

## LinkedList

↳ array (1D)

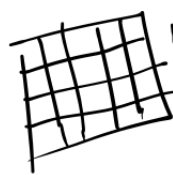
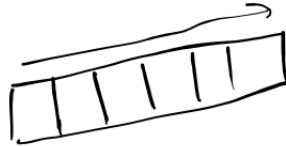
↳ string

↳ AL

↳ SB

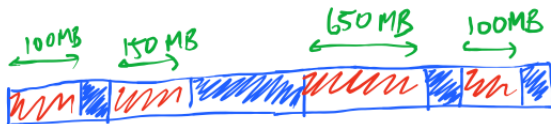
Linear

→ They exist  
or grow in a  
single direction



Non Linear  
Bi Directional

1000 MB ?? Cannot create an array as contiguous  
memory is not available.

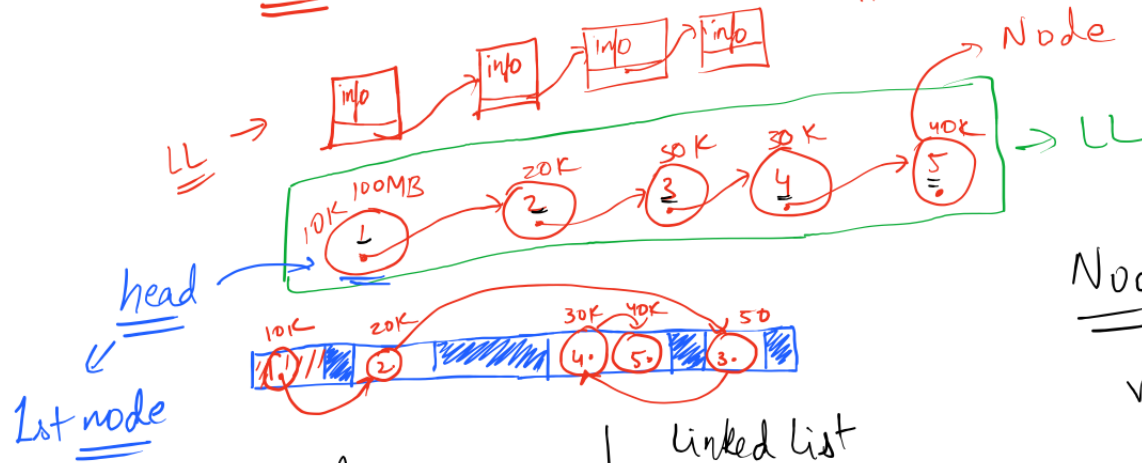


What  
How?

## ↳ Linked List

- ↳ Linear
- ↳ Non contiguous memory allotted.

Node → Smallest part of a linked list → used to link



Node

- Value
- link to next node.
  - ↓
  - Address of the next node

Array

- Contiguous
- faster
- fixed size
- Memory allotted at compile time

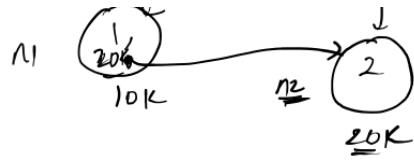
Linked List

- Non contiguous
- slower
- do not have fixed size
- Memory allotted at runtime.

Node

Node

Node

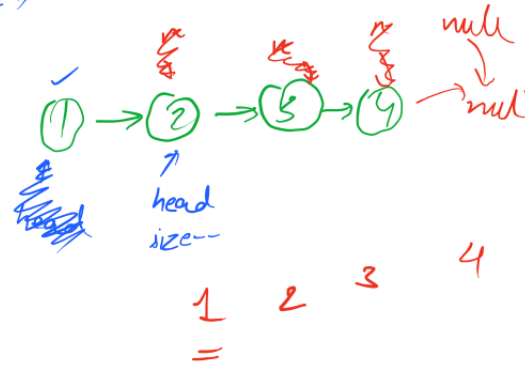
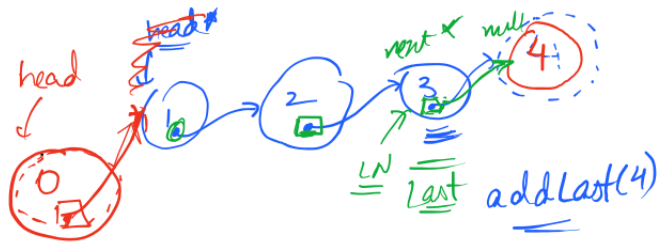
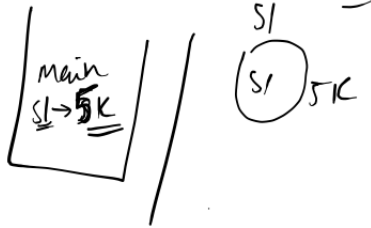


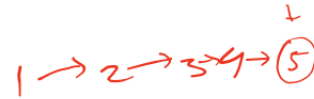
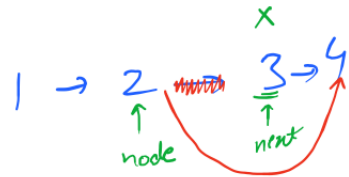
$n1 \rightarrow 10K$   
 $n2 \rightarrow 20K$   
 $n3 \rightarrow 50K$

Node  
 val  
 of curr  
 node

Address of  
 the next  
 node.

↓  
 where do  
 we store address?





head  
↓  
1 → 2 → 3 → 4 → 5  
↳ Print Reverse??  
5 ← 4 ← 3 ← 2 ← 1

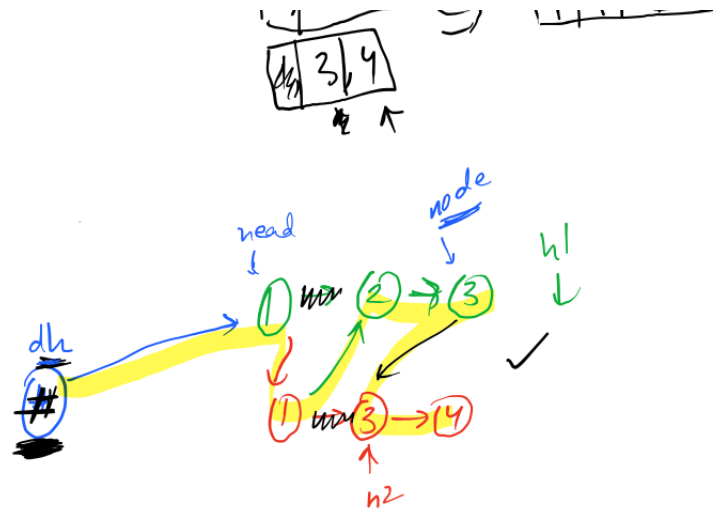
```

[ printRev(arr, i) {
  // BC
  printRev(arr, i+1);
} → System arr [ ] ✓
  ]

```

0	1	2	3
1	2	<u>3</u>	4

$$\begin{matrix} 0 & 1 & 2 & 3 & 4 \\ & 1 & 2 & 3 & 4 \\ & & \underline{\underline{3}} & 4 & 5 \end{matrix}$$
$$\frac{5}{2} = 2 \quad \frac{4}{2} = 2$$

① → ① → ② → ③ → ③ → ④

① ② ③ ④ ⑤  
 ↓  
 1) size 2nd  
 2) headstart