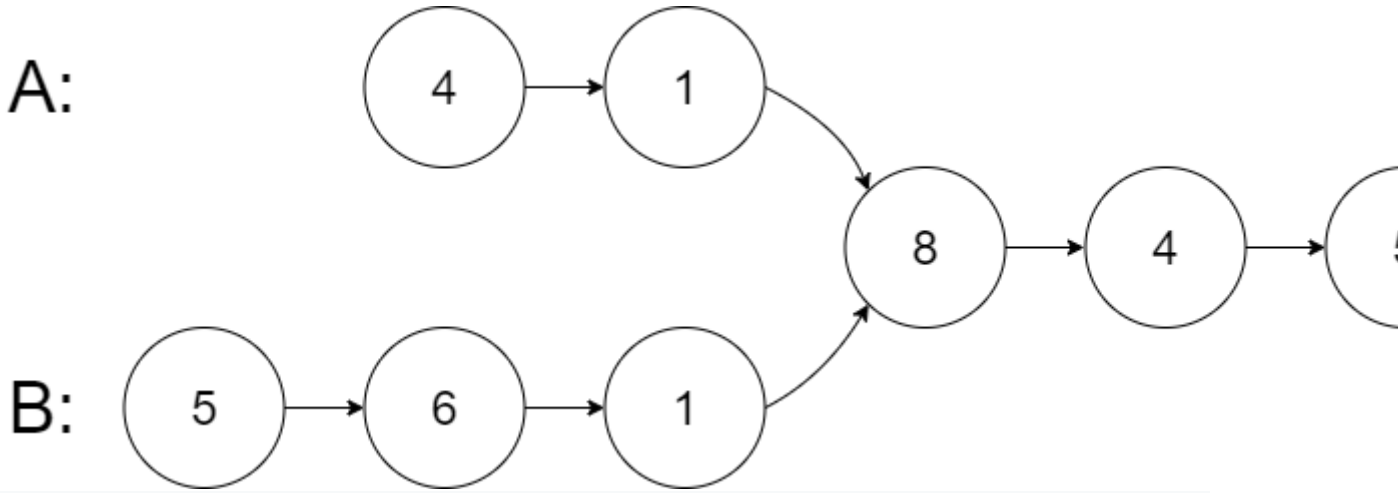
Write a program to find the node at which the intersection of two singly linked lists begins.

For example, the following two linked lists:



begin to intersect at node c1.

Example 1:

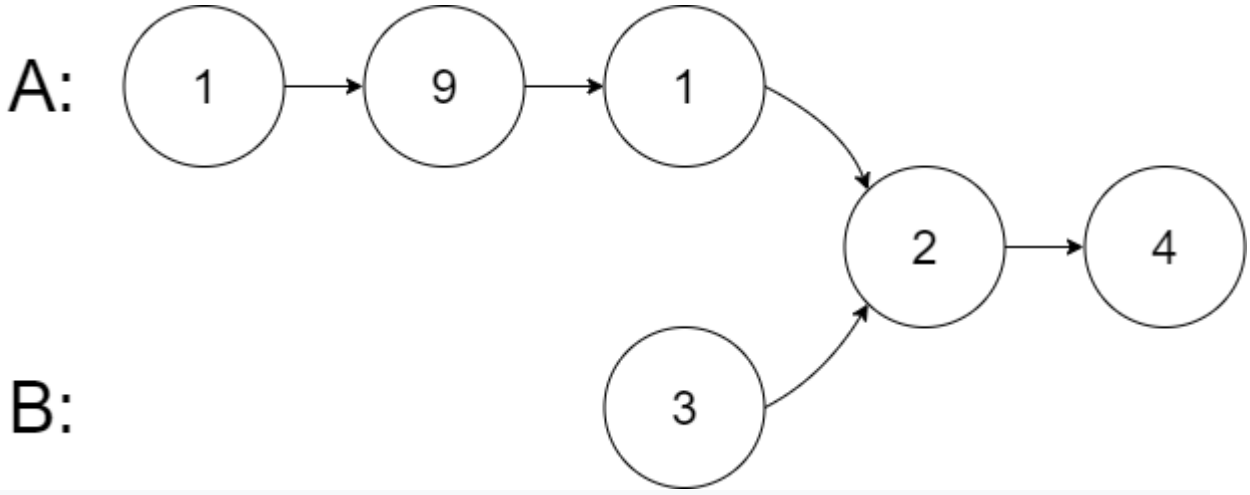



```
Input: intersectVal = 8, listA = [4,1,8,4,5], listB = [5,6,1,8,4,5], skipA = 2,
skipB = 3

Output: Reference of the node with value = 8

Input Explanation: The intersected node's value is 8 (note that this must not be 0
if the two lists intersect). From the head of A, it reads as [4,1,8,4,5]. From the
head of B, it reads as [5,6,1,8,4,5]. There are 2 nodes before the intersected
node in A; There are 3 nodes before the intersected node in B.
```

Example 2:

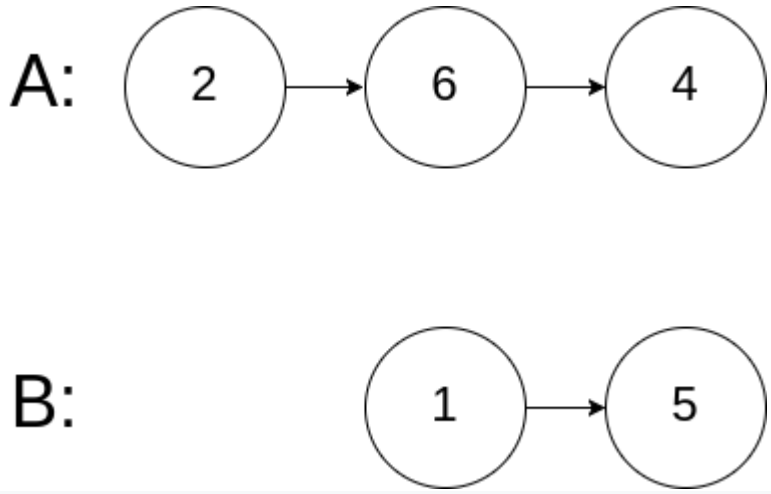



```
Input: intersectVal = 2, listA = [1,9,1,2,4], listB = [3,2,4], skipA = 3, skipB = 1

Output: Reference of the node with value = 2

Input Explanation: The intersected node's value is 2 (note that this must not be 0 if the two lists intersect). From the head of A, it reads as [1,9,1,2,4]. From the head of B, it reads as [3,2,4]. There are 3 nodes before the intersected node in A; There are 1 node before the intersected node in B.
```

Example 3:




```
Input: intersectVal = 0, listA = [2,6,4], listB = [1,5], skipA = 3, skipB = 2

Output: null

Input Explanation: From the head of A, it reads as [2,6,4]. From the head of B, it reads as [1,5]. Since the two lists do not intersect, intersectVal must be 0, while skipA and skipB can be arbitrary values.

Explanation: The two lists do not intersect, so return null.
```

Notes:

- If the two linked lists have no intersection at all, return `null`.
- The linked lists must retain their original structure after the function returns.
- You may assume there are no cycles anywhere in the entire linked structure.
- Each value on each linked list is in the range `[1, 10^9]`.
- Your code should preferably run in O(n) time and use only O(1) memory.