CSE 11
Accelerated Intro to Programming
Lecture 9

Greg Miranda, Spring 2021

This lecture is being recorded

Announcements

- Quiz 9 due Monday @ 8am
- PA3 due Wednesday @ 11:59pm
- Survey 3 due tonight @ 11:59pm
- PA0.5 Resubmission due tonight @ 11:59pm
  - Or see a tutor during lab hours and demo it

Constructors

- Now that we understand the Stack, we have what we need to understand constructors

stack

method stack frames

Heap

objects

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



}
class ExamplesRegion {
  Point tenFifty = new Point(10, 50);

}
```

Constructor Summary

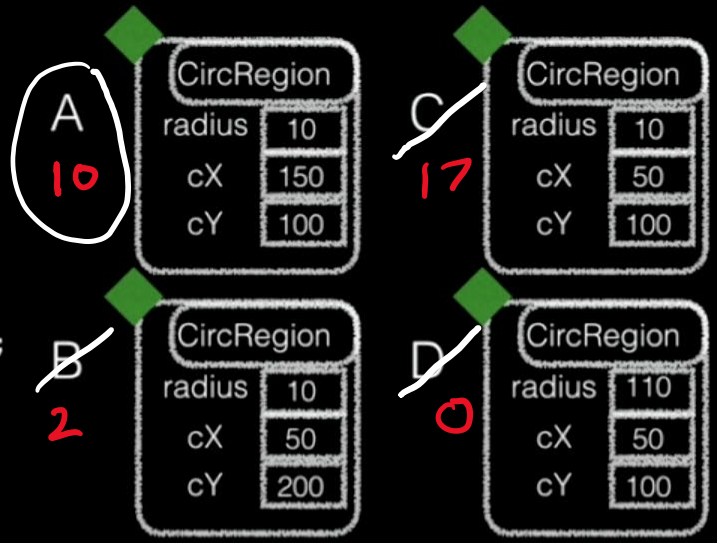
- Constructors:
  - Are special methods, called when **new** is used
  - Are passed the newly-constructor object as **this**, and any arguments
  - Typically assign values into fields using **this.field = value**
- When new is used:
  - A fresh object, with a new reference is created with uninitialized fields
  - The constructor with parameters that match the arguments is called
  - The whole new expression evaluates to the new reference

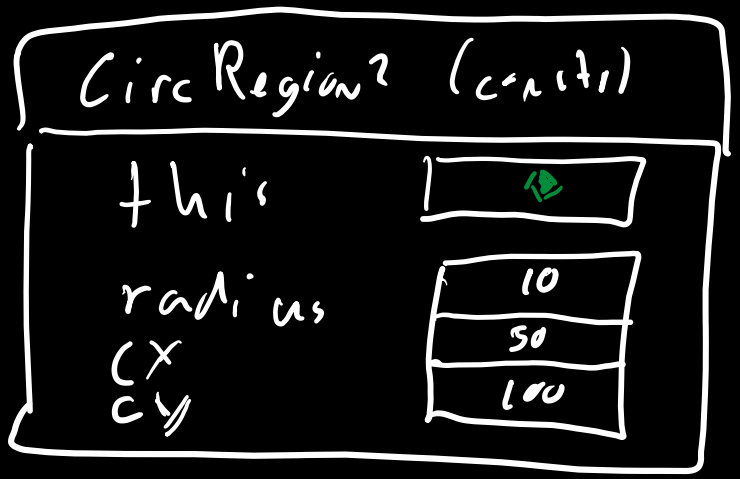
```
class CircRegion2 {
  int radius;
  int cX;
  int cY;
  CircRegion2(int radius, int cX, int cY) {
    this.radius = radius;
    this.cX = cX + 100;
    this.cY = cY;
  }
}
class ExamplesRegion {
  CircRegion2 cr2 = new CircRegion(10, 50, 100);

}
```

10 50 100

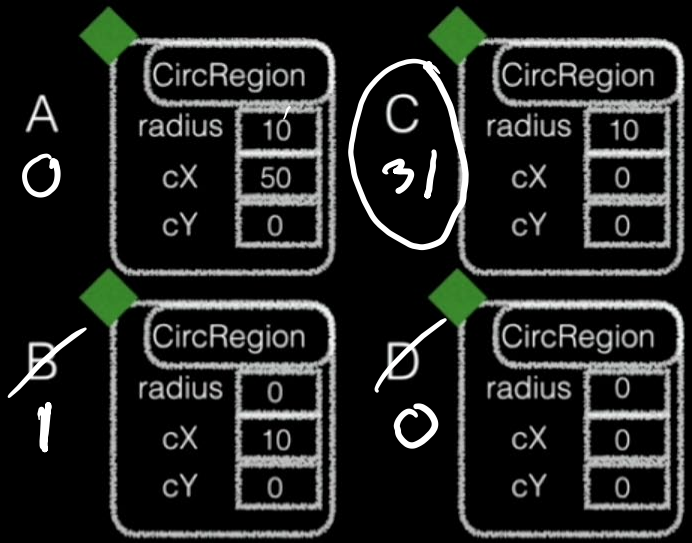
50 + 100 = 150

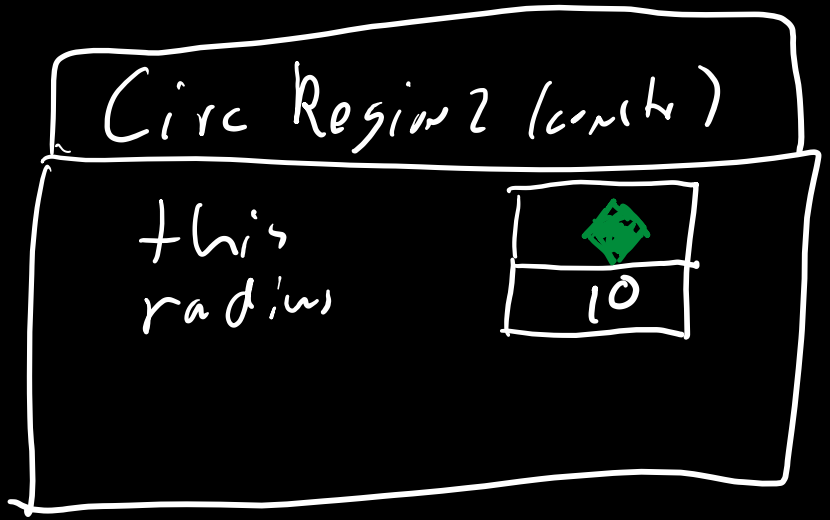




```
class CircRegion2 {
  int radius;
  int cX;
  int cY;
  CircRegion2(int radius) {
    this.radius = radius;
    this.cX = 0;
    this.cY = 0;
  }
}
class ExamplesRegion {
  CircRegion2 cr2 = new CircRegion(10);

}
```





Tester

- import tester.*;
  - tester.jar – java archive
    - Libraries that contain classes that we can use in our own code
      - Tester
- Tester class allows us to create methods to unit test our code
  - Unit testing – compare actual values versus expected values
    - t.checkExpect(<actual value>, <expected value>);
  - Goal: get all tests to pass
    - Confidence that your code/solution is correct

boolean checkExpect(? act, ? exp)

Local Variables

- Local variables are defined inside the body of a method
  - They are ‘local’ to the method in which they are defined in
- Used temporarily while the method is running, then are removed
  - Similar to parameters
  - Added to the stack frame for the method
- No default value
  - Must be assigned a value before it’s read from
    - i.e. used as an expression