

First Non-Repeating Character In Stream

```
1 class DoubleLinkedListNode(object):
2     def __init__(self, value):
3         self.val = value
4         self.prev = None
5         self.next = None
6
7 class Solution:
8     def __init__(self):
9         # initialize the class
10        self.ch_to_listNode = {}
11        self.head = DoubleLinkedListNode(None)
12        self.tail = DoubleLinkedListNode(None)
13        self.head.next = self.tail
14        self.tail.prev = self.head
15
16    def read(self, ch):
17        if ch in self.ch_to_listNode:
18            remove_node = self.ch_to_listNode[ch]
19            if remove_node == None:
20                return
21            remove_node.prev.next = remove_node.next
22            remove_node.next.prev = remove_node.prev
23            self.ch_to_listNode[ch] = None
24        return
25        node = DoubleLinkedListNode(ch)
26        self.tail.prev.next = node
27        node.prev = self.tail.prev
28        node.next = self.tail
29        self.tail.prev = node
30        self.ch_to_listNode[ch] = node
31
32    def first_non_repeat(self):
33        return self.head.next.val
```