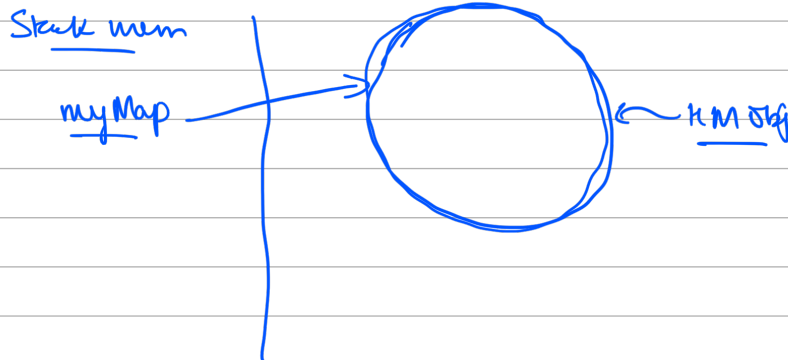


# HASHMAP

@thrivcrashish (ASHISH GUPTA)

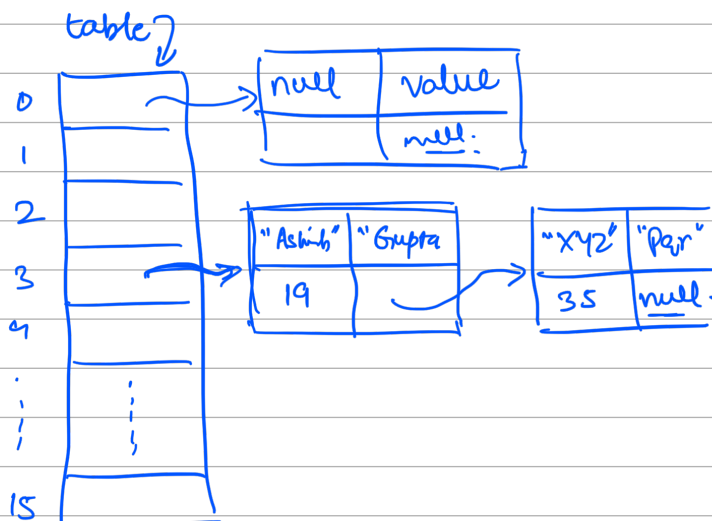
Map < String, String > myMap = new HashMap<> ();



get(—) , put (key, value)  
O(1)

table ← array of type Node  
inner class  
which extends  
Map, Entry

transient Node[] table



Case 1: Key is not null.

myMap.put("Ashish", "Gupta");  
↑  
Key.

Hash of Ashish is 19

19 % capacity  
kept growing  
19 % 16 = 3

myMap.put("XYZ", "Pqr")

hash of XYZ = 35

35 % 16 = 3  
index.

Size = 16  
capacity

Node {  
Key  
Value  
hash

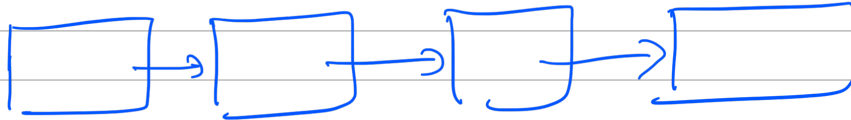
Node next

}

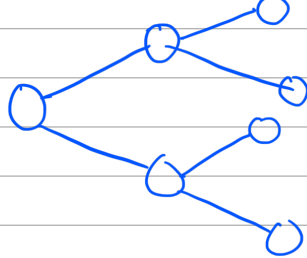
Case 2: key is null

If size of LL is grown upto Threshold.

from Java 8  $\rightarrow$  collision is further handled  
via Self Balancing Binary Search Tree



$$O(k) = O(n)$$



Self Bal BST

$$O(\log n)$$

Tree.Node

loadfactor  $\rightarrow$  75% By default

If more and more elements are inserted  
 $\Rightarrow$  increases collision.

capacity of HM  $\rightarrow$  16 loadfactor 75%

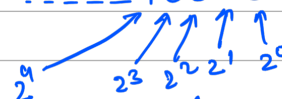


$\rightarrow$  size of hml. is  
capacity of HM will increase.

$$\text{newCapacity} = \text{OldCapacity} \ll 1$$

$$\frac{16 \ll 1}{(32)}$$

How 16 up in Binary  $\sim$  10000 = 16



left shift by 1

newCap.

$$\frac{100000}{2^5 \cdot 2^3 \cdot 2^2 \cdot 2^1 \cdot 2^0} = 32$$

Max Capacity = 1 < 30

Get Operations

Key is null  
table[0]

Key is not null.

- cal Hashcode of key.
- maps index & search.
- iterates over table[index]

checks hashcode & equals

if matches return value.  
else null. (return).

@thriverrashish  
insta ←  
twitter ←  
linkedIn. ←

load map.

Ashish