CS 2110 Lecture 2 : Objects & Classes

2 : int

methods

Blocks: A sequence of statements in {} (braces)
- unlike Python: indentation doesn't matter

- Method bodies
- if, while, switch... statements

```
if (x==0) {
    y = x+1;
}
```
block.

- can use anywhere a statement is expected.
- empty block {} — does nothing.

```
while (true) {}
```

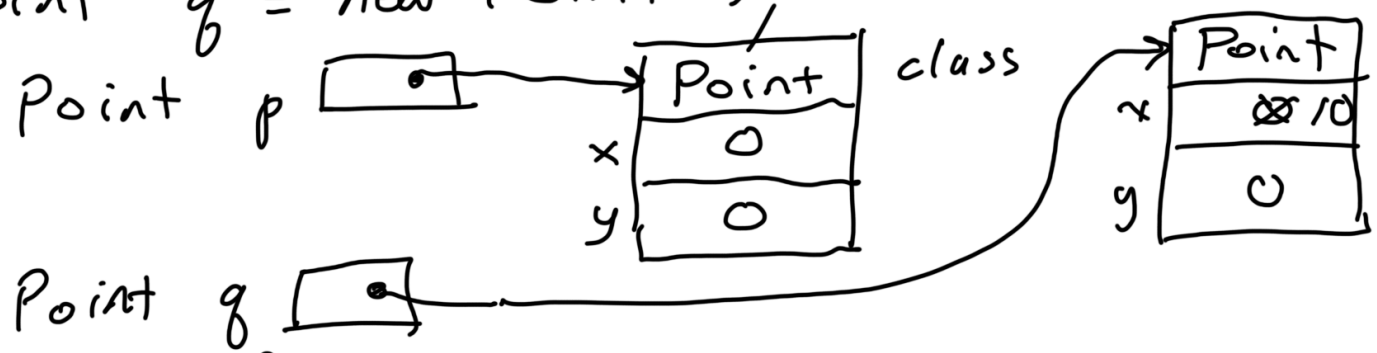
Objects

- Values created at run time
- Instances of classes
- contain instance variables (aka fields)

Class definition:

```
class Point {
    int x = 0;
    int y = 0;
}
```

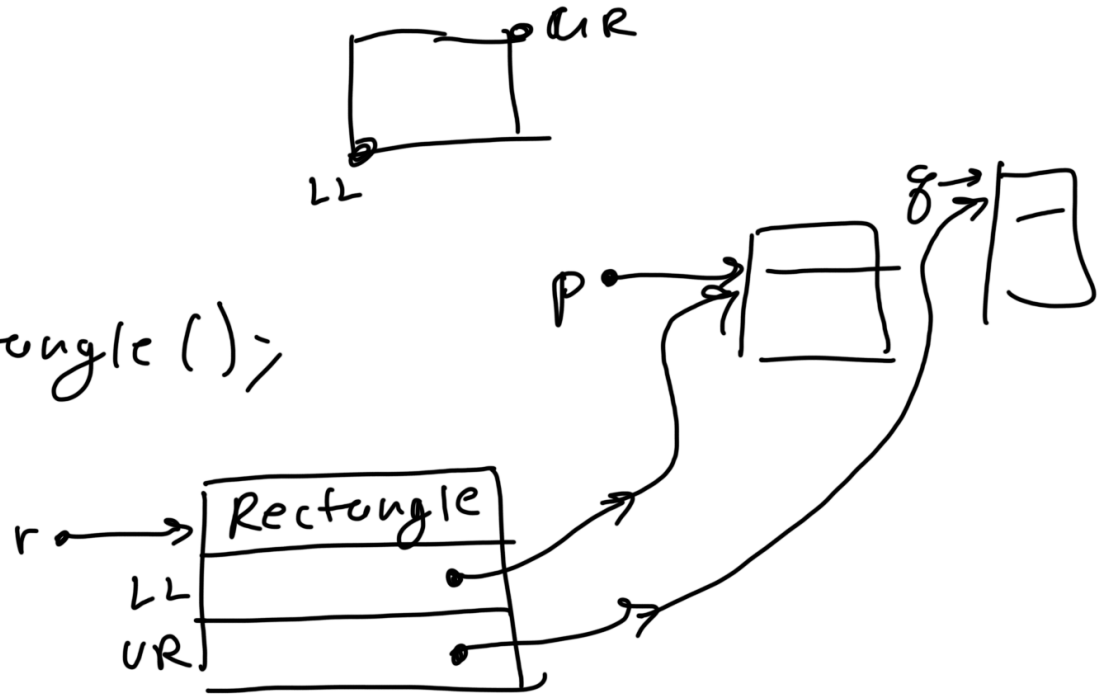
```
Point p = new Point();
Point q = new Point();
```




```
p == q ?
q.x = 10;
```

```
class Rectangle {
    Point LL, UR;
}

Rectangle r = new Rectangle();
r.LL = p;   //no new
r.UR = q;   objs.
```



r does not have
a copy of p.

```
p.x = 2;
r.LL.x
```

A: 0
B: 2
C: 10
D: ?

Instance Methods

Class can define methods.

```
class Rectangle {
    Point LL, UR;
    /** Area of this */
    int area() {
        return (UR.x - LL.x) * (UR.y - LL.y);
    }
}
```

int a = r.area();

receiver

method call.

return type

instance var of receiver object (this)

procedure: method w/ return type void
— used for side effects

```
class Point {
    /** Move point to origin */
    void setOrigin() { x = y = 0; }
}
```

p.setOrigin();

Constructors

Special methods for initializing objects to "good state"

```
class Point {
    Point(int x, int y) {
        this.x = x;
        this.y = y;
    }
}
```

constructor same name as class

this.x, this.y: instance vars

x, y: formal parameters

1. create object (this) to default values
2. init ivars
3. Run body of constructor

```
p2 = new Point(3, 4)
```