

06 | Monday

8 am

Dictionaries

- Dictionary ADT
- Binary search
- Hashing

10

* Dictionaries.

- 11 Stores element that can be located quickly using keys. [Account no. in bank]
- 12 • stores keys.

1 pm

Methods :- size(), isEmpty(),

- 2 element() → return all elements
- 3 findElem(k) } return element with key 'k'.
- findAllElem(k)

- 4 No notion of key is bigger or smaller than other, only op. is comparable (equal or not).

- 6 For implement Dictionaries we can use :- Array, LinkList,

- 7 Double linklist...

- 8 we having key & data Hash table, Binary trees

9 Searching - Binary search

- Note :
- Divide & Conquer
 - Narrow down range in which we are searching key.

07 | Tuesday

8 am

- Look middle element, compare & process Right or left side of array & keep going. Recursive

9

10 Time - $O(\log n)$

comparision	rang
11 0	n
1 1	n/2
12 2	n/4

12

1 pm

$$\boxed{\log_2 n \quad 1}$$

- 2 Array based implementation, access by rank takes $O(i)$ time.

3

- 4 If Searching is an unsorted order $O(n)$.

5

Unordered seq.



- 7 Delete - $O(n)$

- insert - $O(1)$

- 8 Best for log files (rare search, delete)

- 9 ordered seq.

searching $O(\log n)$

Note : insert $O(n)$

$$O(n + \log n)$$

$$= O(n)$$

↳ 1st search create space shift $O(n)$ element to Right

JULY

AUGUST

SEPTEMBER

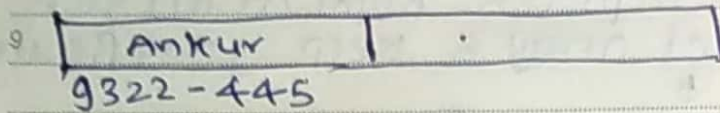
OCTOBER

NOVEMBER

DECEMBER

08 Wednesday

8 am For mobile no.



10 Create huge array & at
11 location of mobile no. put
Data.

12 Takes $O(1)$ for all operation.
But Huge Data waste.

1 pm \therefore We use Hashing.

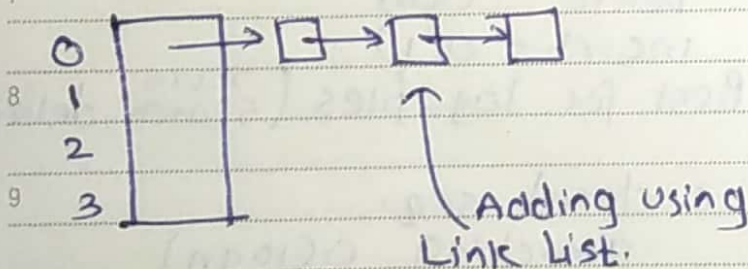
2 Here we $(9322445) \bmod 5 = 4$

\therefore Smaller array and at
3 location 4, Ankur present.

\therefore 100 users: 100 space
4 & using Hashing will solve
problem.

* Collision Resolution

6 Two key with same hash
Spot. Use Chaining.



Note :

Worst case all key map to one
location & same as LinkList

09 Thursday

8 am

List can be ordered/unordered

9
10 Ideal hash function, distribute
uniformly.

11 Load factor $= \alpha = \frac{n}{m}$

12 \rightarrow avg. of list length.

1 pm 20 element, 10 spaces, $\frac{20}{10} = 2$

2 $O(1 + \alpha)$, searching (1)
+ Link list (α).

3
4 For insert, need to go through
entire linklist.

5 $\alpha = 1$ is ideal.

6

7

8

9

Note :