CS & IT ENGINEERING

Data Structures

Introduction to Data Structures

Lec- 01

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TOPICS TO BE COVERED

- Introduction

1 to 1000

Data Structure

625 / 100 ⇒ 6   25/10 ⇒ 2

Row wise arrangement with a grouping of 10

Row wise arrangement with a grouping of 20

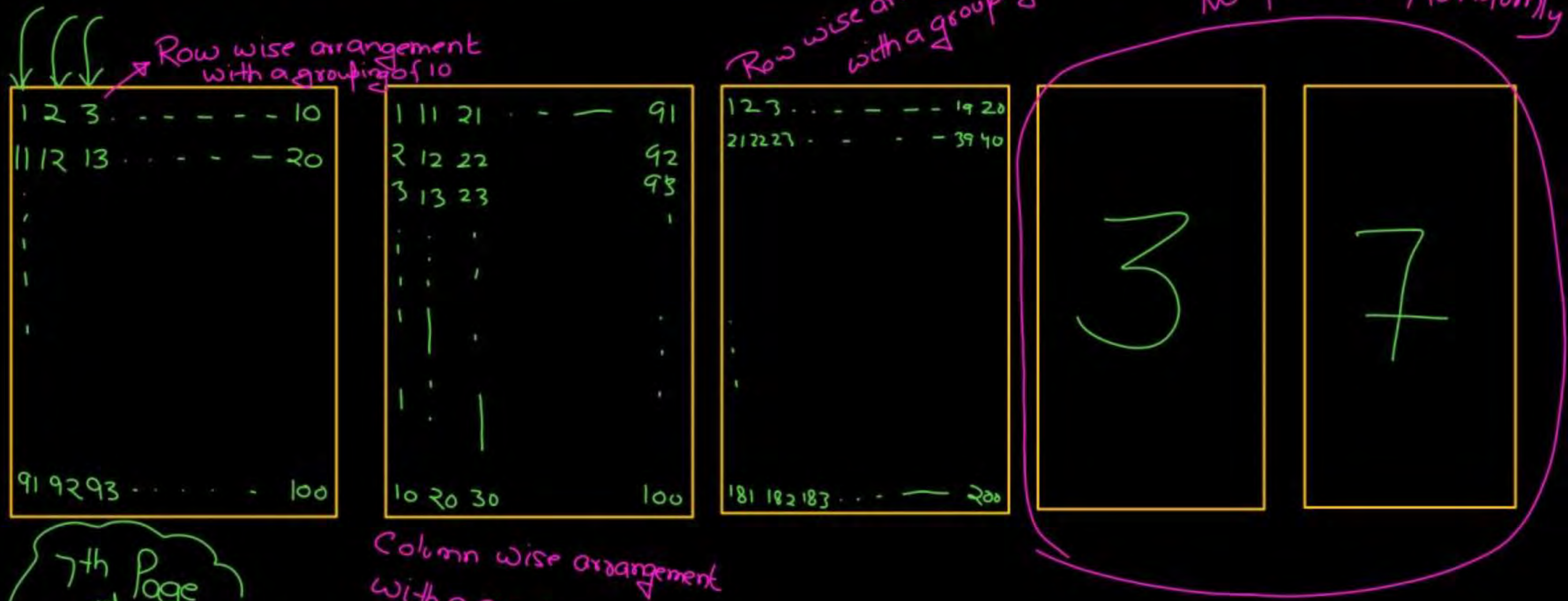
No Batter, Randomly

25el-

1 → 10

2 → 10

3



Column wise arrangement with a grouping of 10

7th Page
3rd Row
5th col

7th Page
3rd col
5th row

Ex2

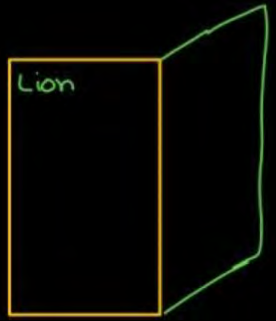
Contact List → ~~Sorted~~ unsorted

~~search~~ → 🔍

Ex3:

Dictionary → Sorted → Search

Parrot



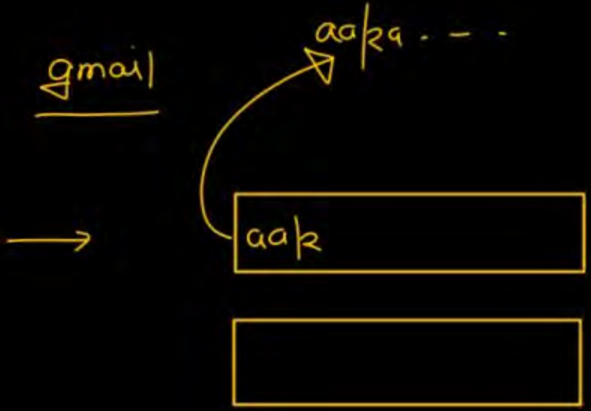
→ Insert

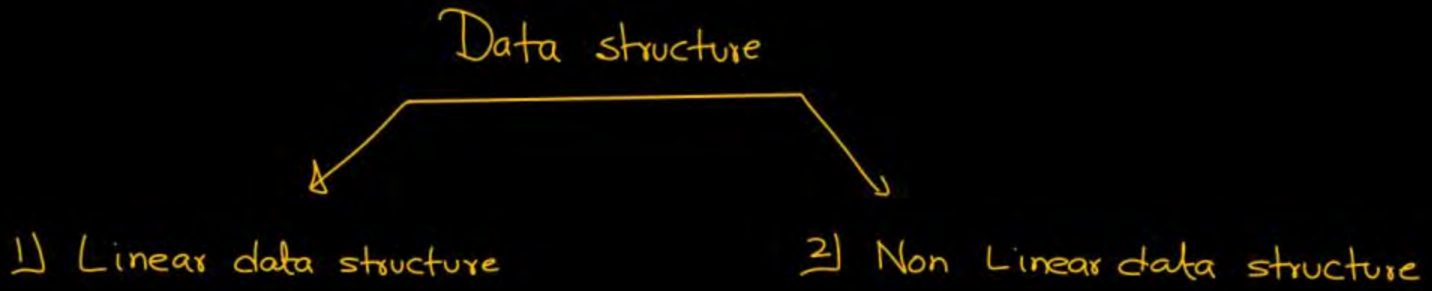
→ unsorted

Ex4

e-maild

gmail





Data structure

1) Linear data structure

2) Non Linear data structure

A data structure in which an element can have almost 2 neighbours.

More than 2 neighbours ✓ can be possible.

Linear data structure

1] Arrays → address calculation

2] Linked List → Code

3] Stack

4] Queue

Non Linear data structure

✓ 1] Tree : Binary tree
Binary Search tree
Heap
AVL tree
} 60%

2] Graph

Hashing

C Programming ✓ → Arrays, pointers, structure

→ 0 knowledge → C recording 2x →

Array

```
int m1, m2, m3 ;
```

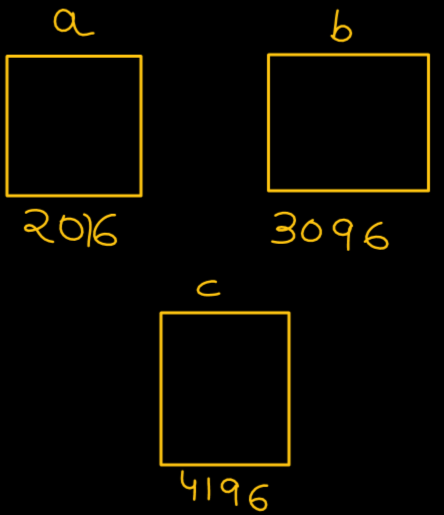
≡

avg = (m1 + m2 + m3)/3

=

```
int m1, m2, m3, m4, m5, - - - -
        . . . m50 ;
```

```
int a, b, c;
```

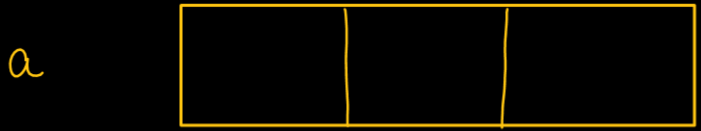


⇒

```
int a[3];
```

3 elements

a is a group of



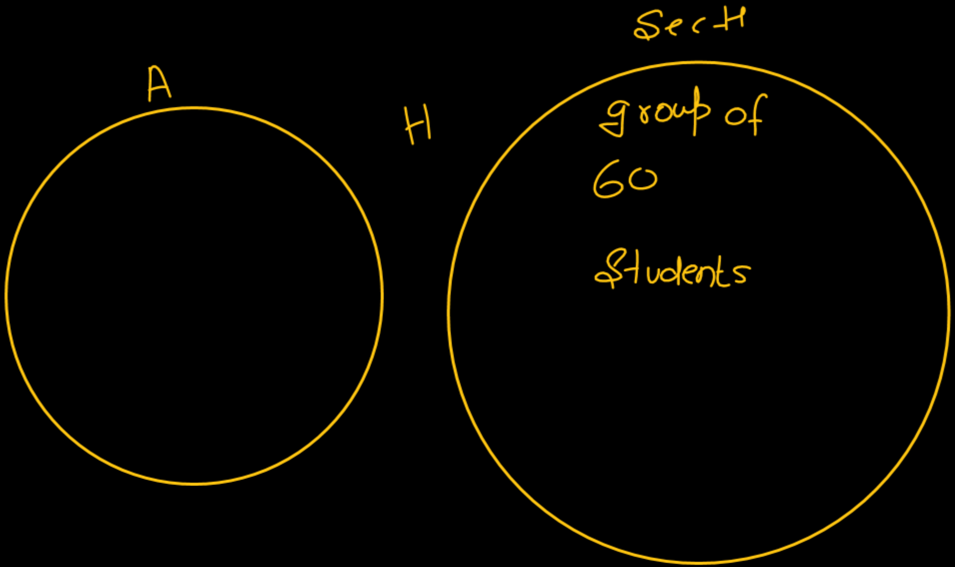
```
int a[10];

char c[5];

float p[20];
```

group of elements of same type.

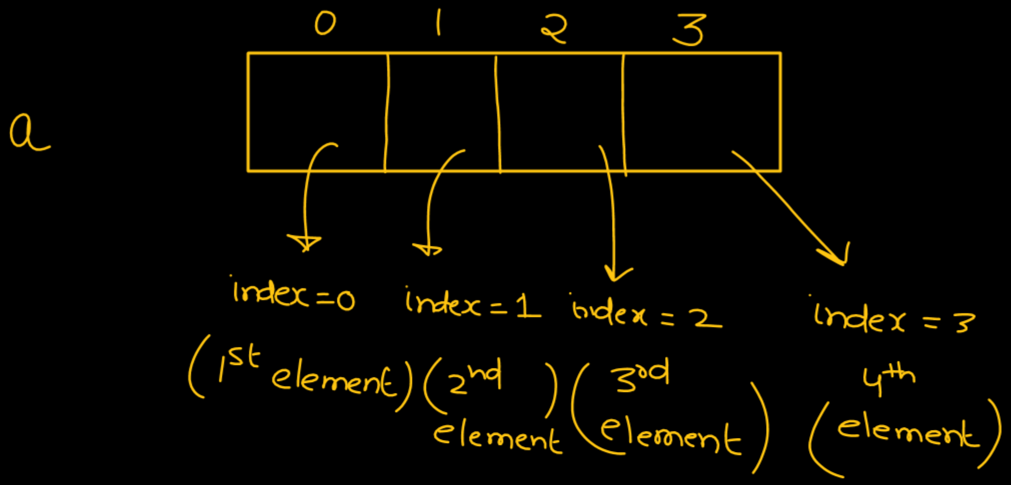
Collection of homogenous types of data elements



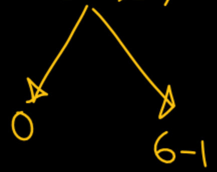
unique identification no

Roll no

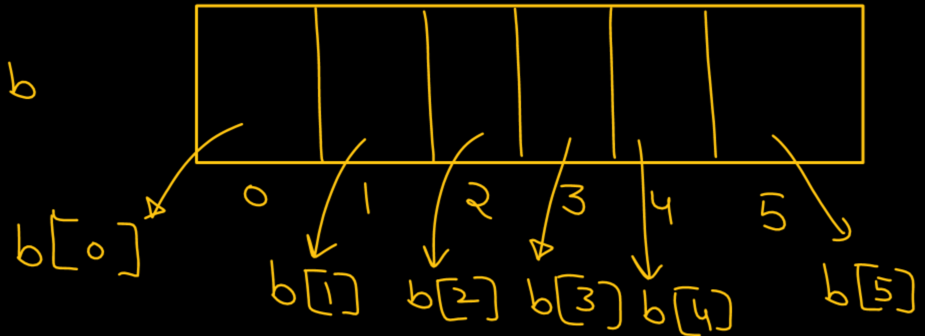
```
int a[4];
```



```
int b[6];
```



0 to 5

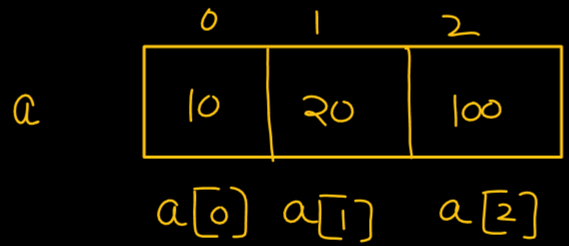


int a,b,c;

a=10; ✓

b=30; ✓

c = 50; ✓



int a[3];

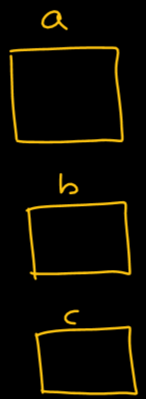
a[0] = 10;

a[1] = 20;

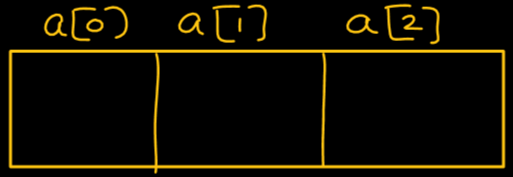
a[2] = 100

```
void main(){

        int  a,b,c;
```



```
int a[3];
```



THANK YOU GW SOLDIERS !