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1) Inserting n elements using

a) Aggregate method

* Pseudo Code.

Initialize table with capacity=1

for i=1 to n

if table is full

network = create new table with size 2* current ~~table~~ size

Copy elements from old table to new table

table = new table.

insert elements i into table.

Let $K = \log(n+1) - 1$

Total Cost = $O(n) * K$

$= O(n \log n)$

Cost per insertion = $O(\log n)$

Runtime per insertion is $O(\log n)$

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

b). Accounting method =

Pseudo Code :-

```
Initialize table with capacity = 1
    for i = 1 to n
        if table is full
            new table = create new table with size *
                        2 * current size

        Copy element from old table to new table
        table = new table
        insert element i into table
        initialise charges = 0
        initialize credits = 0

        for i = 1 to n i

            charges + = 2
            if table doubled in size from m to 2m
             credits + = m
```

Total charges = $2 * n = O(n)$

Total credits = $m + 2m + \ldots n/2 * m = O(n)$

Amortized cost per insertion = Total / (n)

$= O(n/n)$

$= O(1)$

Runtime per insertion = O(1)

Total time = O(n)