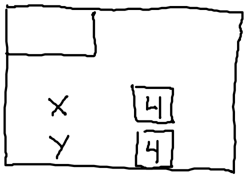
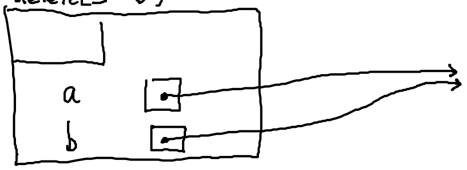
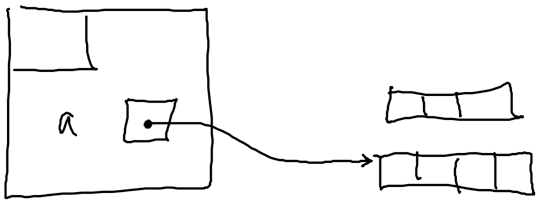
```
int  x;
x=4;
int y;
y=x;
```



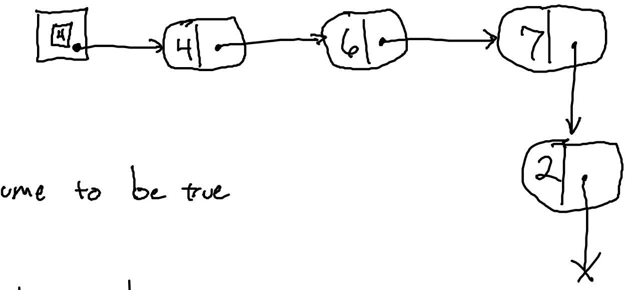
```
int *a;
a = new int[3];
int * b;
b = a;
delete[] b;
```



```
int* a= new int[3];
  a =new int[4];
```



List (ADT)



Linked List (data structure)

invariant: a fact we can always assume to be true

worst case	insert first	remove first	insert last	get size	remove last	get
LL	O(1)	O(1)	O(n)	O(n)	O(n)	O(n)
LL + size	O(1)	O(1)	O(n)	O(1)	O(n)	O(n)
LL + size + last	O(1)	O(1)	O(1)	O(1)	O(n)	O(n)
AL			O(n)	O(1)		O(1)

Amortized Worst Case

mean time of a series of operations in the worst case

Iteration		This Iteration Copies	Total Copies	Cap
1		1	1	4
2		1	2	4
3		1	3	4
4		1	4	4
5		4+1	9	8
6	2+1	1	10	8
7	2+1	1	11	8
8	2+1	1	12	8
9	2+1	8+1	21	16
10		1	22	16
		⋮		
16		1	28	16
17		16+1	45	32

Array List insertLast has amortized WC O(1) time