

學習歷程

哈希表

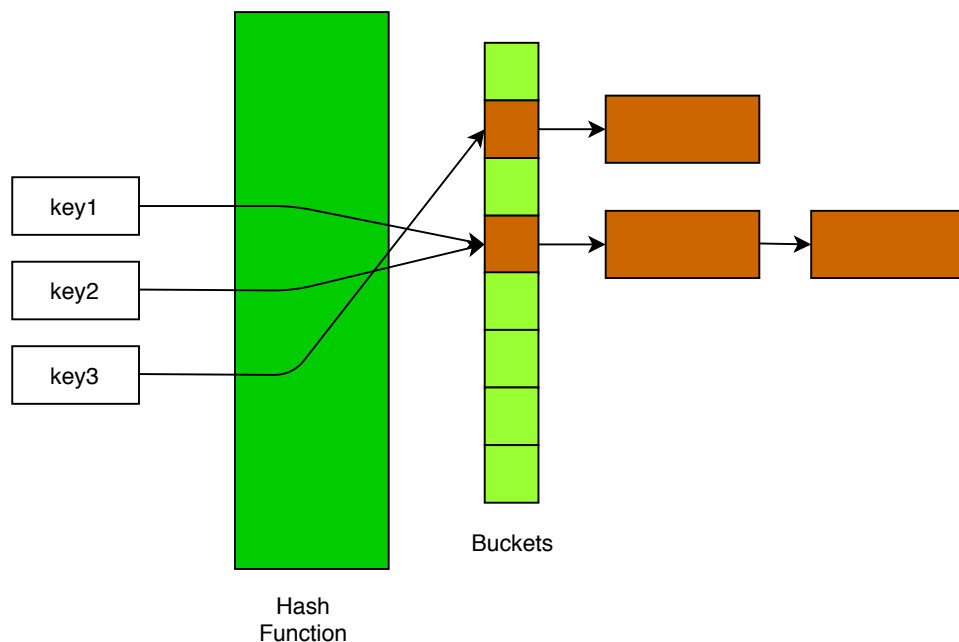
Hash Table是根據關鍵碼值 (Key-Value) 而直接進行訪問的數據結構
通過把關鍵碼值映射到表中壹個位置來訪問記錄，以加快查找的速度
哈希表的實現主要需要解決兩個問題，哈希函數和沖突解決

Hash Table的概念

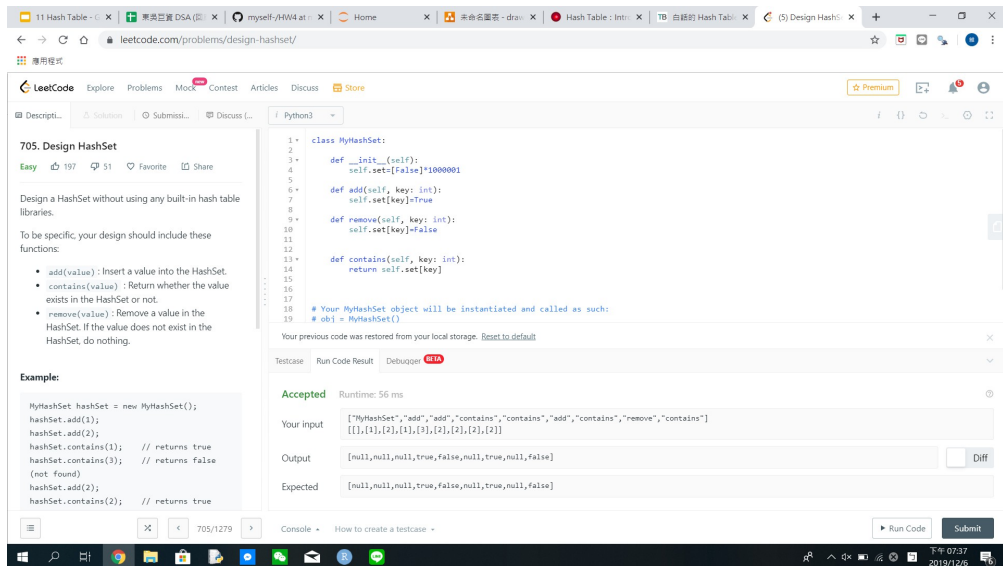
Hash Table希望能夠將存放資料的「Table」的大小(size)降到「真正會存放進Table的資料的數量」，也就是「有用到的Key的數量」。

Hash Function介紹

若把Table想像成「書桌」，slot想像成書桌的「抽屜」，那麼為了要能更快速找到物品，當然是希望「每一個抽屜只放一個物品」，如此一來，只要拿著**Key**，透過**Hash Function**找到對應的抽屜，就能保證是該**Key**所要找的物品。反之，如果同一個抽屜裡有兩個以上的物品時，便有可能找錯物品。



因為去了星期二的課，了解到LeetCode中705題對於hash table有關連
在完成705題之後進行修改後，最終完成的我的程式碼



The screenshot shows the LeetCode interface for problem 705, "Design HashSet". The problem description on the left states: "Design a HashSet without using any built-in hash table libraries. To be specific, your design should include these functions: add(value): Insert a value into the HashSet. contains(value): Return whether the value exists in the HashSet or not. remove(value): Remove a value in the HashSet. If the value does not exist in the HashSet, do nothing." An example code snippet is provided:

```
MyHashSet hashSet = new MyHashSet();
hashSet.add(1);
hashSet.add(2);
hashSet.contains(1); // returns true
hashSet.contains(3); // returns false (not found)
hashSet.add(2);
hashSet.contains(2); // returns true
```

 The Python solution on the right defines a `MyHashSet` class with methods `add`, `contains`, and `remove`. The `add` method uses a dictionary to store the presence of each value. The `contains` method checks if the value is in the dictionary. The `remove` method removes the value from the dictionary. The code is tested and accepted, with a runtime of 56 ms. The test case input is `[["MyHashSet", "add", "add", "contains", "contains", "add", "contains", "remove", "contains"], [[1], [1], [2], [1], [1], [2], [2], [2], [2]]]` and the output is `[null, null, null, true, false, null, true, null, false]`.

參考資料

<http://alrightchiu.github.io/SecondRound/hash-tableintrojian-jie.html#ht>
<https://blog.techbridge.cc/2017/01/21/simple-hash-table-intro/>
<https://leetcode.com/problems/design-hashset/>
https://www.youtube.com/watch?v=aZVNWYSR_sY
<https://www.youtube.com/watch?v=2BldESGZKB8>