#2

1002258103
B. BHARGAV

1) Inserting n elements using

1) Aggregate method

* Pseudo Code

Initially table with capicity = 1

for i = 1 to n :

if table in full

network = create new table with size 2 CurrentSize

Copy Elements from old table to newtable

table = newtable

insert Elements in inner 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 in 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 newtable
table = newtable
insert element i into 1
Initialize charges = 0
initialize credits = 0

for i = 1 to n:
charges += 2
if table doubled in size from n to 2m
credits += m
Total charge = 2^1 n = O(n)
Total credits = m + 2m + ... n/2 * m = O(n)
Cost Per Insertion = Total / n
= O(n/n)
= O(1)

Runtime Per insertion = O(1)

Total time = O(n)