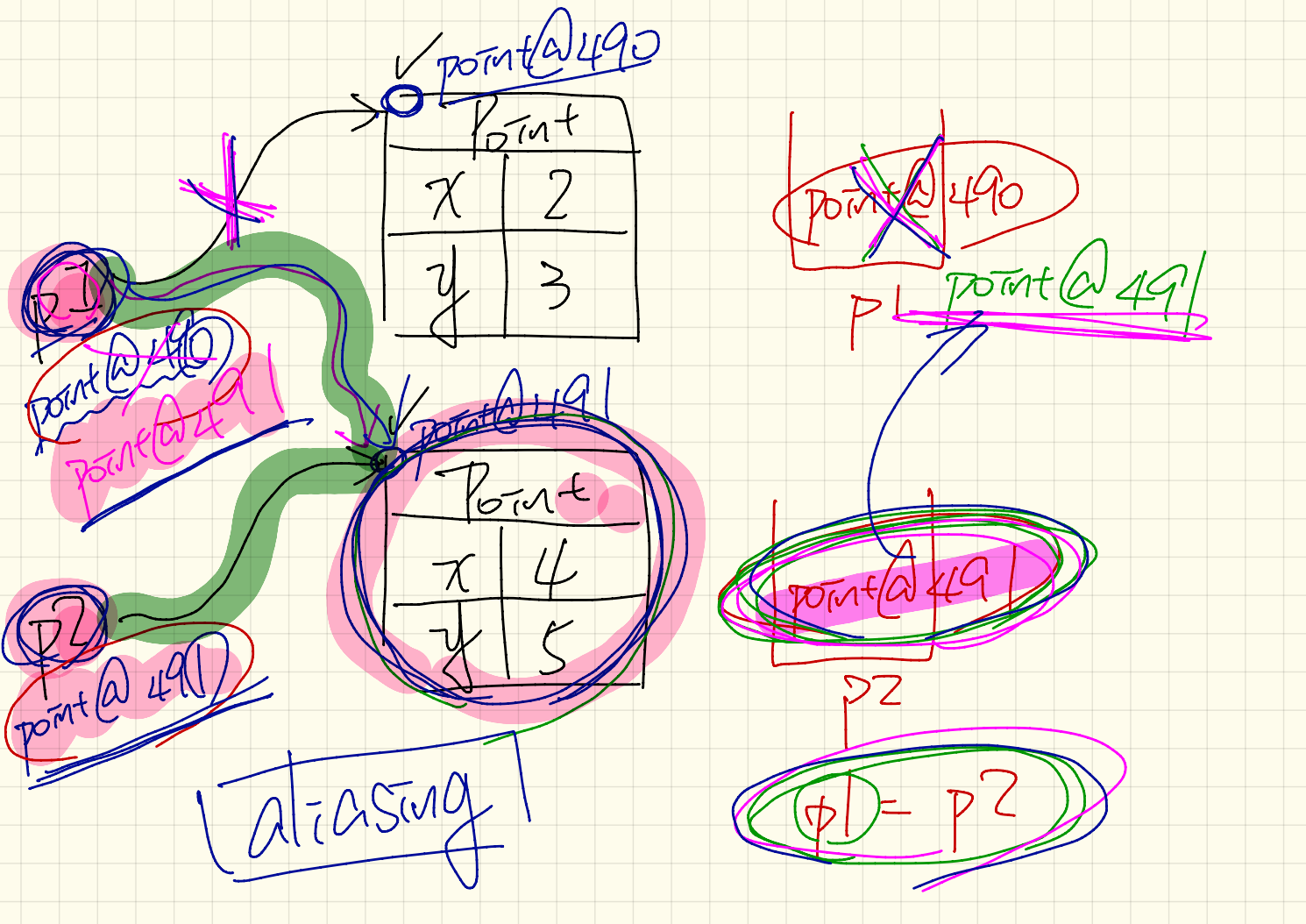
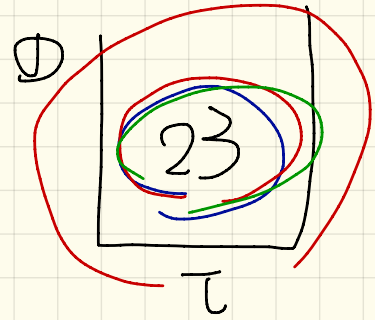
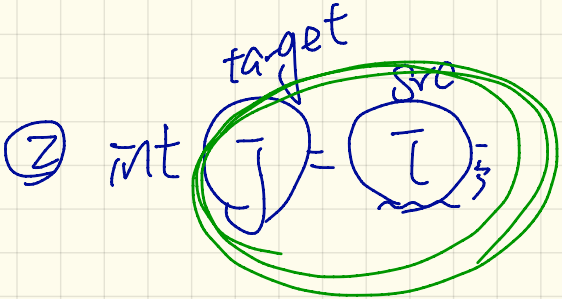
Model Development Pattern:

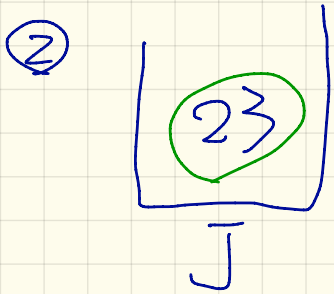
Attributes with Reference Types


Point@490
Point
x 2
y 3
p1
Point@490
Point@491
Point@491
Point
x 4
y 5
p2
Point@490
Aliasing
Point@490
Point@491
p1
Point@491
p2
p1 = p2

① int i = 23;







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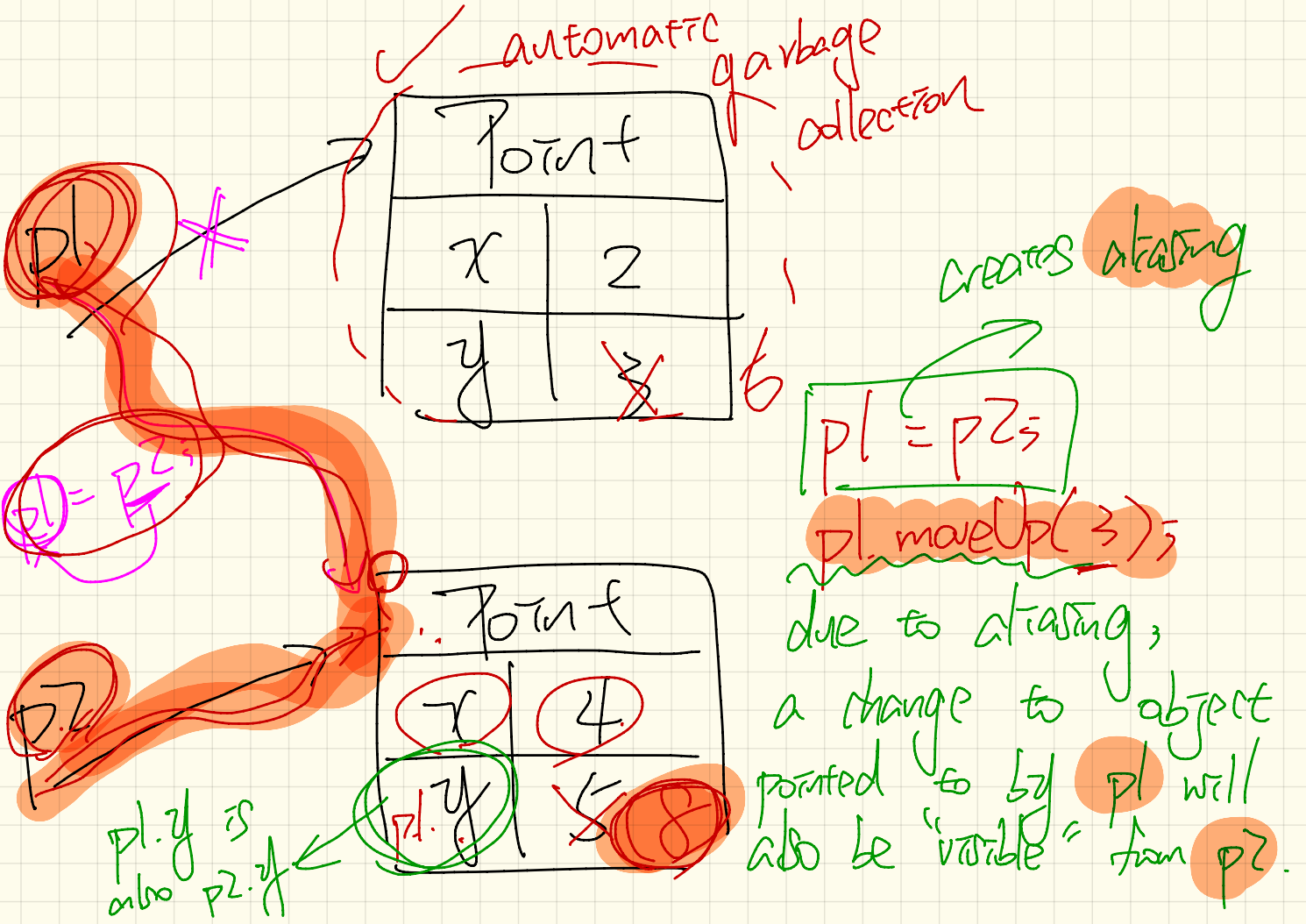
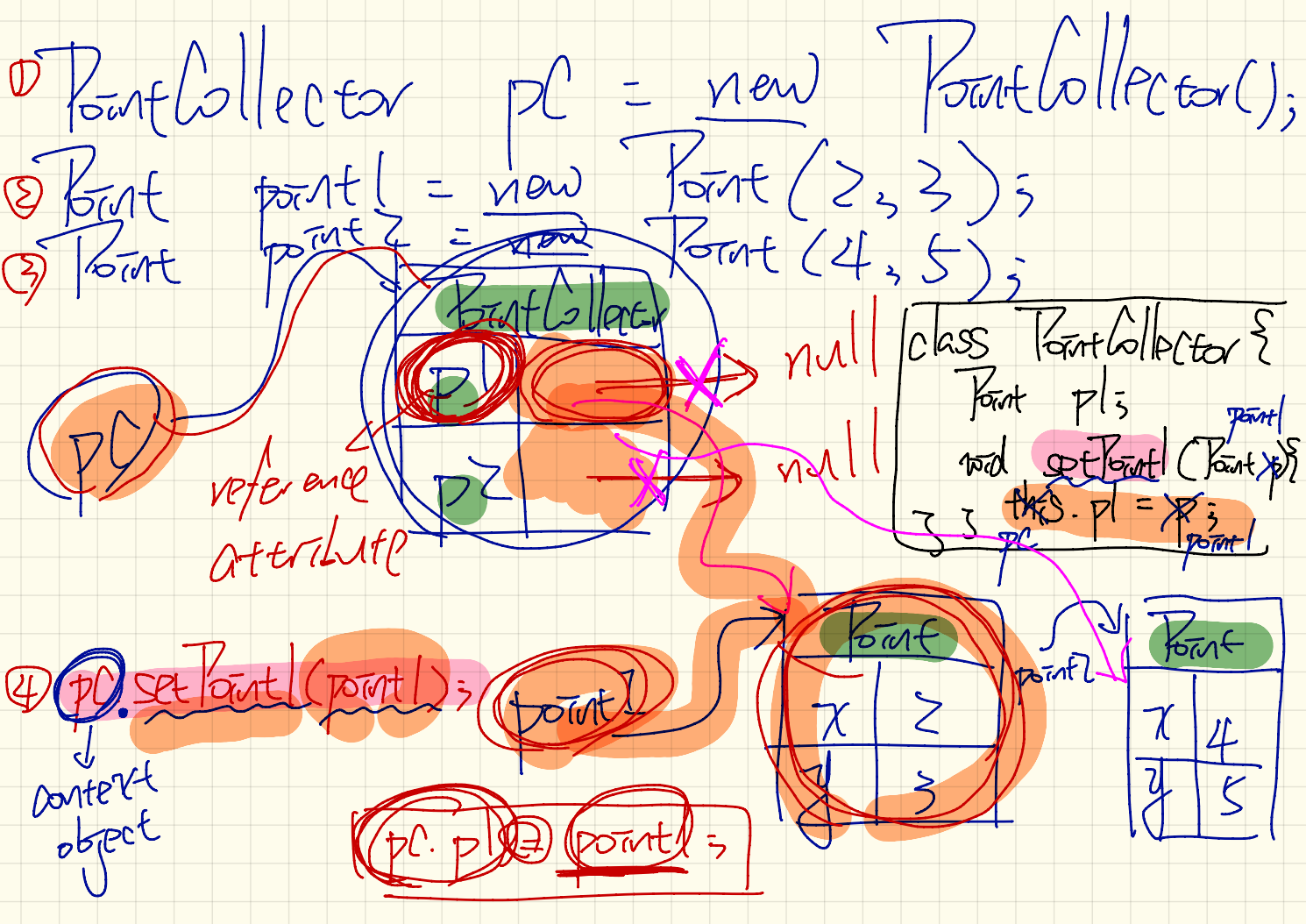
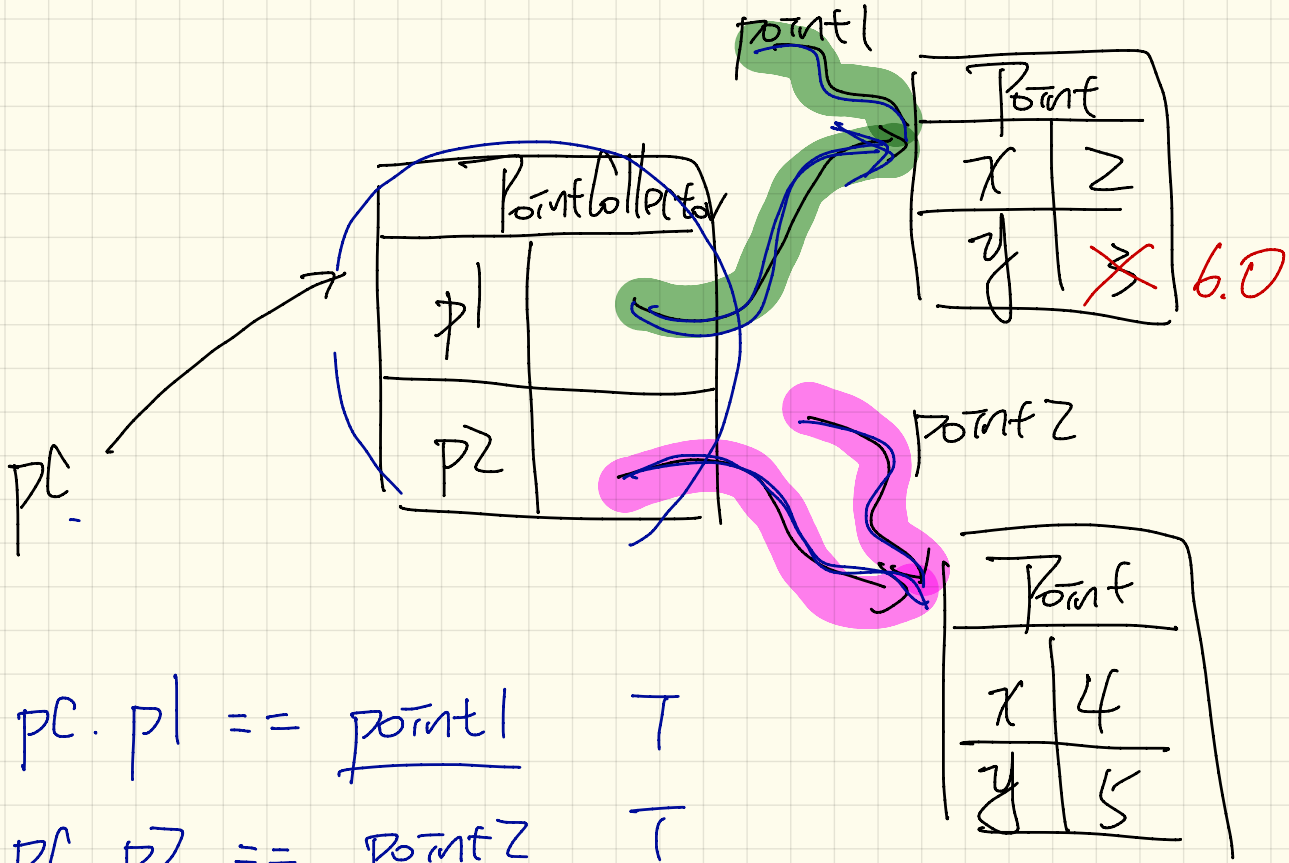
p1 = p2;

p1: place holder for Point address

p2: address of Point object

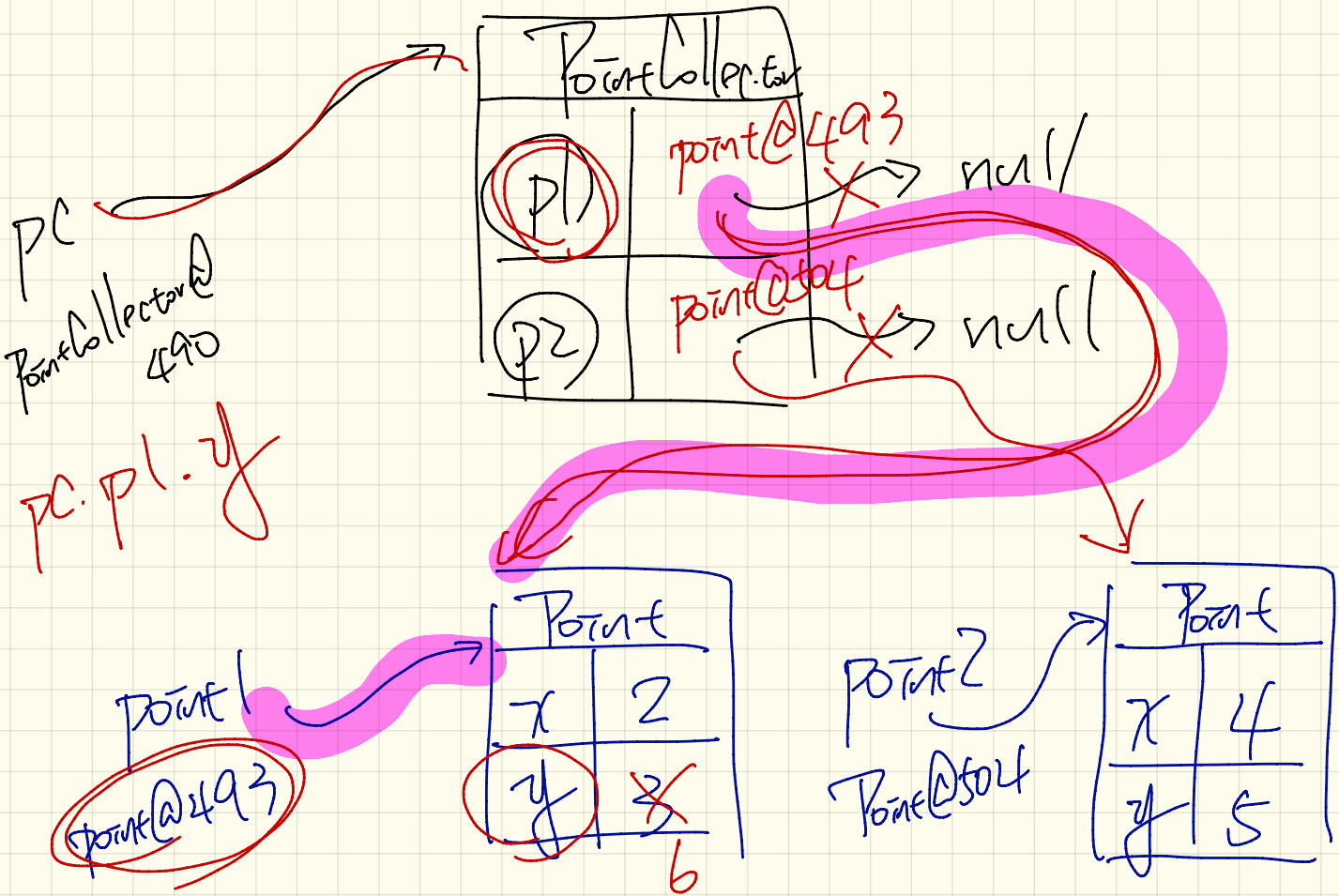

automatic garbage collection
Point
x
z
y
p1
p1 = p2;
p2
Point
x
4
y
8
p1.y
p1.y is also p2.y
creates aliasing
p1 = p2;
p1.moveUp(3);
due to aliasing, a change to object pointed to by p1 will also be "visible" from p2.


① PointCollector pc = new PointCollector();
② Point point1 = new Point(2, 3);
③ Point point2 = new Point(4, 5);
pc
PointCollector
p1
p2
reference attribute
null
null
class PointCollector {
Point p1;
void setPoint1(Point p) {
this.p1 = p;
}
}
④ pc.setPoint1(point1);
context object
point1
pc.p1 = point1;
Point
x 2
y 3
Point
x 4
y 5
point2



pc.p1 == point1 T

pc.p2 == point2 T


PointCollector
p1
p2
point@493
null
point@504
null
pc
PointCollector@490
pc.p1.y
point1
Point@493
Point
x
2
y
6
point2
Point@504
Point
x
4
y
5