Date: 25/03/2021

Black Board

Data Structures

Topic:

- Step Count Analysis
- &
- Asymptotic Notations (Big-O, Big-omega, Theta)

Goal: To perform performance analysis of our DS.

→ How should we do it?

↳ option: X do it for specific tech.

↳ ✓ Analyze the DS not for a specific machine but for a general machine.

(Modern Comp).

how to describe it?

① → we wish to count the # of steps taken by algo

② → we wish to express this step count as a function of the size of data.

$a = a + b;$

# of steps depends of size of input → n

we estimate

$T(n)$:= # of steps taken by an algo on an input of size n.

$T(n) = 2n^2 + 5$ (1,000,000,000)

$T(n) = 3n + 5$

units are ~~#~~ steps.

Efficient DS: To perform an operation it takes $T(n)$ steps. and

$T(n)$ grows slowly with n.

& Perform well for large n. {10,000, 100,000, 10,001,000, 10^7, 10^8, ...}

Analysis where we are interested in large n : **Asymptotic Analysis**