

链表与数组

Linked List & Array

课程版本 v4.0 主讲 令狐冲



扫描二维码关注微信/微博
获取最新面试题及权威解答

微信: [ninechapter](#)

微博: <http://www.weibo.com/ninechapter>

知乎: <http://zhuoanlan.zhihu.com/jiuzhang>

官网: <http://www.jiuzhang.com>

- Linked List
 - Dummy Node
 - High Frequency
- Array
 - Subarray
 - Sorted Array

- What's the output of the following code?

```
1 void print(ListNode node) {
2     while (node != null) {
3         System.out.print(node.val);
4         System.out.print("->");
5         node = node.next;
6     }
7     System.out.println("null");
8 }
9
10 void main() {
11     // connect nodes and connect them to a linked list
12     ListNode node1 = new ListNode(1);
13     ListNode node2 = new ListNode(2);
14     ListNode node3 = new ListNode(3);
15
16     node1.next = node2;
17     node2.next = node3;
18
19     // print head
20     ListNode head = node1;
21     print(head);
22
23     // print head again
24     node1 = node2;
25     print(head);
26 }
```

Reverse Nodes in k-Groups

<http://www.lintcode.com/en/problem/reverse-nodes-in-k-group/>

<http://www.jiuzhang.com/solutions/reverse-nodes-in-k-group/>

Dummy Node 哨兵节点八问八答

如何使用 Dummy Node

head = dummy 这句话总是需要么？

什么时候使用 Dummy Node？

Dummy Node 是否需要删除？

使用 Dummy Node 面试官会说我耗费了额外空间么？

Dummy Node 非用不可么？

Dummy Node 初始化的值重要么？

链表的问题都需要用到 Dummy Node 么？

用到了 Dummy Node 的值得一做的题目

<http://www.lintcode.com/en/problem/partition-list/>

<http://www.lintcode.com/en/problem/merge-two-sorted-lists/>

<http://www.lintcode.com/en/problem/reverse-linked-list-ii/>

<http://www.lintcode.com/en/problem/swap-two-nodes-in-linked-list/>

<http://www.lintcode.com/en/problem/reorder-list/>

<http://www.lintcode.com/en/problem/rotate-list/>

Copy List with Random Pointer

<http://www.lintcode.com/problem/copy-list-with-random-pointer/>

<http://www.jiuzhang.com/solutions/copy-list-with-random-pointer/>

Linked List Cycle

<http://www.lintcode.com/en/problem/linked-list-cycle/>

<http://www.jiuzhang.com/solutions/linked-list-cycle/>

follow up: <http://www.jiuzhang.com/solutions/intersection-of-two-linked-lists/>

Sort List

<http://www.lintcode.com/en/problem/sort-list/>

<http://www.jiuzhang.com/solutions/sort-list/>

问: 哪些排序算法时间复杂度是 $O(n \log n)$ 的?

问: 哪些排序算法空间复杂度是 $O(1)$ 的?

- <http://www.lintcode.com/problem/convert-sorted-list-to-balanced-bst/>
- <http://www.lintcode.com/problem/delete-node-in-the-middle-of-singly-linked-list/>
- <http://www.lintcode.com/problem/convert-binary-search-tree-to-doubly-linked-list/>

休息5分钟

Take a break

子数组 Subarray

令 $\text{PrefixSum}[i] = A[0] + A[1] + \dots + A[i - 1]$, $\text{PrefixSum}[0] = 0$

易知构造 PrefixSum 耗费 $O(n)$ 时间和 $O(n)$ 空间

如需计算子数组从下标 i 到下标 j 之间的所有数之和

则有 **$\text{Sum}(i \sim j) = \text{PrefixSum}[j + 1] - \text{PrefixSum}[i]$**

Maximum Subarray

<http://www.lintcode.com/en/problem/maximum-subarray/>

<http://www.jiuzhang.com/solutions/maximum-subarray/>

Window Sum (A)

<http://www.lintcode.com/en/problem/window-sum/>

<http://www.jiuzhang.com/solutions/window-sum/>

Subarray Sum

<http://www.lintcode.com/en/problem/subarray-sum/>

<http://www.jiuzhang.com/solutions/subarray-sum/>

Subarray Sum Closest

<http://www.lintcode.com/en/problem/subarray-sum-closest/>

<http://www.jiuzhang.com/solutions/subarray-sum-closest/>

Sorted Array

排序数组

Merge Two Sorted Arrays

<http://www.lintcode.com/problem/merge-two-sorted-arrays>

<http://www.jiuzhang.com/solutions/merge-two-sorted-arrays/>

- 将小数组归并到大数组里
 - <http://www.lintcode.com/problem/merge-sorted-array/>
 - <http://www.jiuzhang.com/solutions/merge-sorted-array/>
- 两个数组的交
 - <http://www.lintcode.com/problem/intersection-of-two-arrays/>
- 数组内积(点乘)
 - Example $[1,3] \cdot [2,4] = 1*2 + 3*4 = 14$
 - Follow up: 两个数组都非常大, 但是其中都包含很多0
 - Example $[1,0,0,0,0 \dots, 0, 2, 0,\dots, 0, 3] \cdot [0,\dots, 0, 4, 0,\dots, 0, 5]$

Median of Two Sorted Arrays

<http://www.lintcode.com/problem/median-of-two-sorted-arrays/>

<http://www.jiuzhang.com/solutions/median-of-two-sorted-arrays/>