

Java, Raspberry Pi, and Zombies

Cassandra Chin (@tingsterchin)



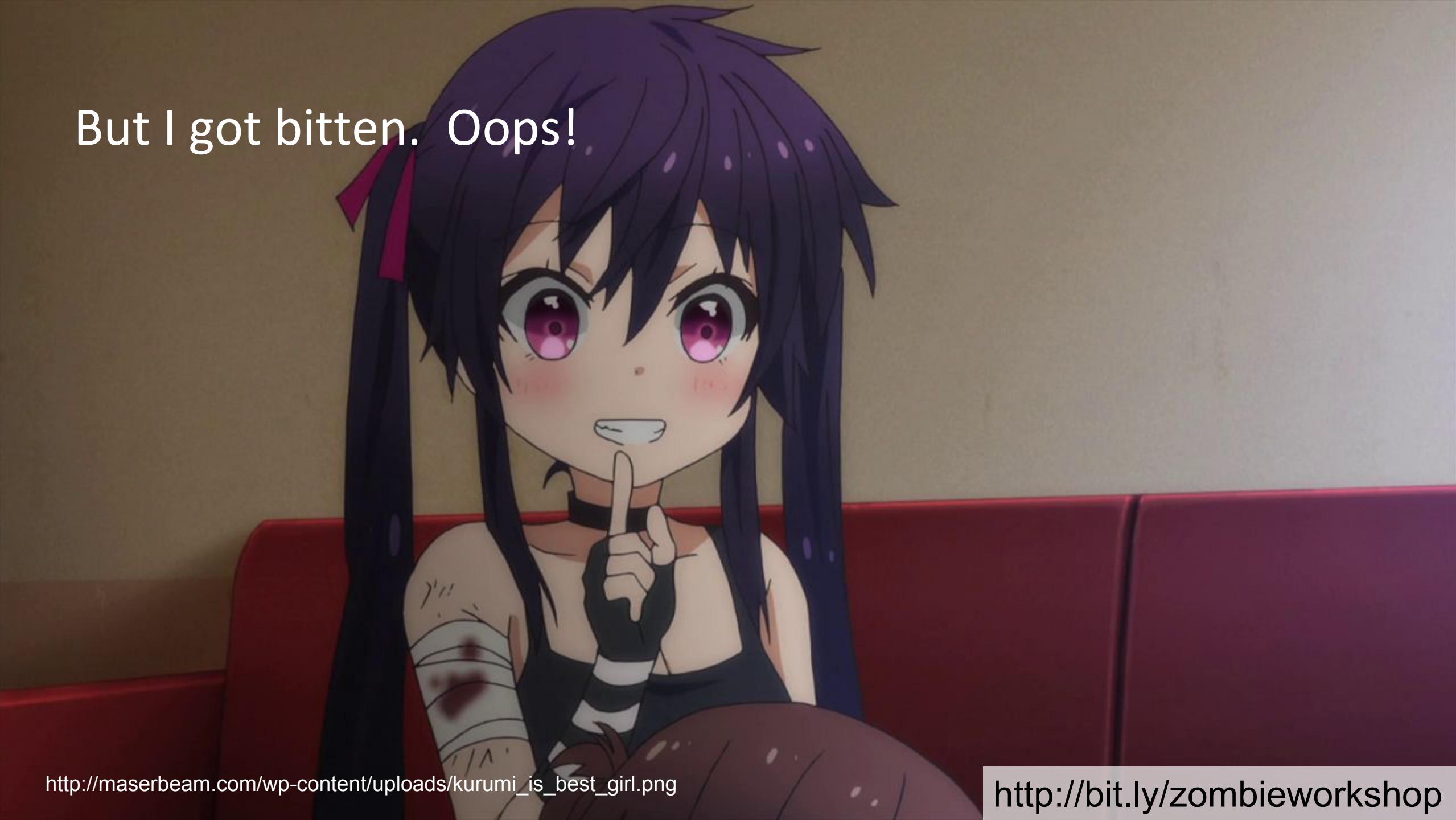
<http://bit.ly/zombieworkshop>

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Zombies are preparing to invade

But I got bitten. Oops!



Time to zombify my friends. :)



But the humans are fighting back



A close-up of a pink-haired anime girl with red eyes. She is wearing a purple, ruffled dress with a large red bow at the waist. She is holding a sword hilt with both hands, looking off to the side with a serious expression.

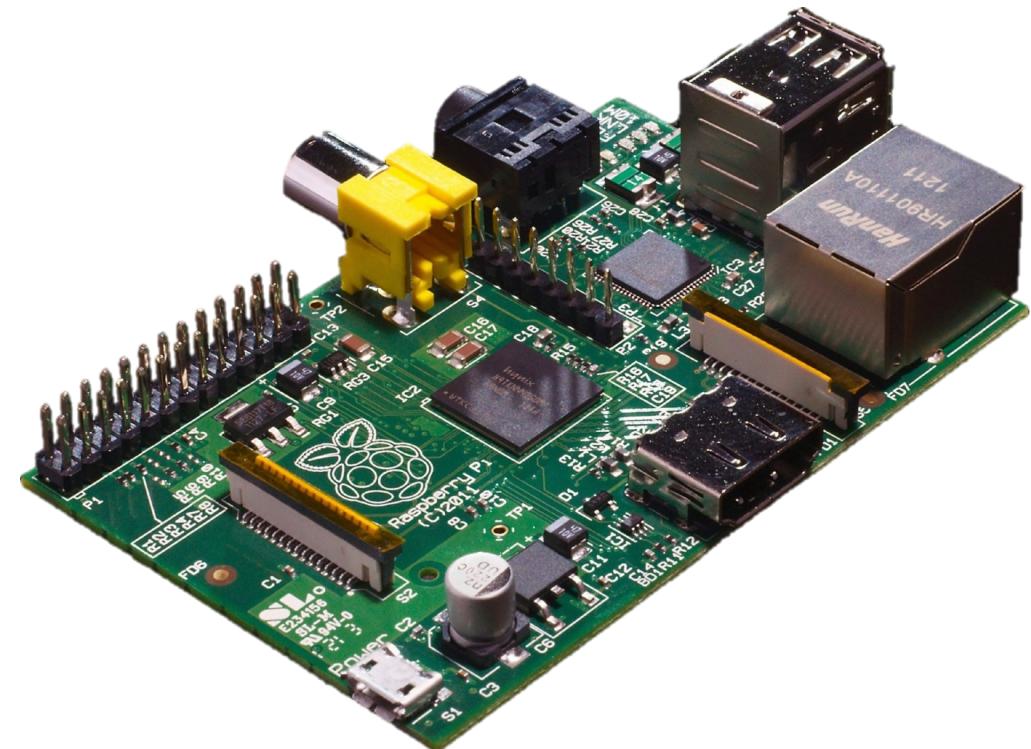
So we need some weapons!

Zombie Attack on Humans!



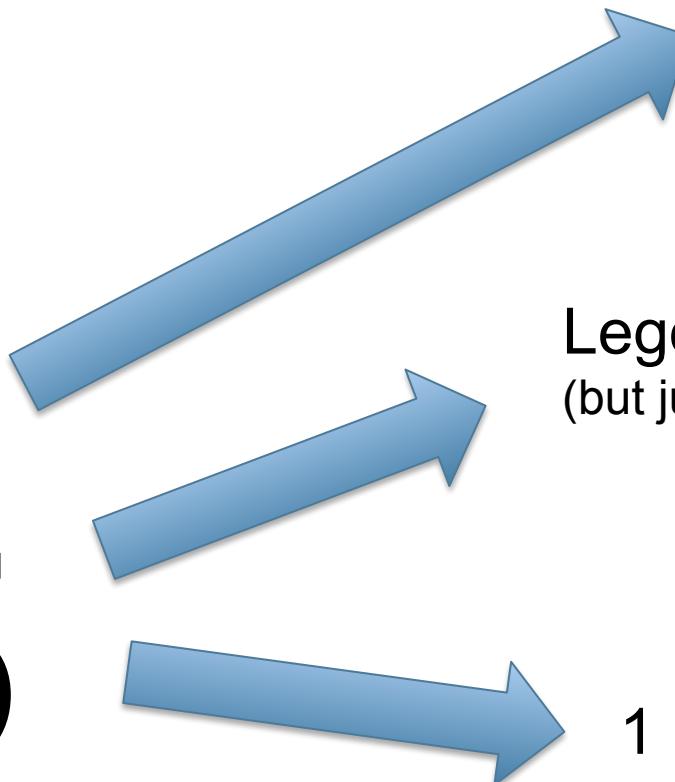
Have Java With Your Dessert

Raspberry Pi



Pis are Affordable

\$35



A Cake



Legos
(but just a small set)



1 Box of Diapers

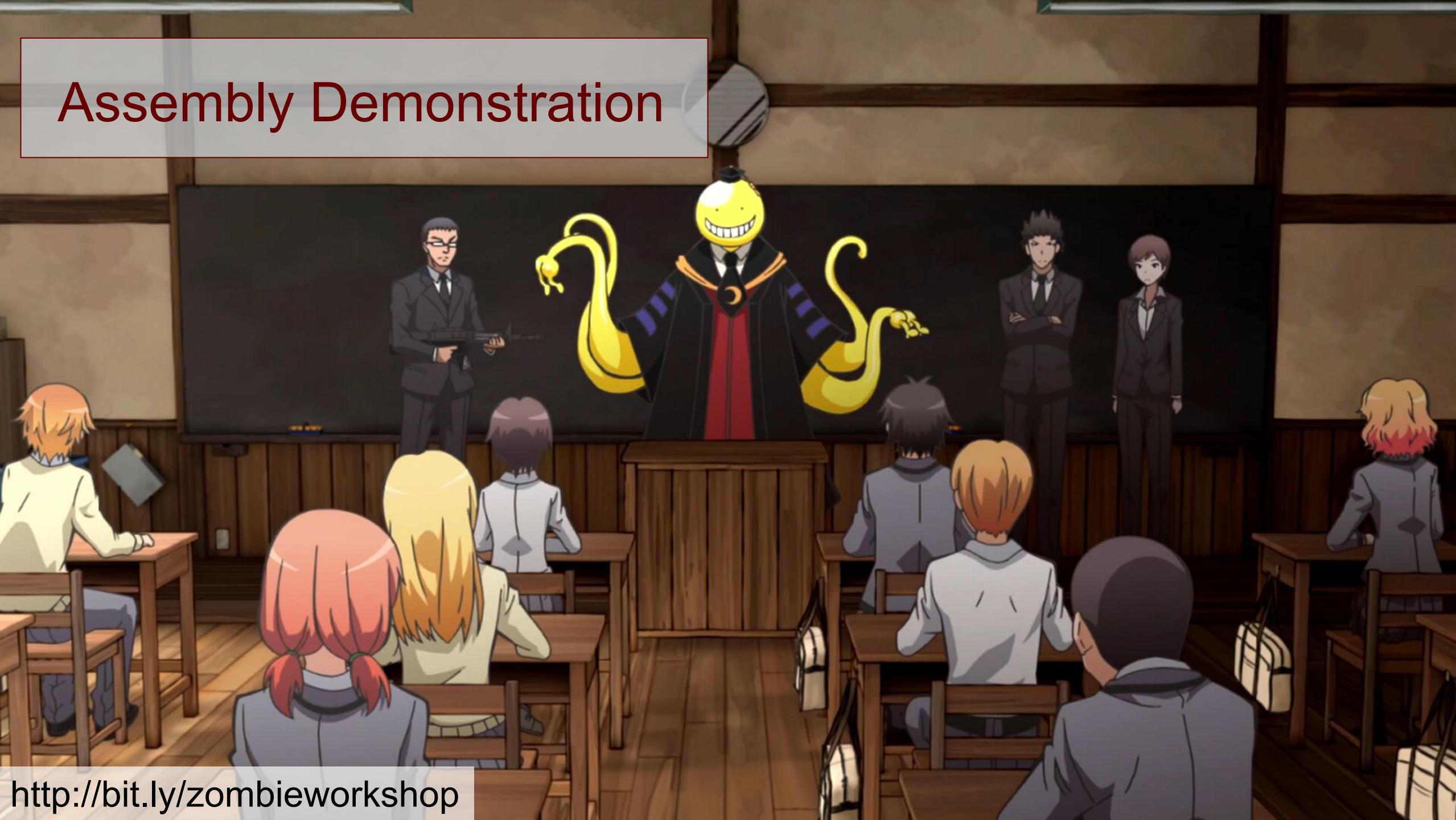


Electronic Safety!

- > Unplug from wall before wiring
- > Get rid of static by touching a metal surface
- > Don't touch exposed wires/metal
- > Never remove/insert SD Card while power is on



Assembly Demonstration



Running the ZombieTime Application

Change directory to the project folder

> **cd ZombieTime**

Run the build script

> **sudo ant**

Time to Assemble



9:02 AM

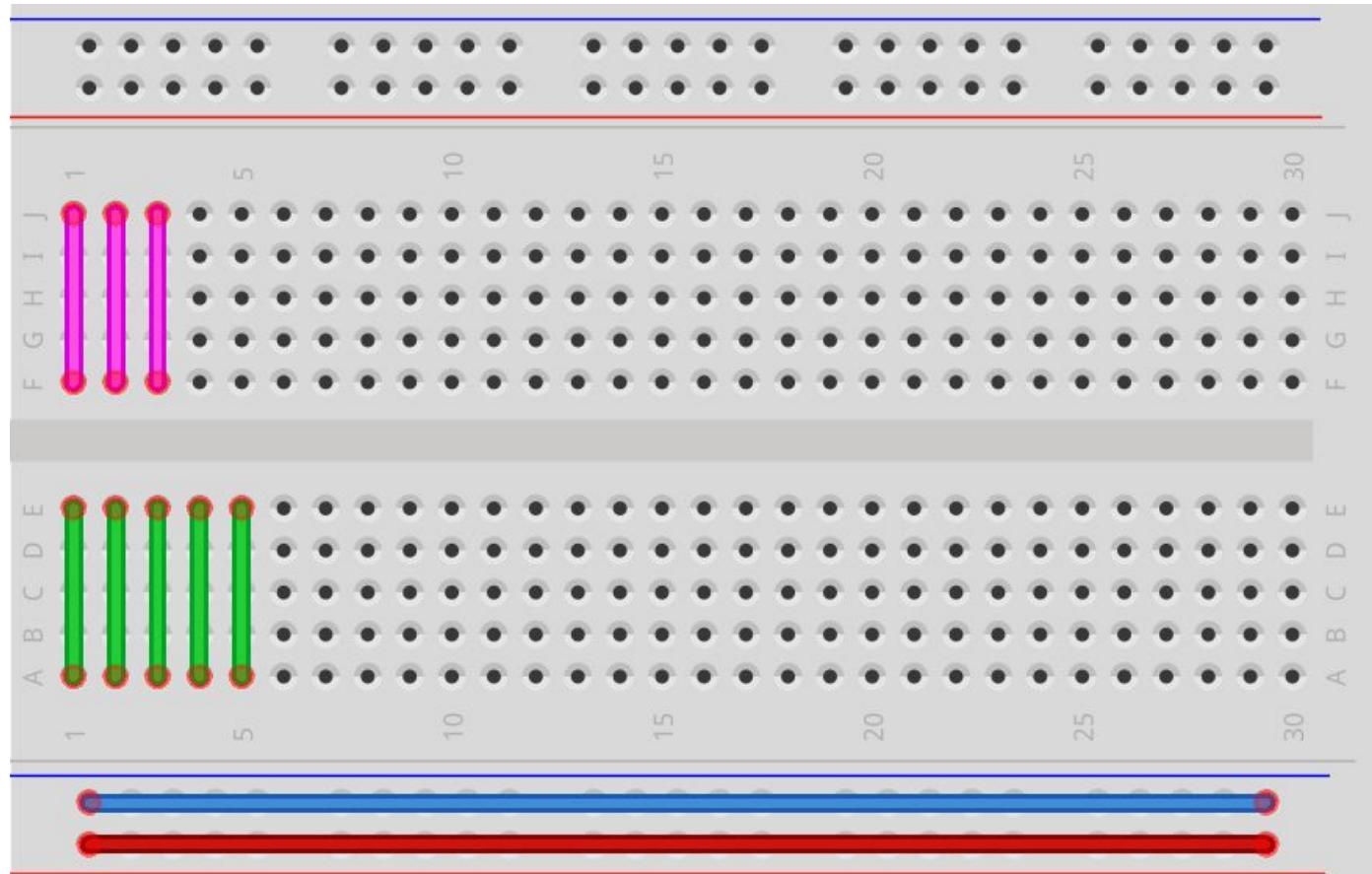


GAME OVER

I hate the sun!

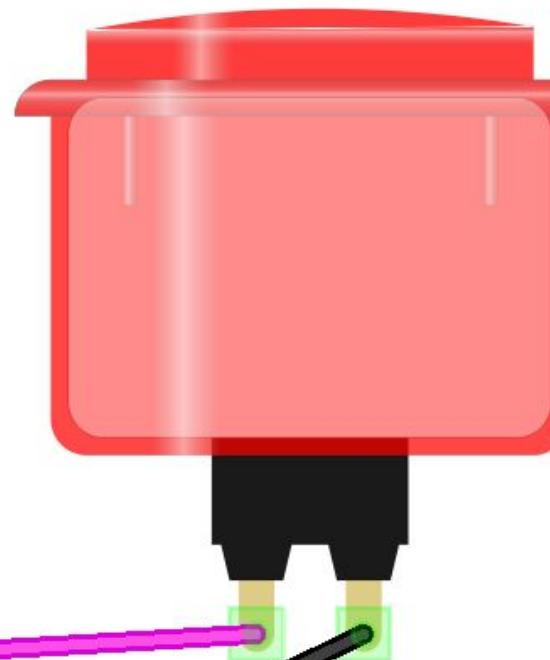
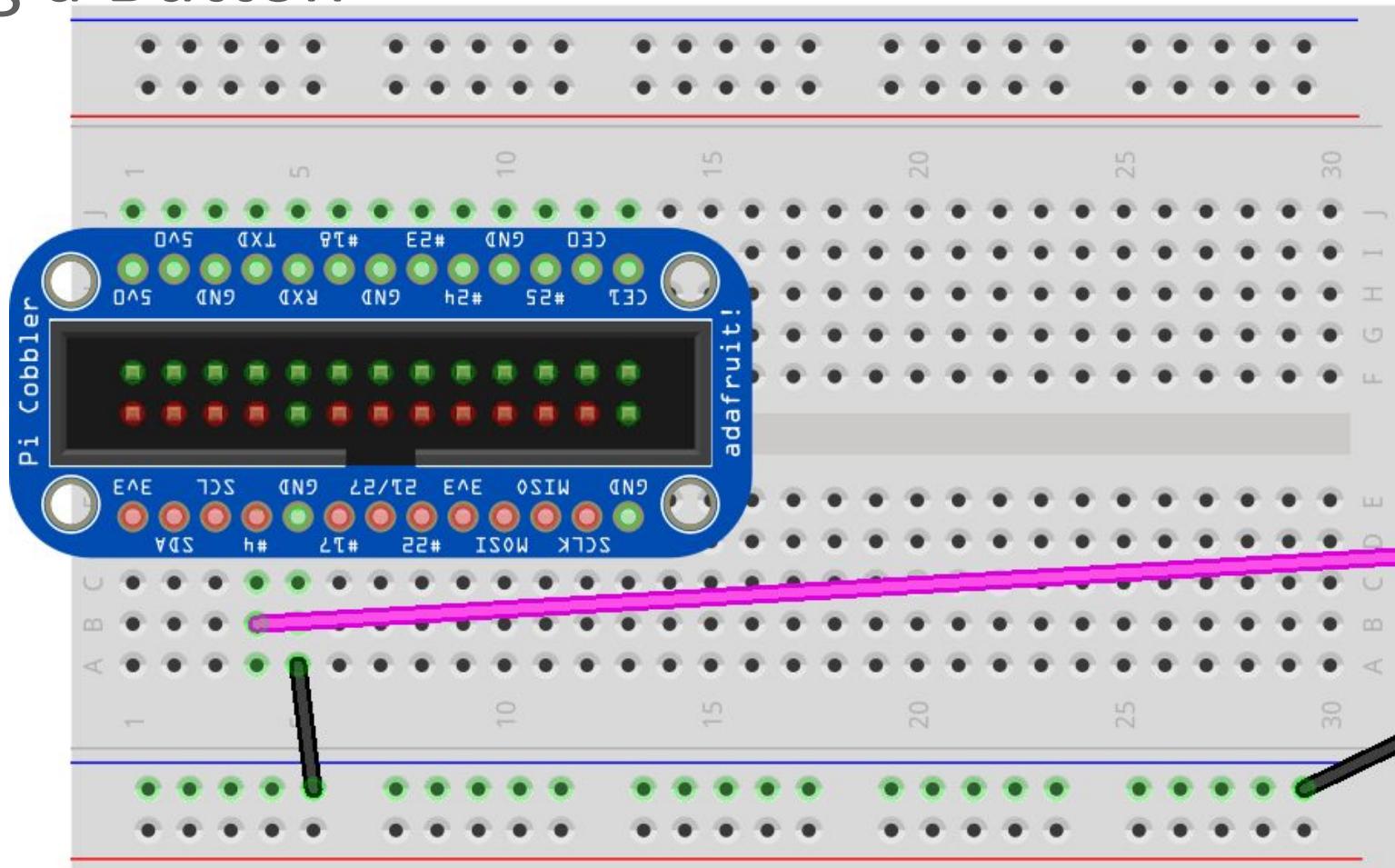


How Breadboards Work



fritzing

Wiring a Button



fritz!

Hiding when you press the button

```
final GpioPinDigitalInput myButton =  
    gpio.provisionDigitalInputPin(RaspiPin.GPIO_07,  
                                  PinPullResistance.PULL_UP);  
myButton.addListener(new GpioPinListenerDigital() {  
    @Override  
    public void handleGpioPinDigitalStateChangeEvent  
        (GpioPinDigitalStateChangeEvent event) {  
        boolean buttonPressed = event.getState().isLow();  
        if (buttonPressed) Main.display("Button Pressed");  
        zombie.underground.setValue(buttonPressed);  
    }  
});
```



12:05 PM



Hacking the Code

Run the nano text editor:

```
> nano src/sample/SensorFactory.java
```

Save your changes:

```
> Control-O Enter
```

Exit Nano:

```
> Control-X
```

Delete old files (if timestamps are bad):

```
> rm -rf out
```

Compile/Run:

```
> sudo ant
```

```
GNU nano 2.1.2-svn      File: ./Download/SVN/nano/src/nano.c

/* Disable mouse support. */
void disable_mouse_support(void)
{
    mousemask(0, NULL);
    mouseinterval(oldinterval);
}

/* Enable mouse support. */
void enable_mouse_support(void)
{
    mousemask(ALL_MOUSE_EVENTS, NULL);
    oldinterval = mouseinterval(50);
}

/* Initialize mouse support. Enable it if the USE_MOUSE flag is set,
 * and disable it otherwise. */
void mouse_init(void)
{
    if (ISSET(USE_MOUSE))
        enable_mouse_support();
    else
        disable_mouse_support();
}

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page  ^U UnCut Text^T To Spell
```

zombie.underground.setValue(buttonPressed);

Time to Wire Your Button!



Hey... There's a button here

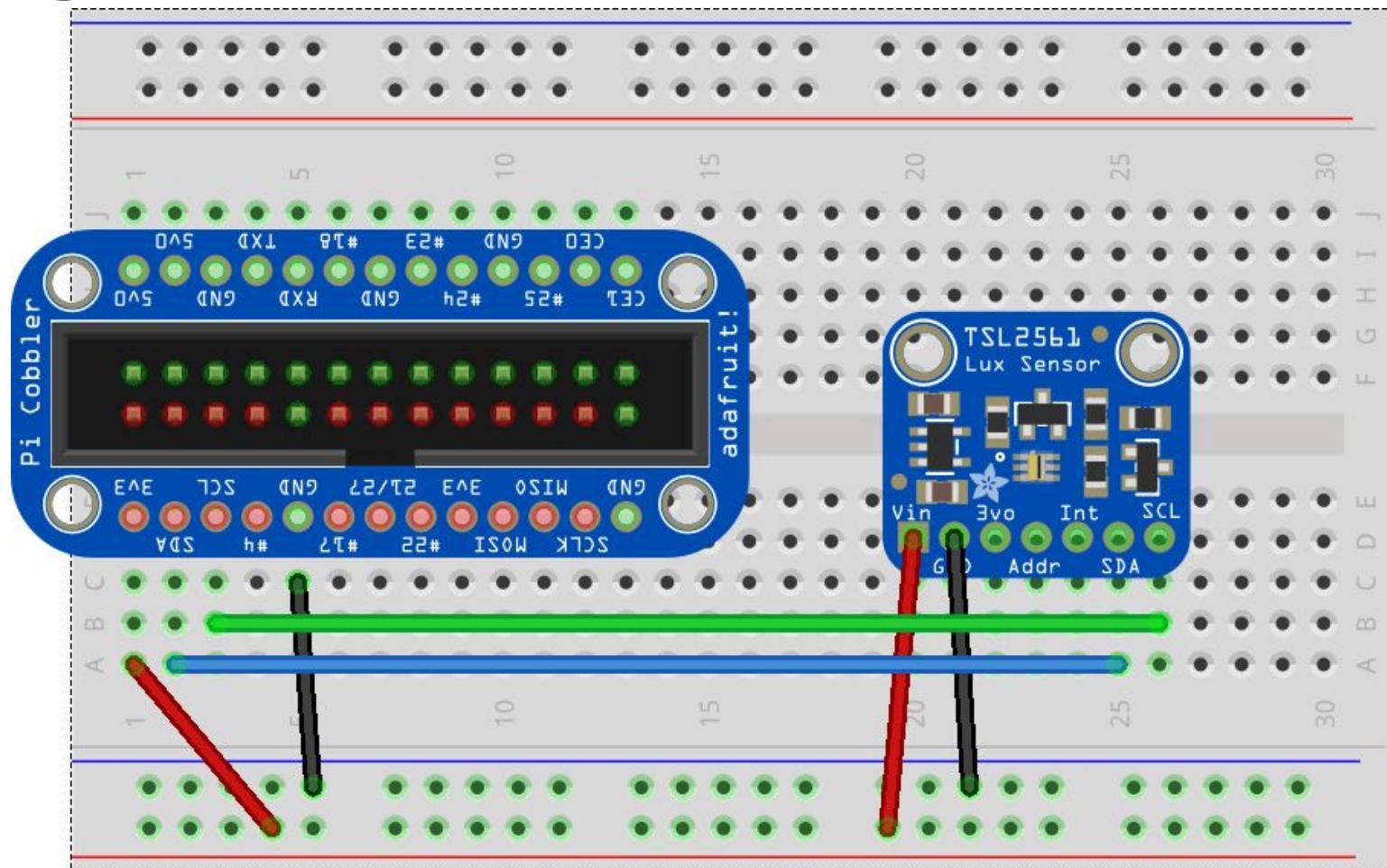


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Zombies Like the Night!



Wiring a Light Sensor



fritzing

Making it Night Using a Light Sensor

```
Tsl2561 lightSensor = new Tsl2561(device);
Timeline lightTimeline = new Timeline(
    new KeyFrame(Duration.seconds(10), actionEvent -> {
        double lux = lightSensor.getLux();
        Main.display("lux = " + lux);
        if (lux < 3) {
            night.setValue(true);
        } else {
            night.setValue(false);
        }
    }));
});
```



Hurry Up and Make it Night!



1:06 AM

Wait!!! I just want
your brains...

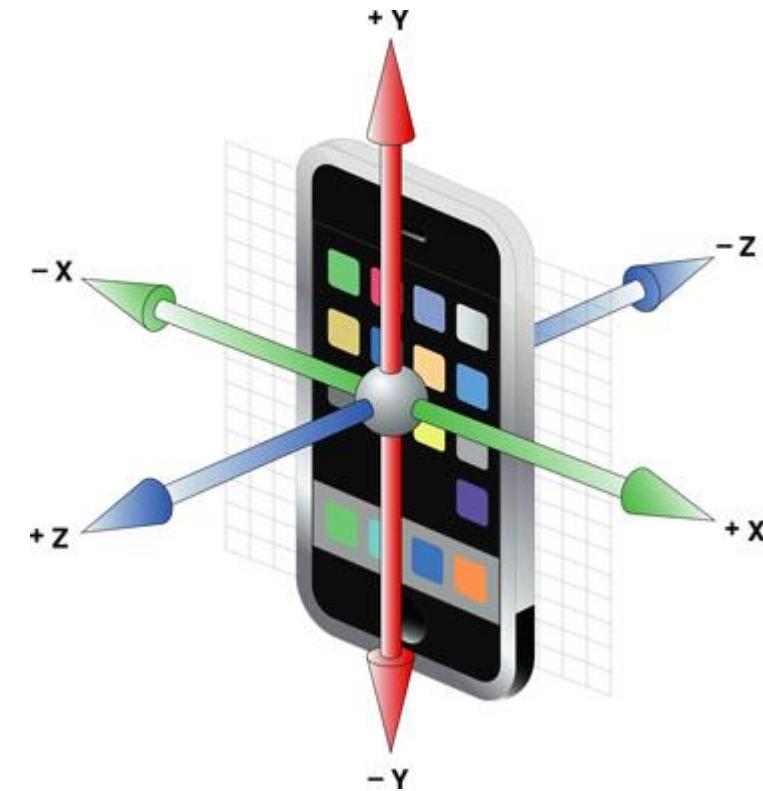




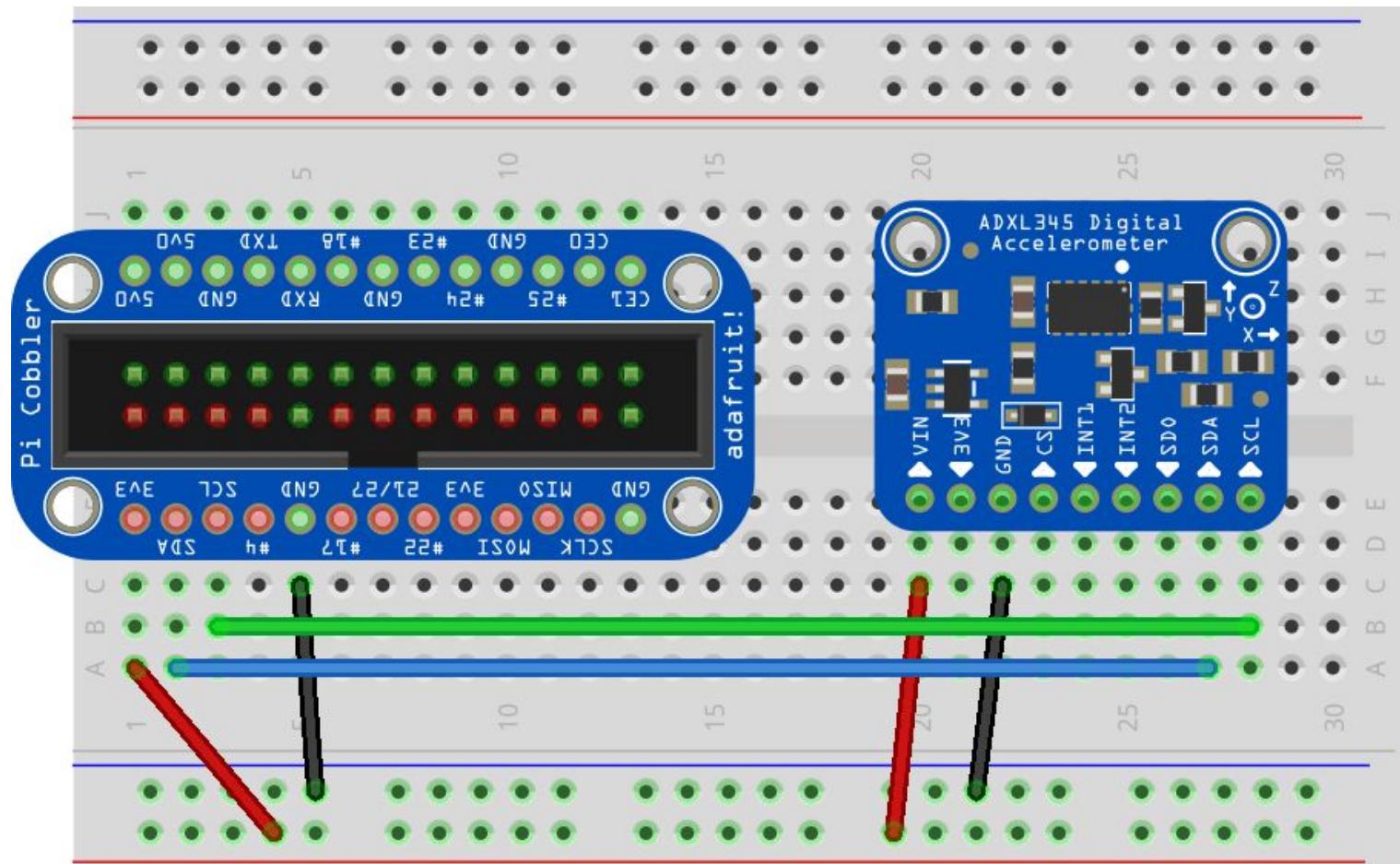
We'll make them come out by force!

Accelerometers let you know orientation

- X = Left and Right
- Y = Forward and Backward
- Z = Up and Down



Wiring an Accelerometer



fritzing

Create an earthquake using an accelerometer

```
ADXL345 gyro = new ADXL345(bus);
gyro.init(gyro.X, 4);
lastGyroX = gyro.X.getRawValue();
Timeline accelerometerTimeline = new Timeline(
    new KeyFrame(Duration.seconds(1), actionEvent -> {
        float x = gyro.X.getRawValue();
        if (!Main.earthquake.getValue()) {
            if (Math.abs(x - lastGyroX) > 2000) {
                System.out.println("Earthquake!");
                Main.earthquake();
            }
        }
        lastGyroX = x;
    }));
});
```



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YOU WIN!!!

Thanks for Attending the Workshop!

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