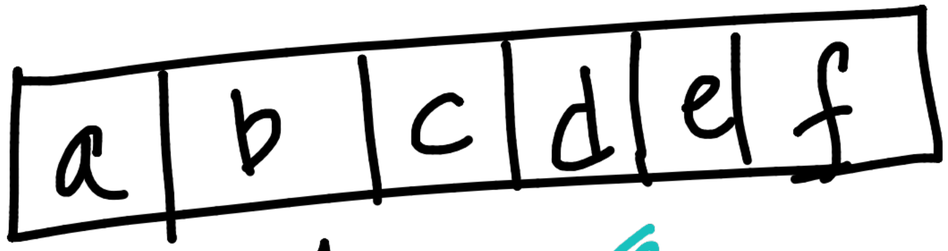
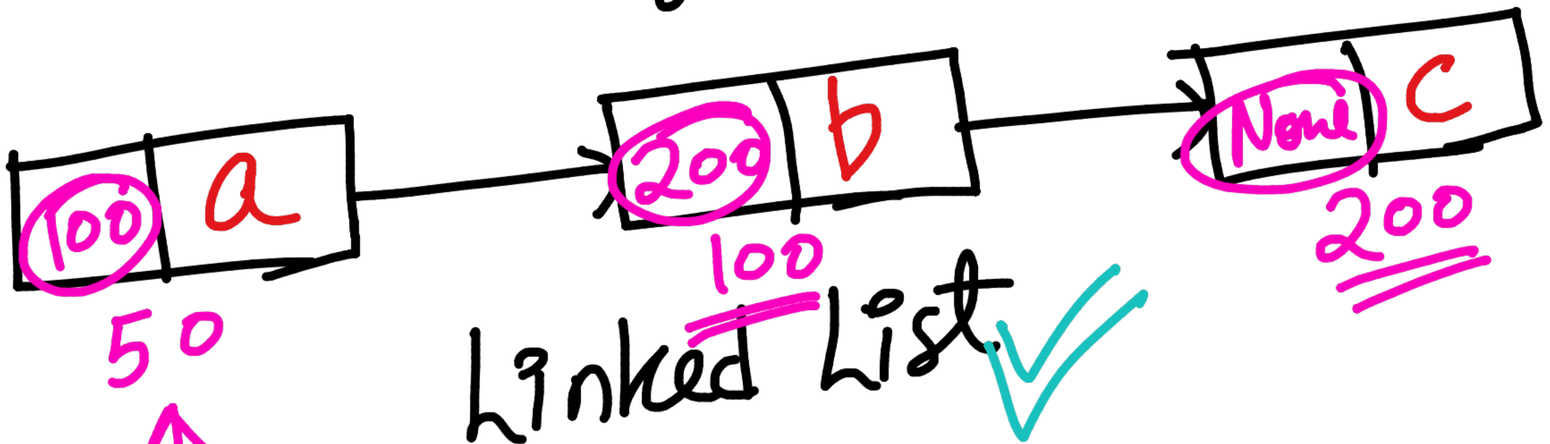
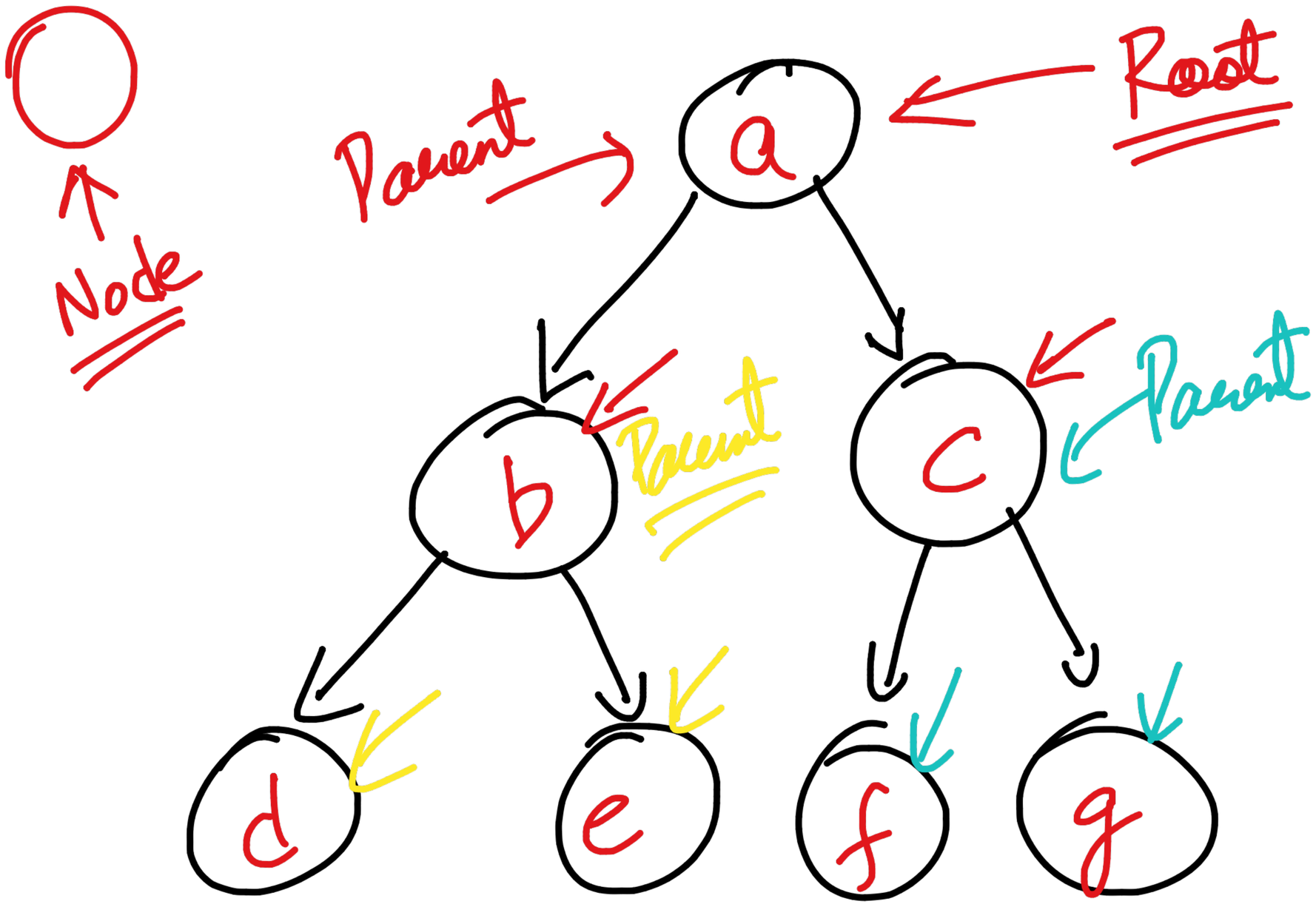
Data Structure



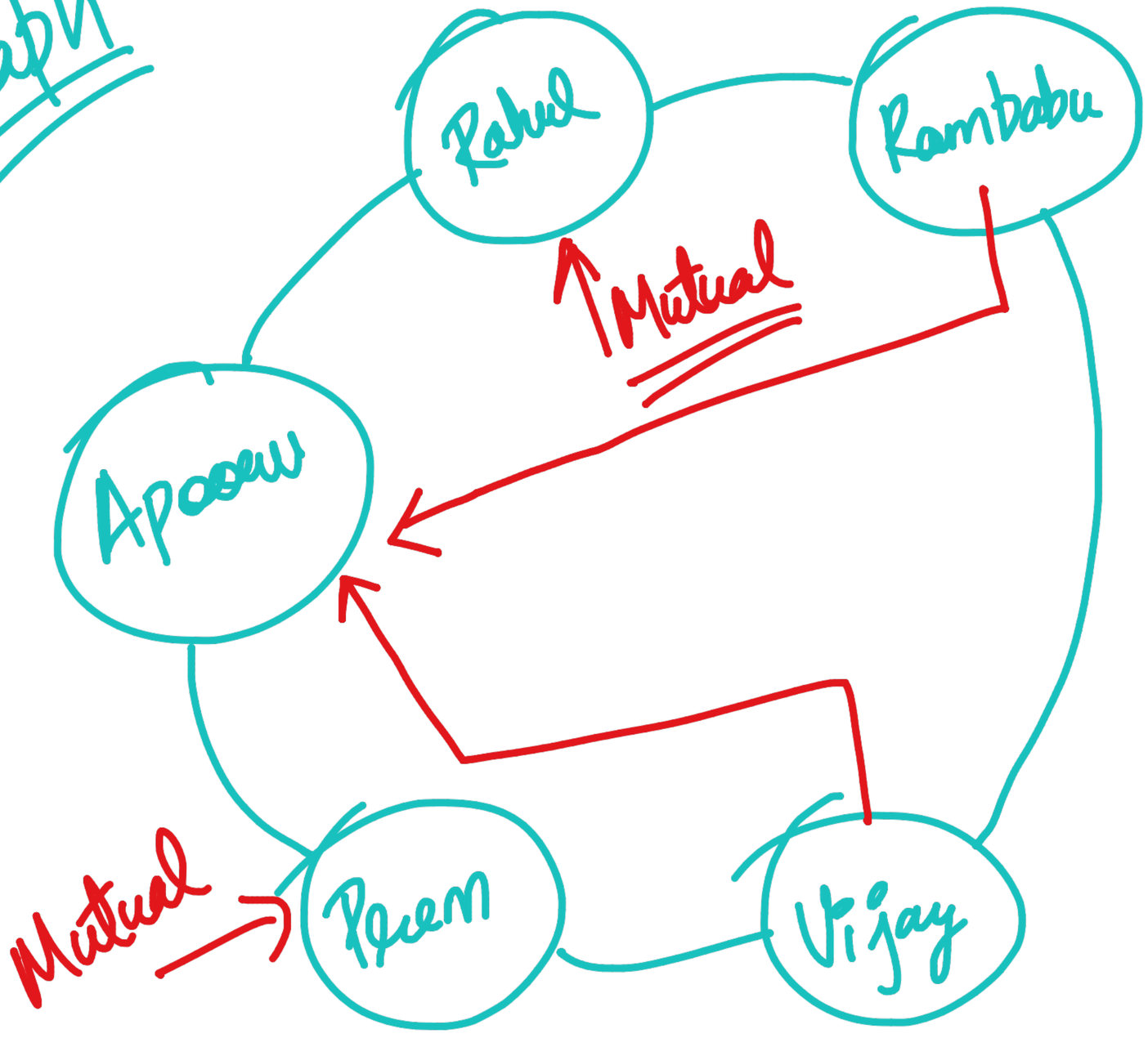
Array ✓



Linked List ✓


Node
Parent
a
Root
b
Parent
c
Parent
d
e
f
g

Graph



Dictionaries

```
{ "python" : 3
  "java"   : 8
  "django" : 3
}
```

Key = ["python", "java", "django"]

Value = [3, 8, 3] ✓

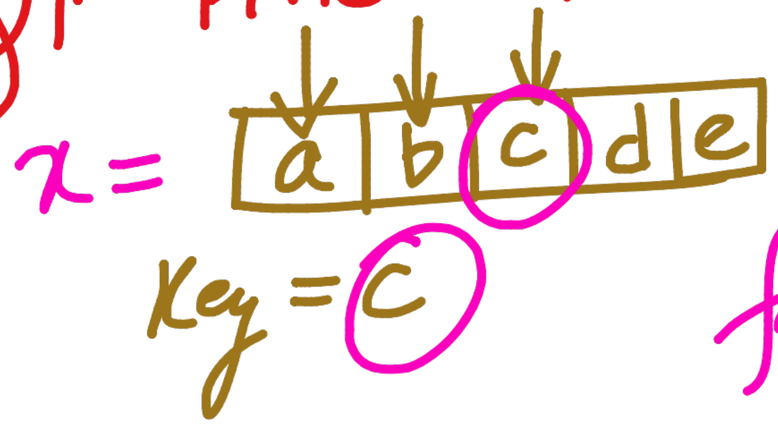
Data Structure is a collection of data values, the relationship among them and operations that can be applied on the data.

* While choosing DS, we choose such that we can store or organise our data efficiently.
* DS is Language independent.

Algorithm

⇒ Step by step procedure to solve a specific problem.

Q1. Find an element in a list/Array.



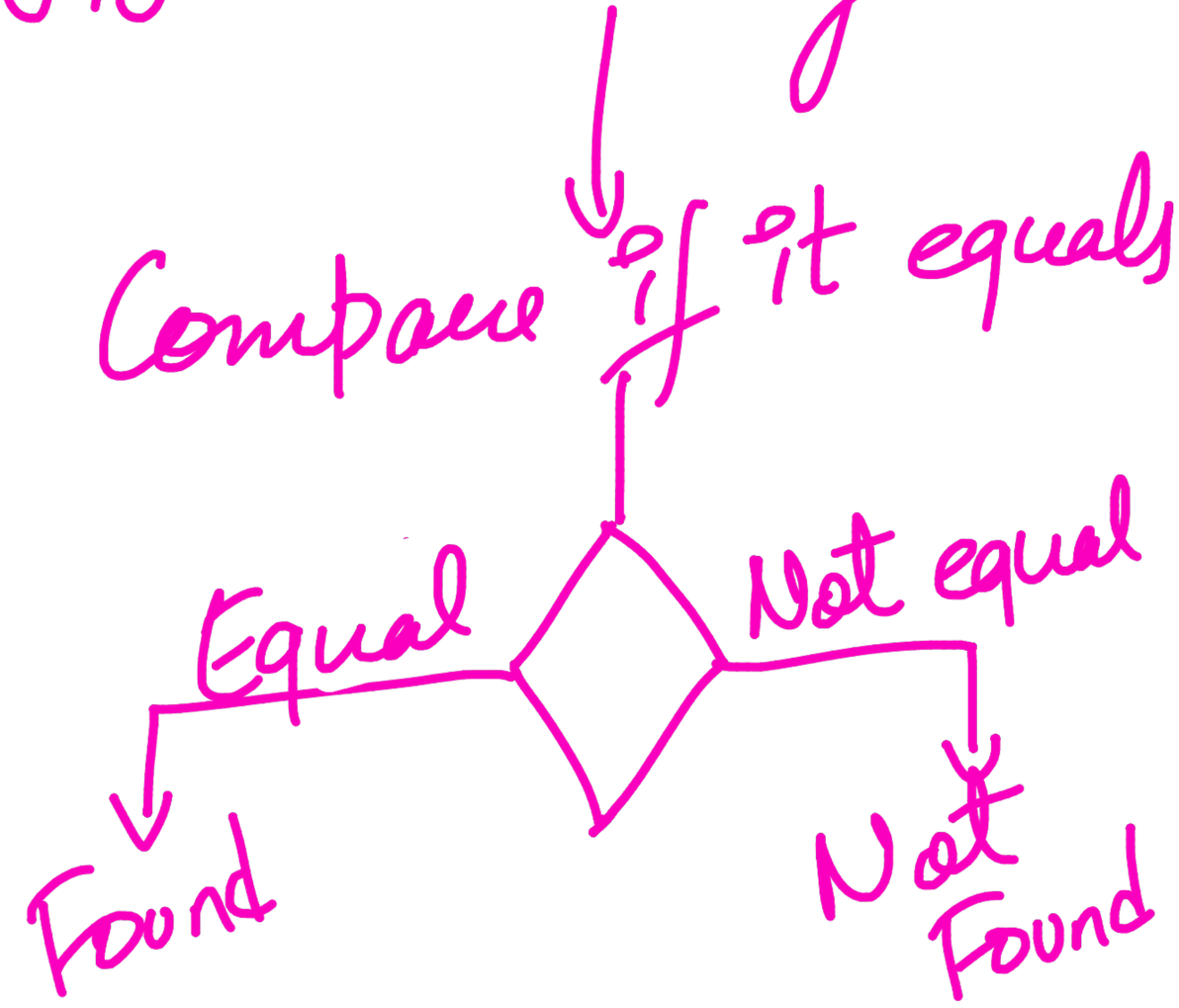

```
for i in x:
    if Key == i:
        print("found")
```

Algorithm Flowchart

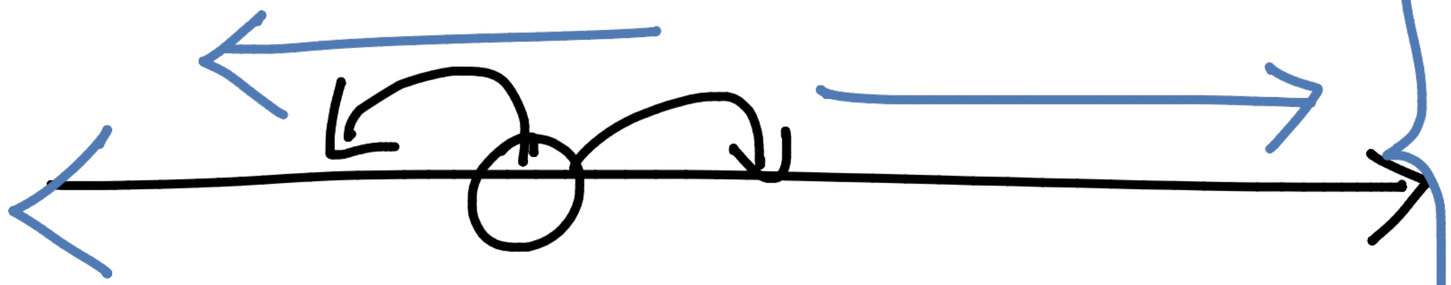
Finding an element in list ✓

Go over every element

Compare if it equals to key

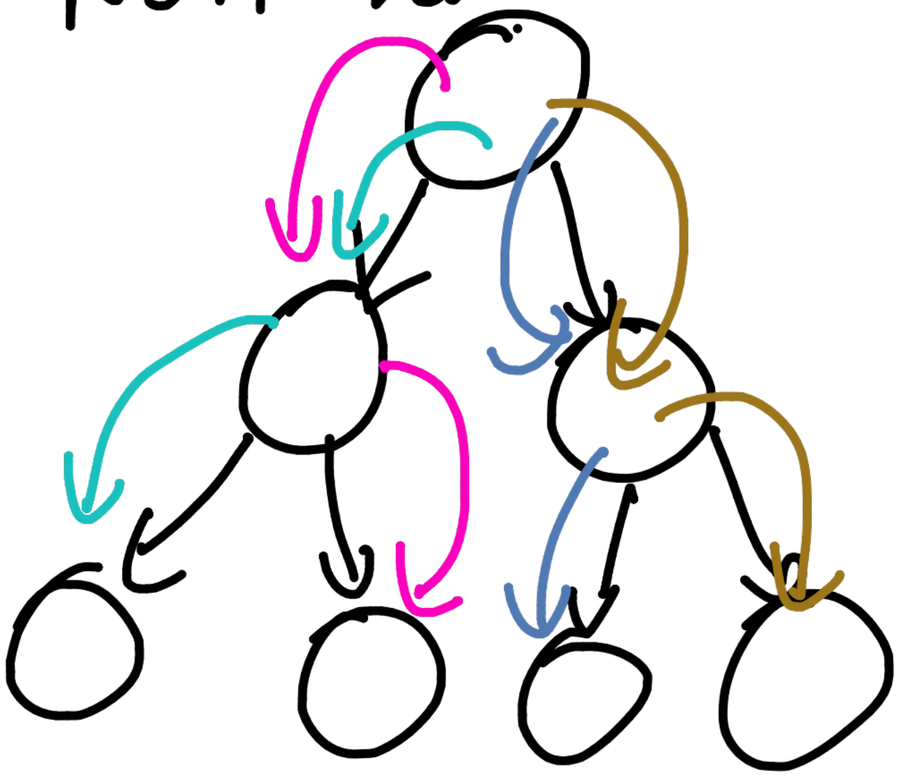


Linear Data Structures



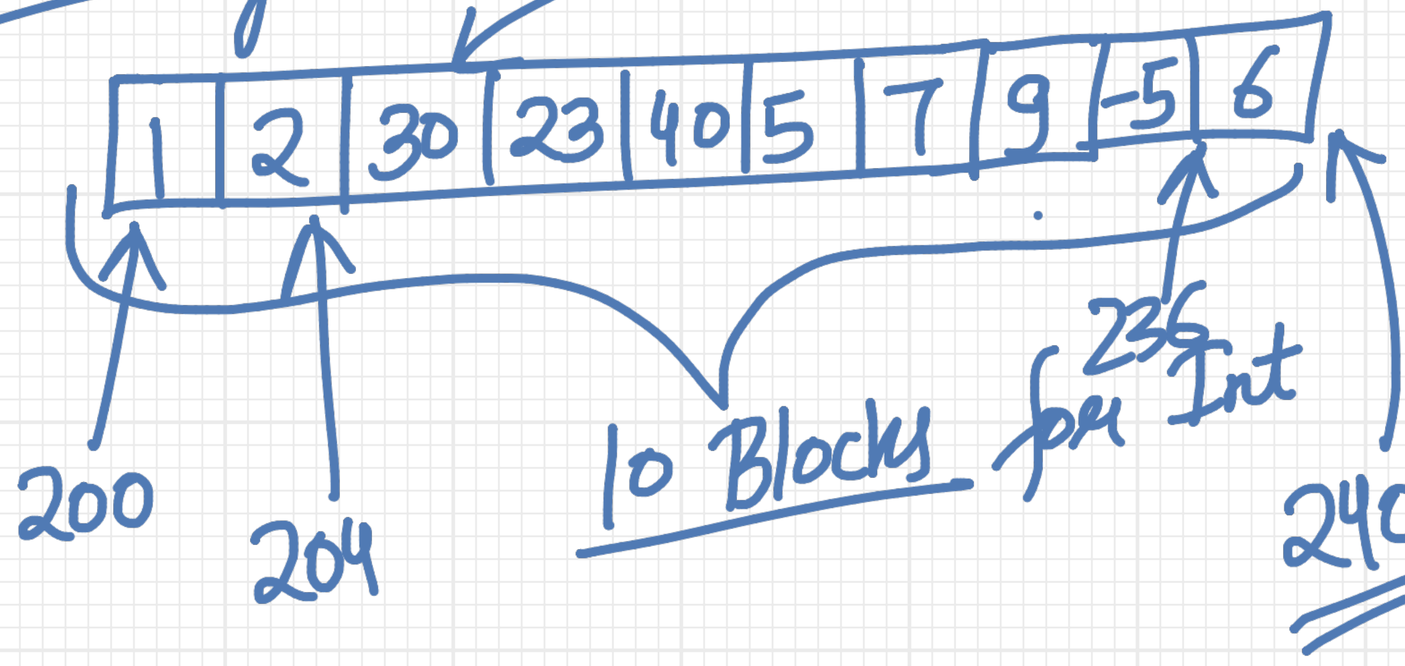
List / Array ,
Linked list, Stack,
Queue

Non Linear DS



Trees & Graphs

Arrays — ADT



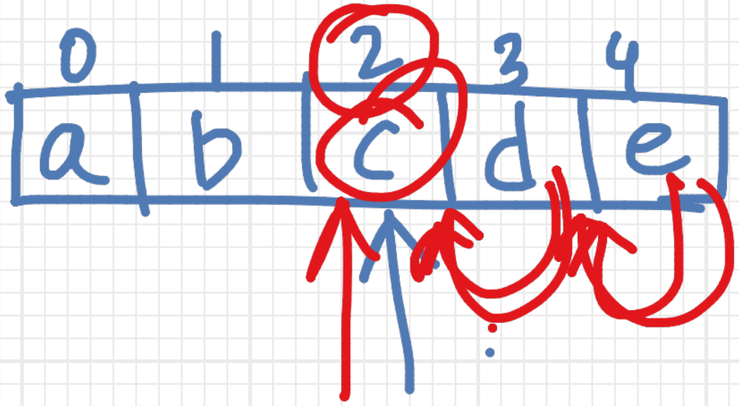
Int > 4 Units

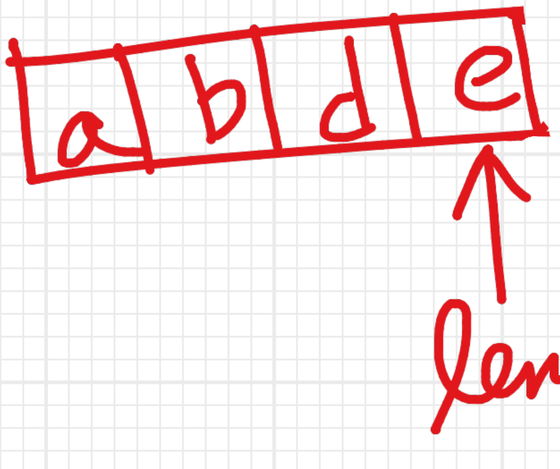
→ Fixed Size

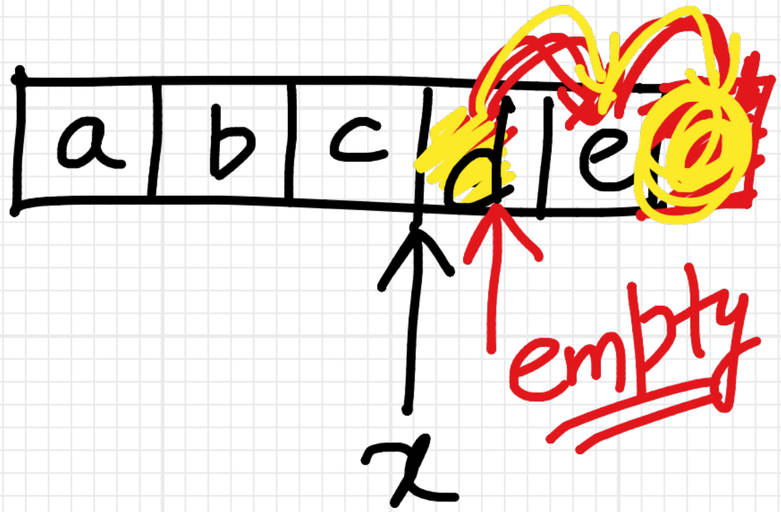
→ Index positions ✓

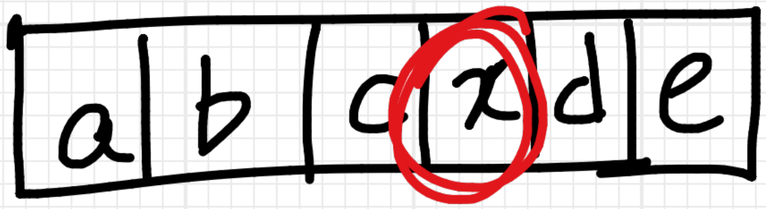
→ Homogenous

→ Contiguous block of memory.


0
1
2
3
4
a
b
c
d
e


a
b
d
e
length=4


a
b
c
d
e
empty
2


a
b
c
x
d
e