# Chapter 4
# Lists

*Data Structures and Algorithms*

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List.— why? need to store lot of data items.

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Logical Level
(WHAT TO THINK ABOUT LIST)

[V(1, 2, 3), V(1.5, 2., 3.5), V(10, 2, 8)]

PHYSICAL LEVEL
(HOW TO IMPLEMENT)

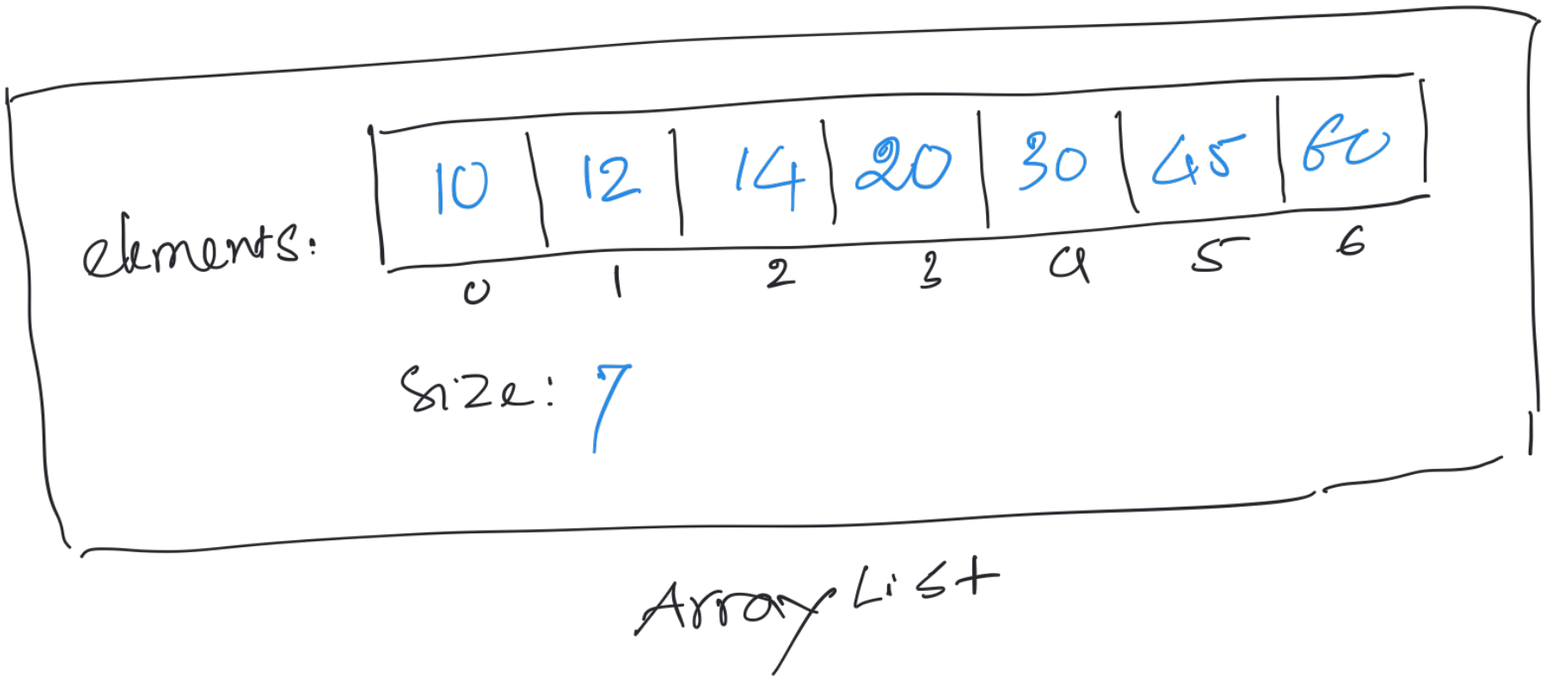
- Array : ArrayList
- Links (pointer) : SLinkedList, DLinkedList.

Array vs Double LinkedList

Ans: Depend on Application.

(1) Learn to use lists

(2) Learn to implement your own list data structure




ArrayList

capacity : 7

size : 7

⇓

array : full

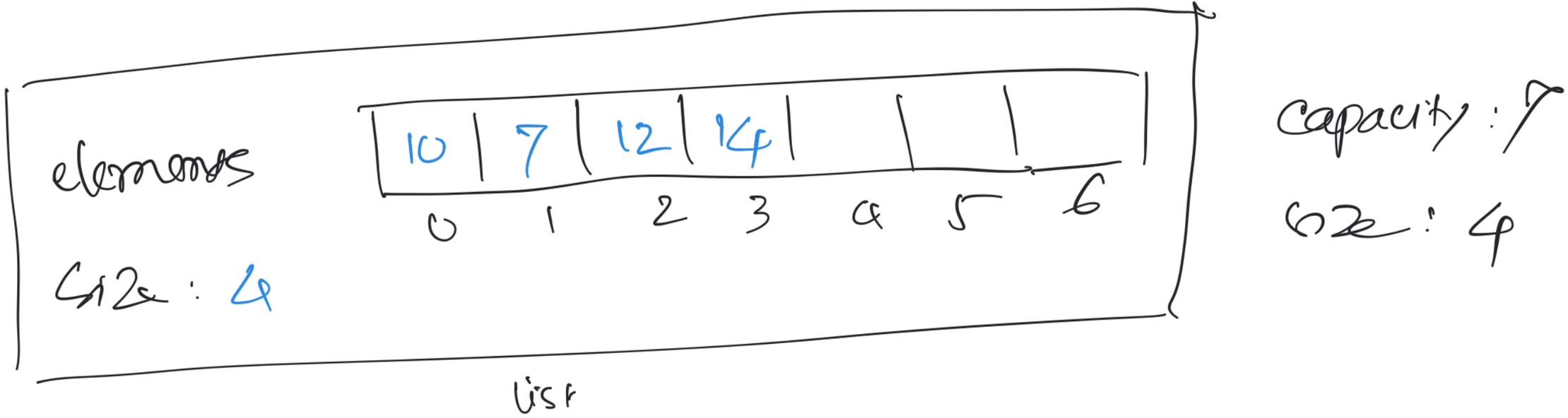
⇓

How to store more items ?

⇓

Enlarge the array to be bigger

P1




list.add(1, 65);

⇓

insert 65 at index 1

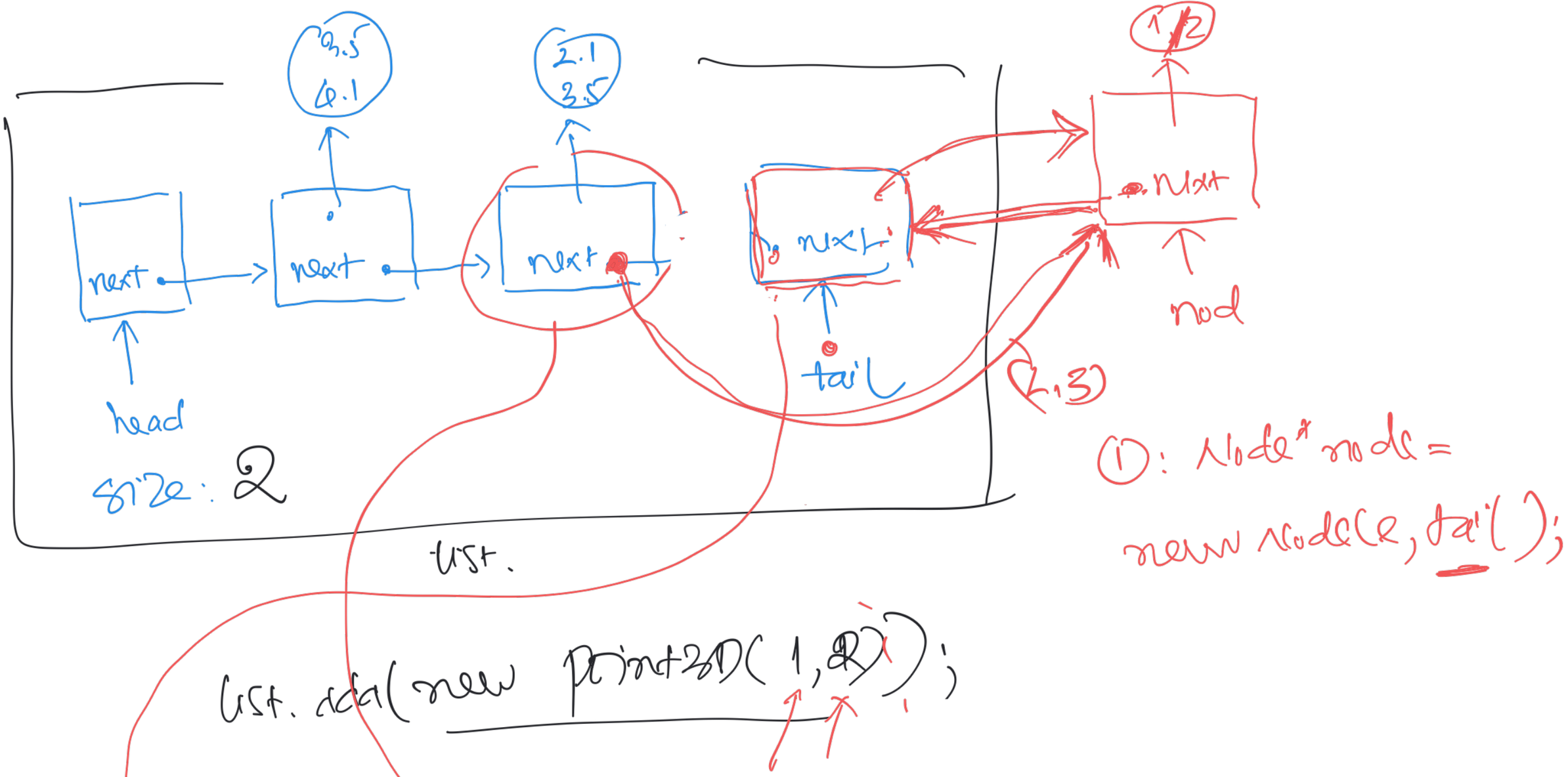
⇓

How ?

p2

— elements[1] = 65;

? shift (7, 12, 14) =>
to right 1 position
elements[1] = 65;




① : Node* node =

new Node(e, tail());

list.add(new Point2D(1,2));

tail

tail.next

tail.pat.next = node (L.3)

tail.pat = node.