

## Week 5

### Topic: Divide and Conquer

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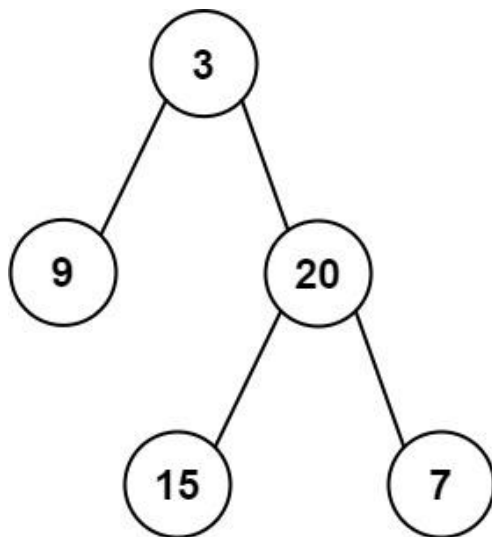
#### 105. Construct Binary Tree from Preorder and Inorder Traversal

- Difficulty: Medium
- Problem URL: <https://leetcode.com/problems/construct-binary-tree-from-preorder-and-inorder-traversal/description>
- Description:  
給定兩個整數陣列，分別是二元樹的前序遍歷[preorder]，與二元樹的中序遍歷[inorder]，根據這兩個遍歷結果，建構出該二元樹，並傳回根節點

Example1:

Input: preorder = [3,9,20,15,7], inorder = [9,3,15,20,7]

Output: [3,9,20,null,15,7]



Example2:

Input: preorder = [-1], inorder = [-1]

Output: [-1]

詳細說明與約束條件請參考 *Leetcode* 網站。

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## 912. Sort an Array

- Difficulty: Medium
- Problem URL: <https://leetcode.com/problems/sort-an-array/description>
- Description:  
對一個整數陣列[nums] 進行遞增排序，時間複雜度必須在  $O(n \log(n))$  內，並盡量壓低空間複雜度。

Example1:

Input: nums = [5,2,3,1]

Output: [1,2,3,5]

Explanation:

After sorting the array, the positions of some numbers are not changed (for example, 2 and 3), while the positions of other numbers are changed (for example, 1 and 5).

Example2:

Input: nums = [5,1,1,2,0,0]

Output: [0,0,1,1,2,5]

Explanation:

Note that the values of nums are not necessarily unique.

詳細說明與約束條件請參考 *Leetcode* 網站。

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## 23. Merge k Sorted Lists

- Difficulty: Hard
- Problem URL: <https://leetcode.com/problems/merge-k-sorted-lists/description>
- Description:  
有 k 個已排序的遞增 ListNode，要求將它們合併成一條排序後的 ListNode，並返回新 ListNode 的頭節點。

Example1:

Input: lists = [[1,4,5],[1,3,4],[2,6]]

Output: [1,1,2,3,4,4,5,6]

Explanation:

The linked-lists are:

```
[
  1->4->5,
  1->3->4,
  2->6
]
merging them into one sorted list:
1->1->2->3->4->4->5->6
```

Example2:

Input: lists = []

Output: []

Example3:

Input: lists = [ [] ]

Output: []

詳細說明與約束條件請參考 *Leetcode* 網站。