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Chapter 17 HW

Sol-1   (a) Aggregate Method :

Initially table with capacity = 1
for   i=1 to n :
    if table is full
        network = create new table with size 2 current size
        copy elements from old table to new table
        table = new table
        insert elements in inter table.

let   K = log (n+1) - 1
    Total   cost = $O(n) * K$
                 = $O(n \log n)$

| Cost per insertion is $O(\log n)$ |

| Total time is $O(n) \log(n+1)$ |

(b) Accounting Method :

Initialize   table with capacity = 1
    for i=1 to n :
        if table is full
        new tall = create new table with size
                                      currentsize

Copy element from old table to new table.

    table = new table

insert, element i into 1

initialize charges = 0

initialize credits = 0

for i=1 to n:

    charges is = 2

    if table doubled in size from n to 2n

    credits is = m

Total charge = $2^{-1} n = O(n)$

Total credits = $m + 2m + \ldots + \frac{n}{2} \cdot m = O(n)$

    cost per insertion = Total /n

                  = $O(n/n)$

                  = $O(1)$

$$\boxed{\text{Runtime per insertion} = O(1)}$$

$$\boxed{\text{Total time} = O(n)}$$