# CStem Project: Thermo-resistor

Crystal, Saiyra, Hannah, Rachel

# Prompt :

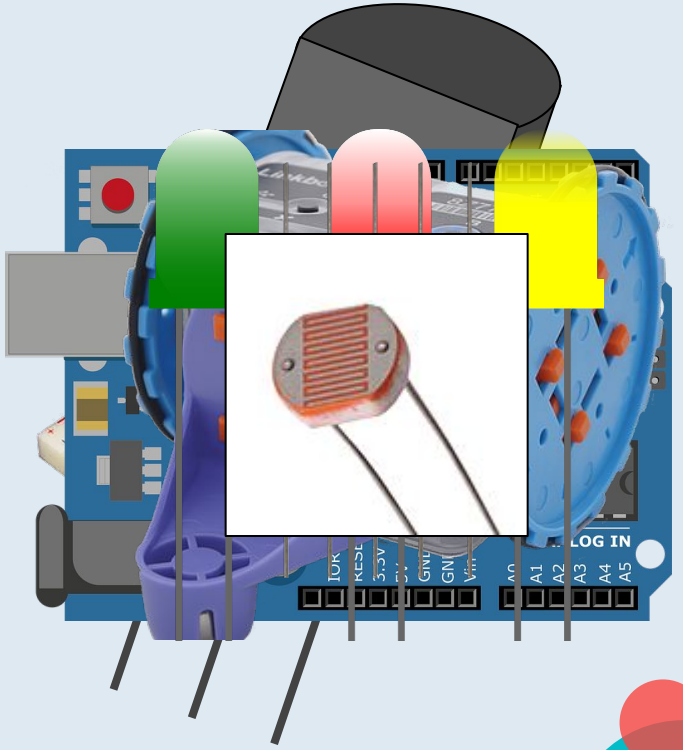
Use a thermo-resistor to control Linkbot speed, and display such through LEDs, when at fastest speed, use photoresistor to determine direction of Linkbot

# Vocabulary

# Vocabulary

## Hardware

- Breadboard
- Thermoresistor
- Arduino
- LinkBot
- LED
- Resistor
- Photoresistor



# Vocabulary

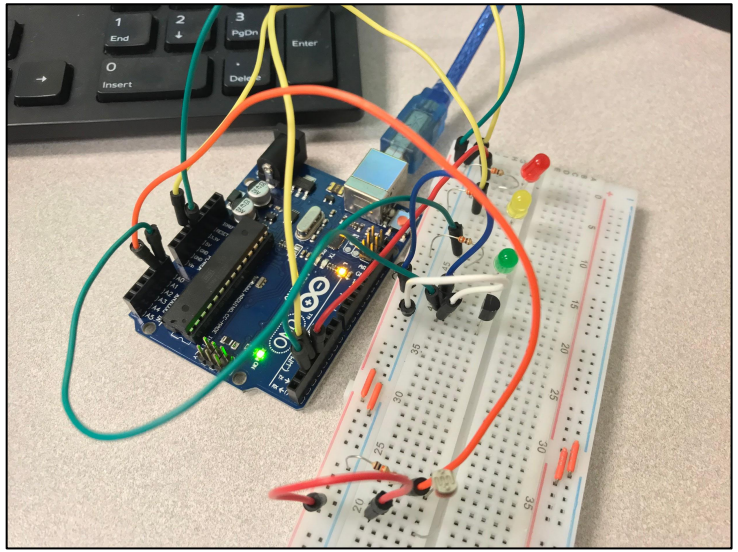
C-STEM™

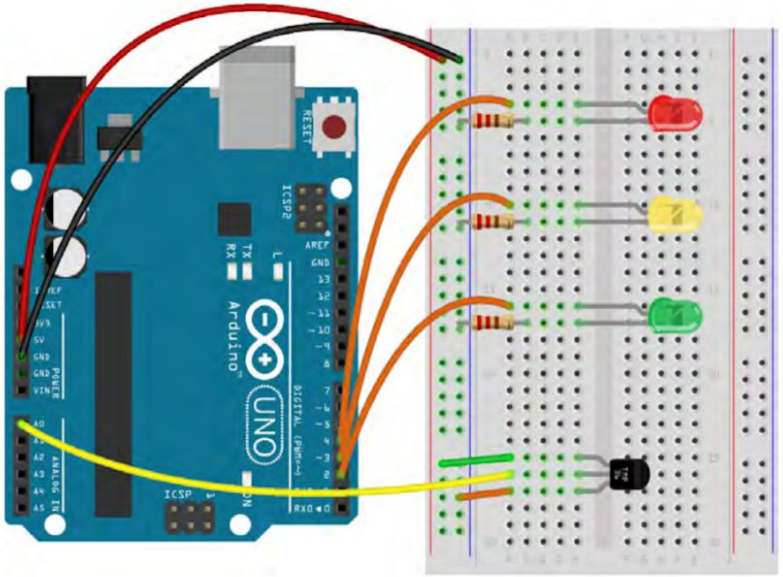
**Programs**

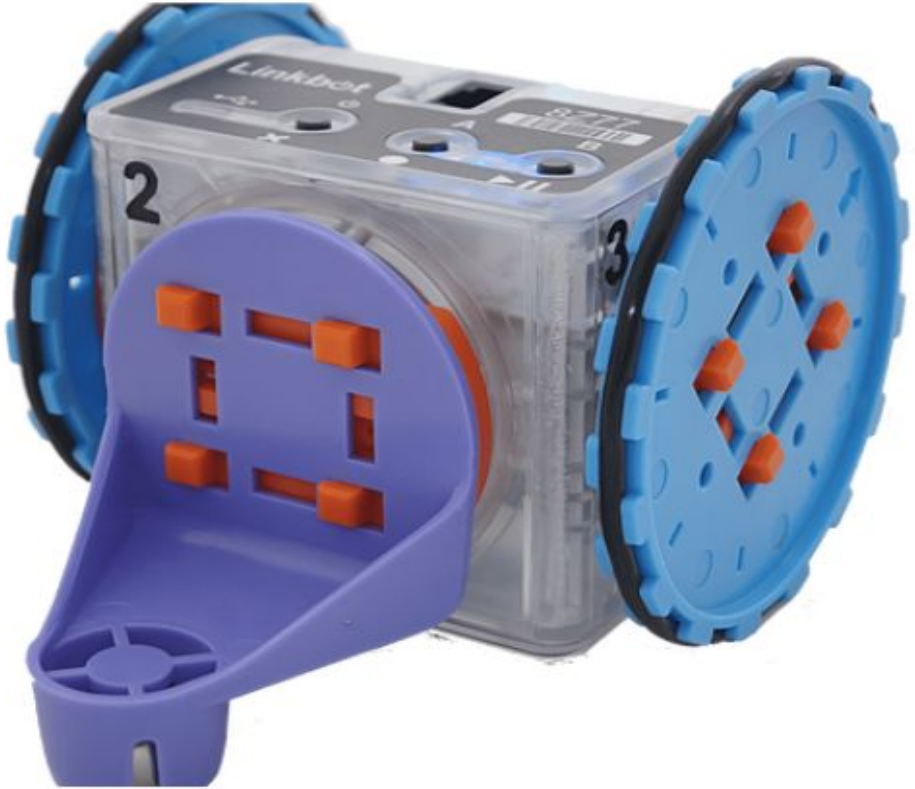
- CStem Studio
  - ChIDE
  - RoboBlockly
  - Ch Arduino

RoboBlockly

# Hardware Procedure




RESET
ICSP2
AREF
GND
TX
RX
L
Arduino
UNO
DIGITAL (PWM~)
POWER
ANALOG IN
ICSP
ON
RX0 0


Linkbot
2
3

# Software Procedure

# Coding

## ChIDE

- Create Header
- Name Variables
- Connect voltage to speed
- Connect temperature to LEDs
- Troubleshoot

```
while(1){;
    sensorVal = analogRead(sensorPin);
    printf("Sensor Value: %d", sensorVal);

    voltage = (sensorVal/1023.0)*5.0;
    printf(", Voltage: %.2lf", voltage);

    temperature = (voltage - 0.5)*100;
    printf(", degrees C: %.2lf\n", temperature);

    if(temperature < baselineTemp){
        digitalWrite(2, LOW);
        digitalWrite(3, LOW);
        digitalWrite(4, LOW)
    }

    else if(temperature >= baselineTemp && temperature < (baselineTemp+2)){
        digitalWrite(2, HIGH);
        digitalWrite(3, LOW);
        digitalWrite(4, LOW);
    }

    else if (temperature >= (baselineTemp+2) && temperature < (baselineTemp+4)){
        digitalWrite(2, HIGH);
        digitalWrite(3, HIGH);
        digitalWrite(4, LOW);
    }
```

# Coding

```
else if (temperature >= (baselineTemp +2)){
    digitalWrite(2, HIGH);
    digitalWrite(3, LOW);
    digitalWrite(4, LOW);
    Barry.setSpeed(5, radius);
    Barry.setLEDColor("green");
    printf("SHOULD TURN GREEN");

    if(lightVal >= (baselineLight+2)){
    printf("Should turn right");
    Barry.turnRight(90,radius,trackwidth);
     }

    else if (lightVal<baselineLight){
    printf("Should turn left");
    Barry.turnLeft(90,radius,trackwidth);
    }

 }
/* {
    digitalWrite(2, LOW);
    digitalWrite(3, LOW);
    digitalWrite(4, HIGH);

    Barry.setSpeed(0, radius);
 }*/

 delay(1000);
}
```

# Summary

# Summary

**Problems**

1. Arduino would not connect
2. Inaccurate thermoresistor
3. Error in code
4. Incomplete Circuit
5. Thermoresistor overheating
6. Linkbot unresponsive

**Solutions**

1. Update Arduino
2. Replace wire
3. Naming robot consistently
4. Rework the wiring
5. Incorrect set up
6. Rewriting code

# Thank you!

## Any questions?