

The background of the slide is a grayscale image of a circuit board. It features a complex network of black lines representing traces and several solid black circles representing vias or components. The circuitry is arranged in a somewhat symmetrical, horizontal pattern. A solid black horizontal band runs across the middle of the image, partially obscuring the circuit board design. Below this band, the text 'CMSC 131' is displayed in a large, white, sans-serif font. Underneath the course number, the text 'Fall 2018' is written in a smaller, green, monospace-style font.

CMSC 131

Fall 2018

Announcements

- Project #3 has been posted
- Exam will be returned in discussion on Wed/Thurs
- Median score was XXXX

Recall Dog class. Review:

Suppose we put this **instance** method in the Dog class:

```
public void bark() {  
  
    Dog d = new Dog();  
  
    // which of the following are OK?  
    ...weight...  
    ...d.weight...  
    ...Dog.weight...  
    ...MIN_DOG_WEIGHT...  
    ...d.MIN_DOG_WEIGHT...  
    ...Dog.MIN_DOG_WEIGHT...
```

Review

Suppose we put this **static** method in the Dog class:

```
public static void foo() {  
  
    Dog d = new Dog();  
  
    // which of the following are OK?  
    ...weight...  
    ...d.weight...  
    ...Dog.weight...  
    ...MIN_DOG_WEIGHT...  
    ...d.MIN_DOG_WEIGHT...  
    ...Dog.MIN_DOG_WEIGHT...
```

Project #3

Let's look at the project together...

- Overview (Let's run it!)
- Soldier class (you will write this)
- Battlefield API
- Contest
- This project is a bit hard to “test” (so submit early and often!)

- Example of implementing a method in soldier class:

```
public boolean isEnemyAboveMe() {
```

```
}
```

Is our Code “Correct”?

- Formal Verification
 - What’s good about it?
 - What’s bad about it?
 - Where might this be used?
- Testing
 - What’s good about it?
 - What’s bad about it?
 - Where might this be used?
 - What is “Unit Testing”?
 - What is “Integrated Testing”?

JUnit

- What is JUnit?
 - Used on our Submission Server
- When are tests written?
- Where are they kept?
- How long are they kept?

Assertions

- `assertTrue(<boolean expression>)`
- `assertFalse(<boolean expression>)`
- `assertEquals(x, y)`
- Many others

Begin Demonstration: FunnyIntegerSet

This class has some bugs. Let's test it with JUnit!

```
public FunnyIntegerSet()
```

Instantiates an “empty” set

```
public add(int x)
```

Adds a value to the set

```
public findClosest(int x)
```

Returns the value in the set that is “closest” to x