Dare to dream → Core values of scaler
→ Importance of DS/Algo

High Level Design

Low level design

Performance Eq

Performance = Potential − Interference

Potential → Scaler

Interference → You

Core Values

Hard-work

Consistency

(Atomic Habits)

- Schedule your priorities
  - → use calendar app
  - → Mark all priority of the day
  - → Take out 2hr of problem solving
- ~~Motivation creates action~~ Shift + del
  Action creates motivation

1% every day

$1 \longrightarrow (1.01)^{365} \Rightarrow 37$,

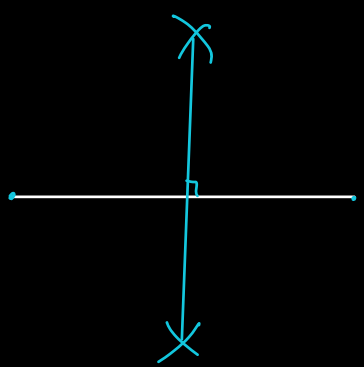
$1 \longrightarrow (1)^{365} \longrightarrow 1$

Amazon
MS
Adobe
Meta
Flipkart
Uber
ola
⋮

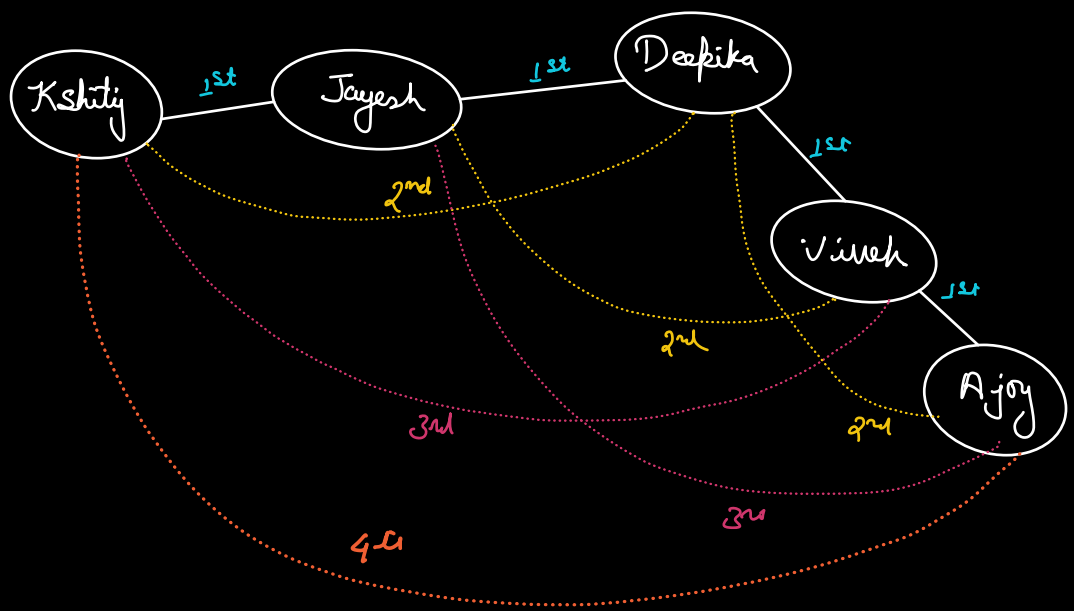
- Trees
- Seg Tree
- Tries
- Heap
- Graphs
- BS
- Dynamic Programing

Arraylists
Hash Maps

* Problem Solving
* Accuracy (less bugs)
* Optimal Code



Q LinkedIn : Degree of connection



Given 2 linked in Profiles

Check if the DOC b/w the profiles is 1st degree

Kshitij , Vivek → 3rd — 2nd degree

Vivek , Ajoy → 1st — 3rd degree

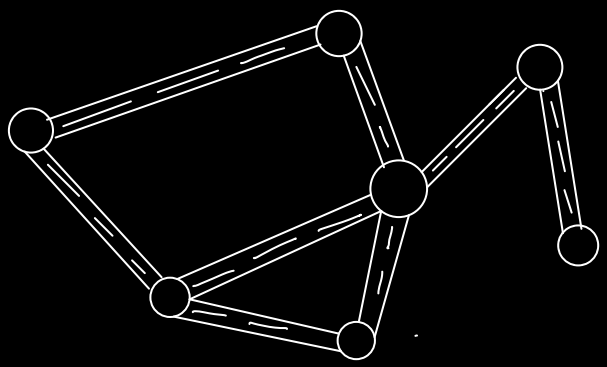
4th degree ?

Assume : 1 person can have at max 5000 connection (option)

Graph ✓ , BFS / Level order traversal ✓

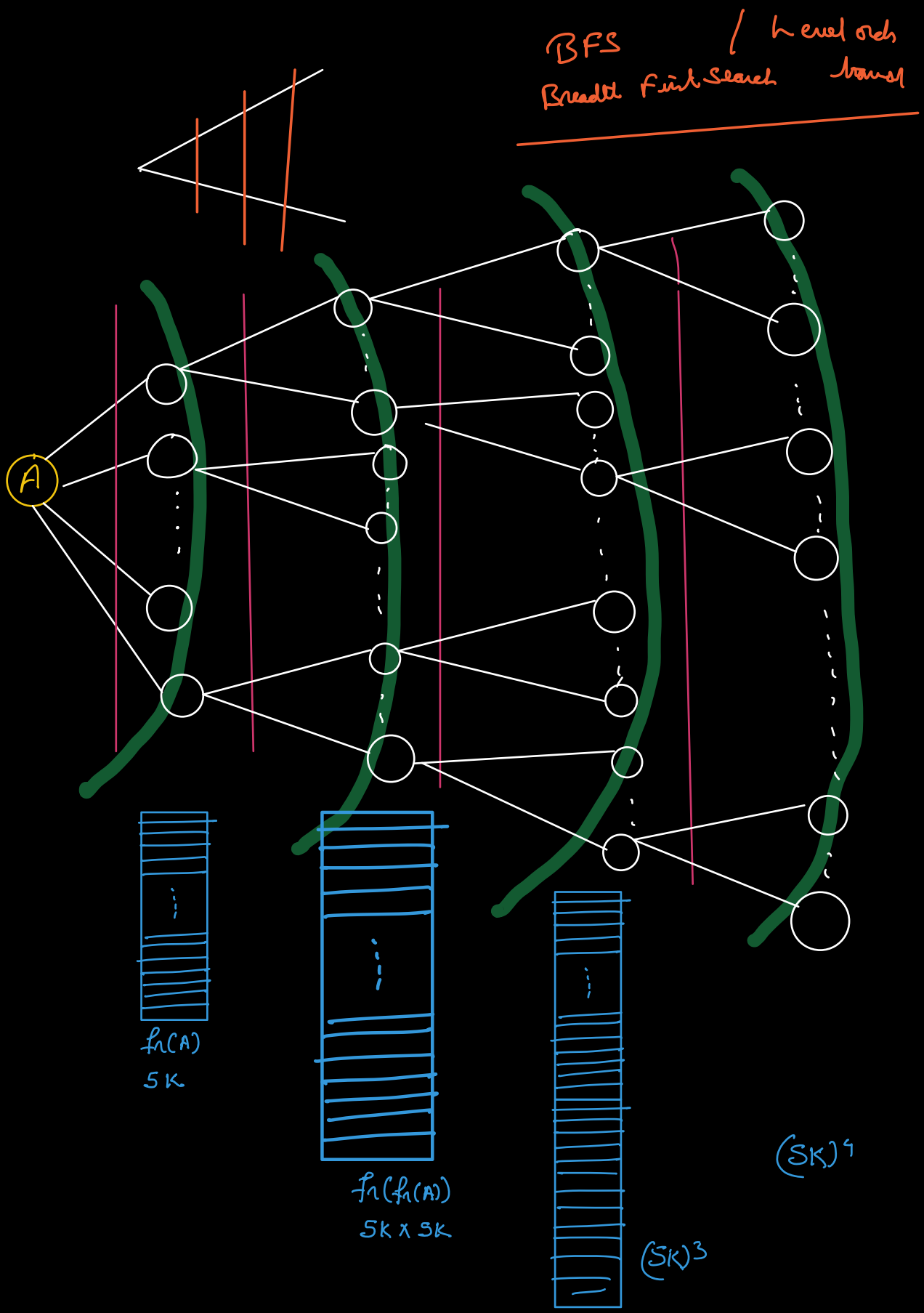
Graph

Roadway network
Railway network
Electricity network
Social media network



any network of
Nodes & edges (link)

(A) (B)


BFS / level order traversal
Breadth First Search
A
fn(A)
5K
fn(fn(A))
5K x 5K
(5K)^3
(5K)^4

Assumption

1 CPU ⟶ 1 GHz (clock speed)

↓ No of instructions / sec (doing)

1 GHz ⟶ 10^8 iteration / sec

If 10^8 iterations can be performed in 1 sec

✔ 5K iterations ——"—— $\frac{5000}{10^8}$ sec = 5×10^{-5} sec

✔ $(5K)^2$ iteration ——"—— $\frac{5000 \times 5000}{10^8}$ sec = .25 sec

✘ $(5K)^3$ iteration ——"—— $\frac{5000 \times 5000 \times 5000}{10^8}$ sec

= 1250 sec

≈ 20 min

✘ $(5K)^4$ iteration ——"—— $\frac{(5K)^4}{10^8} = 625 \times 10^4$ sec

≈ 72 days

> 2.5 months

Shoib Malik

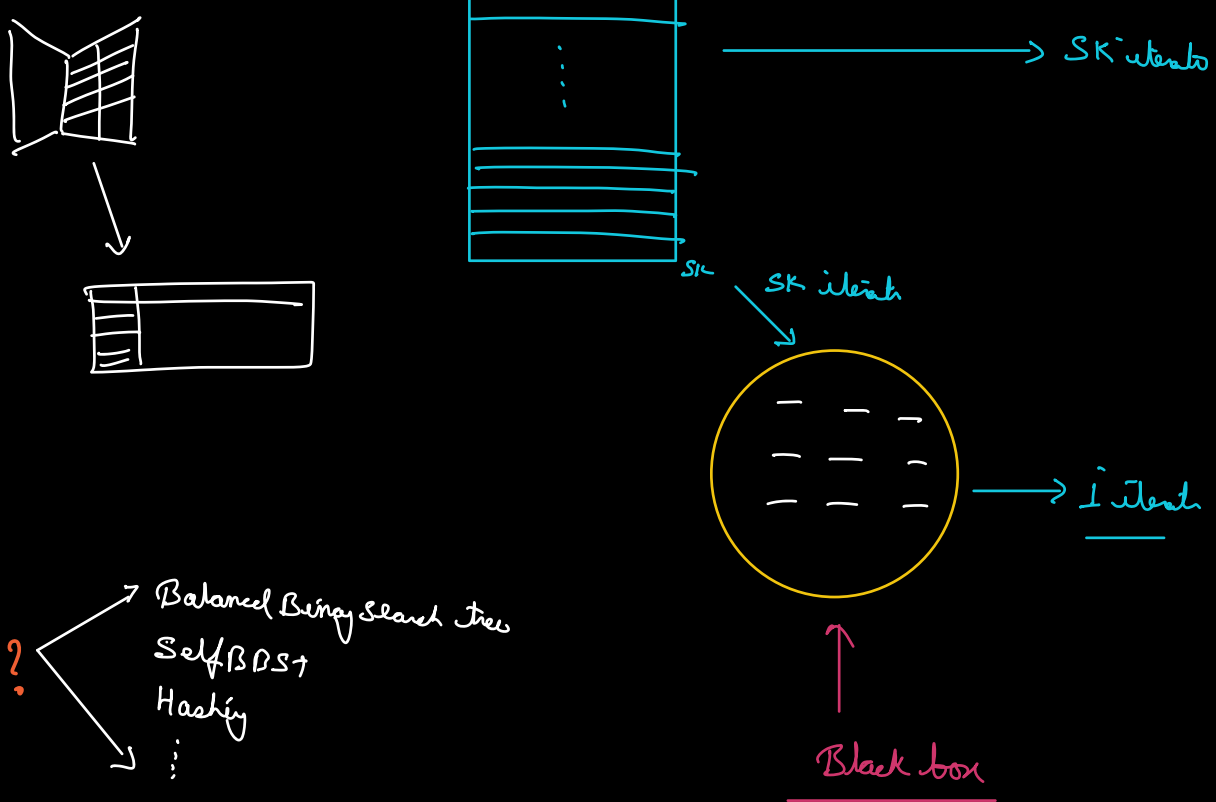
1 GHz ⟶ 10 GHz

$$$

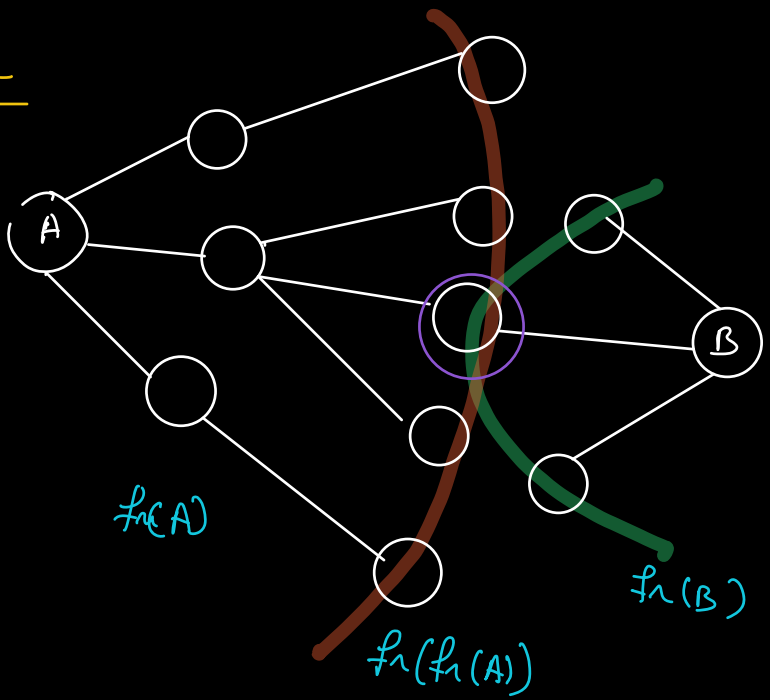
Set / Map

Java	C++	Python	JS / Ruby	C#
HashSet	Unordered_set	set	Set	HashSet
HashMap	unordered_map	dict	map	dictionary

Magic



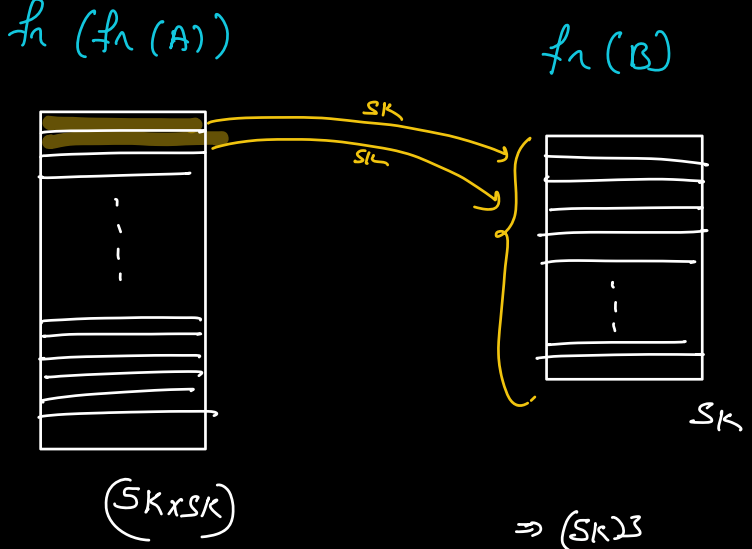
3rd degree

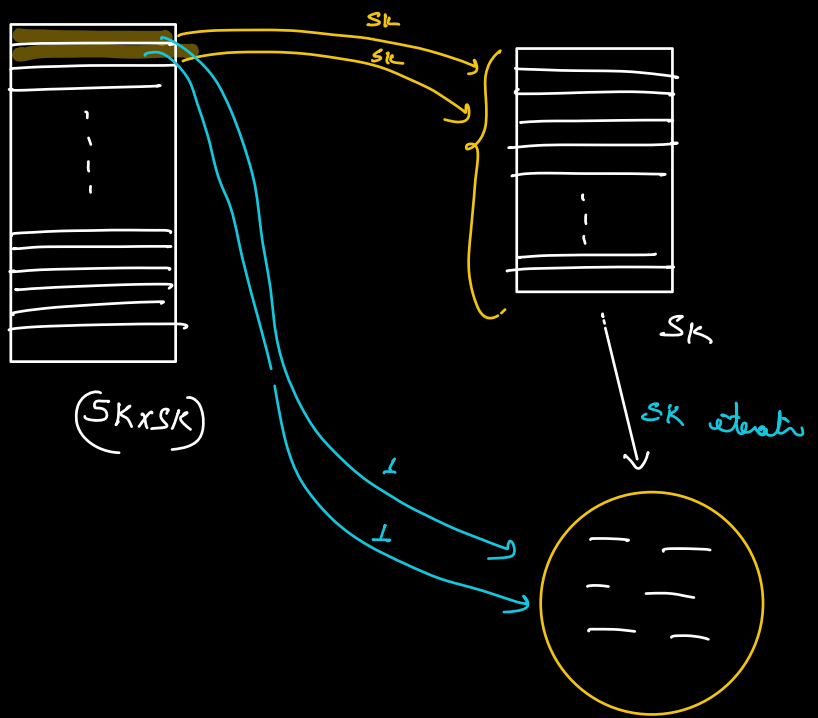


If A & B are in 3rd connection

then $f_n(f_n(A))$ & $f_n(B)$ must have

at least 1 profile in common.





$5K + (5K)^2$

$5K$ ← insert in Set

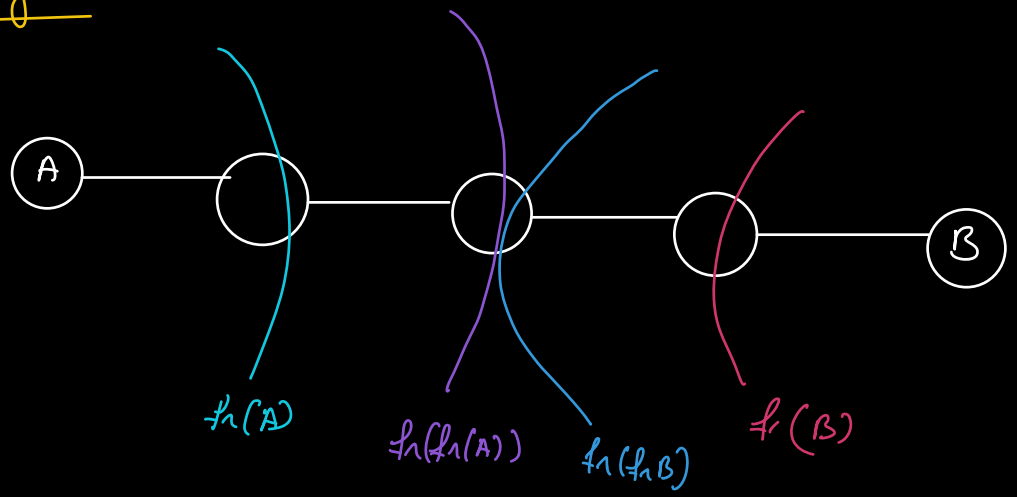
$(5K)^2$ ← intersection

10^8 iterations ⟶ 1 sec

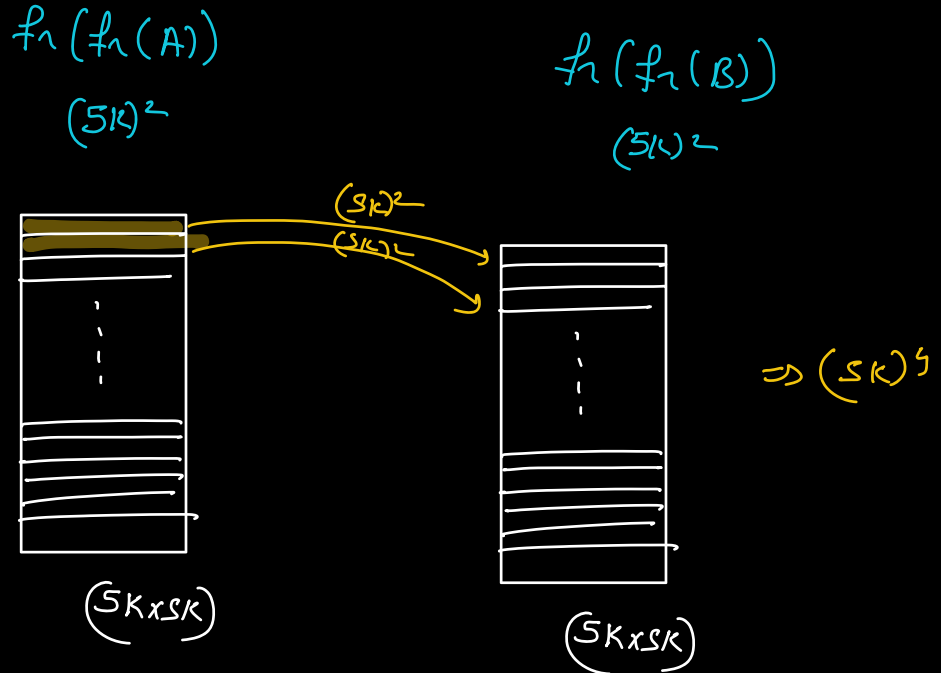
$5K + (5K)^2$ ⟶ 5×10^{-3} sec + .25 sec

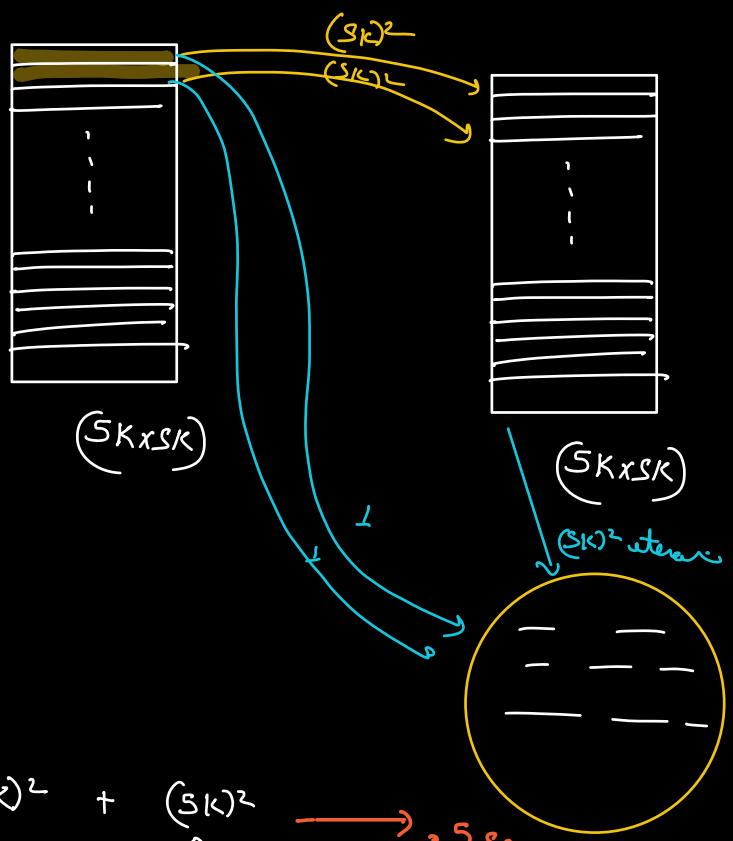
$\approx .25$ sec

4th degree



If A & B are in 4th degree connection
$\Rightarrow f_n(f_n(A))$ & $f_n(f_n(B))$ must have at least 1 profile in common.





$(5K)^2$ + $(5K)^2$ ⟶ .5 sec

insert in set

intersection

Anshum
↳ Facebook