Important Binary Search Applications for Tech Interviews

- ✓* Square Root of a number (Integral Part) ✓
- ✓* First, Last & Total Occurrence of an Element in an array.
- ✓* Missing Element In an Array
- ✓* Peak in a Mountain Array
- ✓* Search in a 2D Matrix
- ✓* Book Allocation Problem
- ✓* Painter's Partition Problem
- ✓* Aggressive Cows

* Leet Code
* Coding Ninjas
* Code Forces

(log N)

First, Last, Total in a sorted array : [1, 2, 3, 3, 3, 3, 4, 5] (indices 0 1 2 3 4 5 6 7)

* Intuition or Idea : Key = 3 (ans = -1)

→ The first occurrence of an element in a sorted array will always be at the extreme left. fo = 2

→ The last occurrence of an element in a sorted array will always be at the extreme right. lo = 5

→ Total = | lo − fo + 1 | = 5 − 2 + 1 = (4)

m = 7/2 = (3)

(ans = mid)

if (arr[mid] == key) — fo → e = m − 1 — el

if (arr[mid] == key) (ans = mid) — lo → s = m + 1 — er

[Missing Element in a Sorted Array of 1 to N] [log N]

[1, 2, 3, 5, 6, 7, 8] → missing → 4 n = 8

Constraints

O(n)

$S_n = \frac{n(n+1)}{2} = \frac{8 \times 9}{2} = 36$

S_n − array sum: 36 − 32 = (4)

"Bold"

n = 7: $\frac{7 \times 8}{2} = 28$; 28 − 24 = (4)

Case 1: [1, 2, 3, 5, 6, 7] (indices 0 1 2 3 4 5), (s+1), 5/2 = (2)

Case 2: [1, 2, 3, 4, 5, 6, 7] ↳ return (n+1)

[ele = ind + 1]

(ele = i+1) fine e = i+2 (3)

↳ → (8) (arr.len + 1)

(I) if arr[mid] = mid + 1 → s = m + 1 → right

arr[2] = 2+1 = = (3)

arr[3-1], a[2] = 3

(II) if arr[mid] != m+1 e = m − 1 → left

Traveling / Traversing left :

(III) if (mid == 0 || (arr[mid − 1] == mid)) return mid+1; (3+1) = (4) (m = 3)

(Assignment)

(I) arr[mid] = mid+1 → s = m+1 → right

(II) arr[mid] != mid+1 → left

↳ if (mid == 0 || arr[mid−1] == mid; return m+1; e = mid − 1,

Agile (SDLC) +

Version Control ? ⟶ Dev Ops

↳ GIT | Mercurial

open source

AWS | GCP | Azure (Git)

Developer : Tech Stack

↳ Project → [Empty Folder]

{index.html, style.css, script.js} {working love the data}

Local Area / Untracked Area / Unstaged Area

Version Control → git

repository [empty]

git init

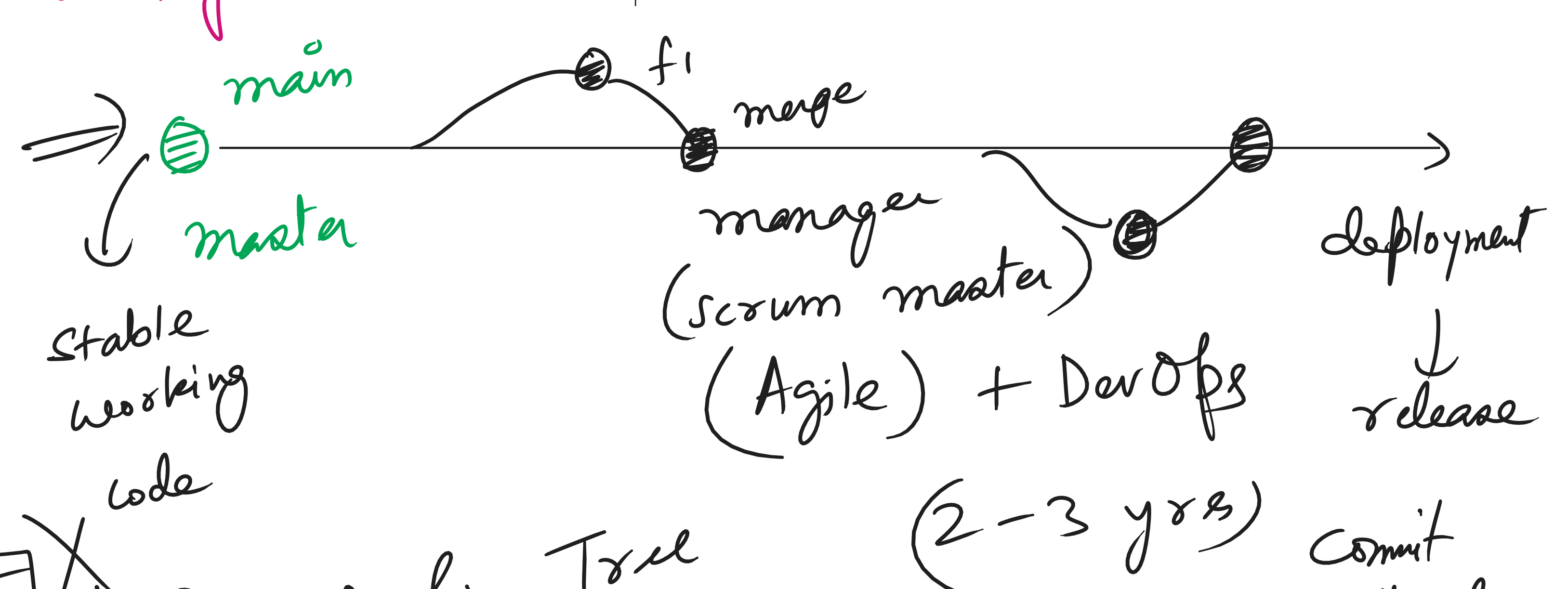
git add <filename>

git add . (all)

files (safe)

commit

Tracking area



(Agile) + DevOps

(2−3 yrs)

check sum

commit, roll back, savepoint, TCL

bug, Working Tree, button, revert

bigotic training . com

Session Code :→ 13967

Ashank David / Saurav Sarkar