Project 4

Multiple Sensors

Objectives:

- Understand concepts related to inputs and outputs using the IR and Ultrasonic sensors to turn on and off LEDs and motors.
- Understand how multiple sensors can work together to control the same device.

Get into groups of 3 or 4 and complete the following exercises.

Group Members

_____

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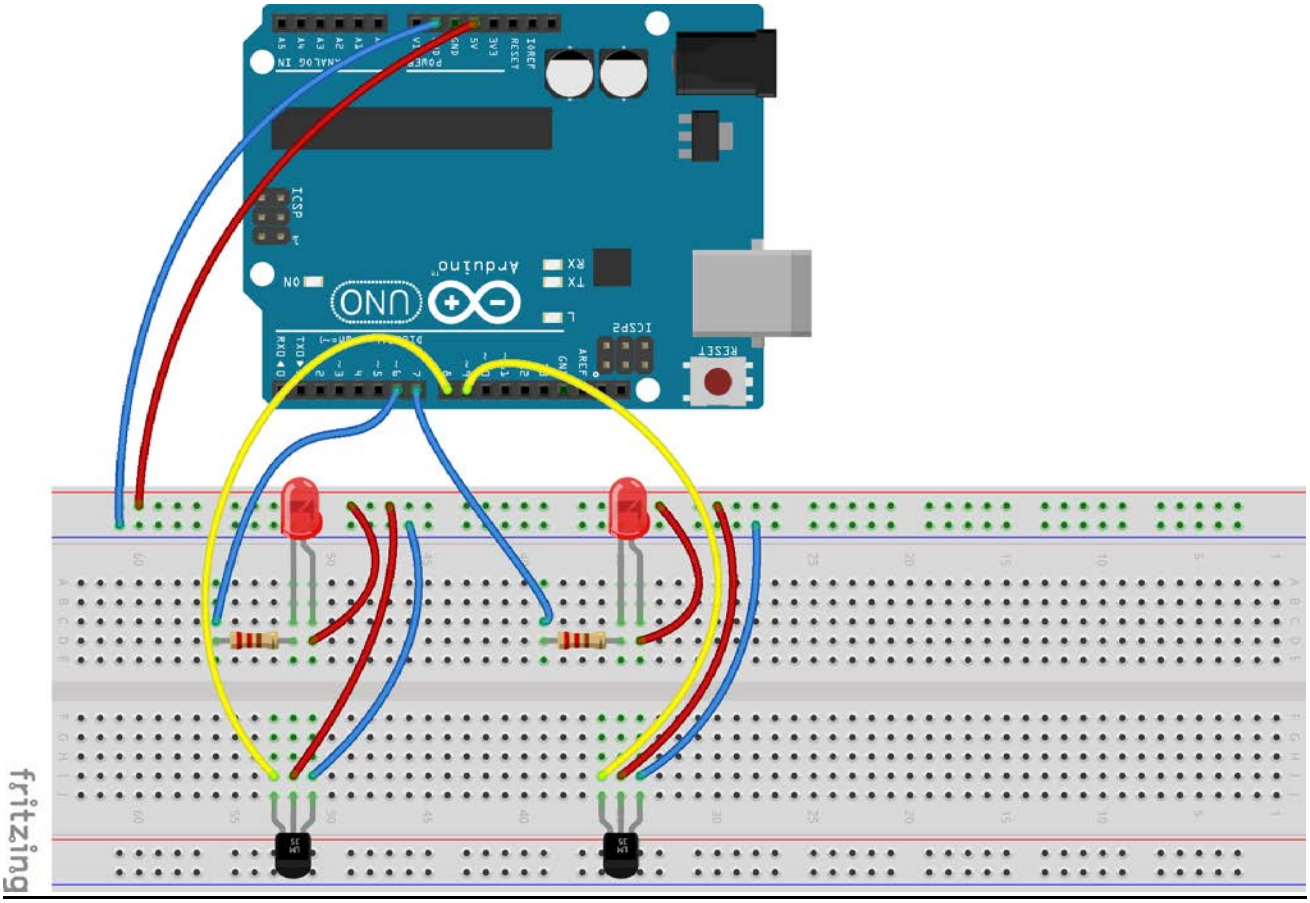
Dual IR

This exercise will demonstrate how to set up two IR sensors which control two separate LEDs.

Supplies Needed:

- 1x Arduino
- 1x Breadboard
- 11x jumper wires
- 2x IR sensor
- 2x 1k resistor
- 2x LED




```
int aIR = 8;

int bIR = 9;

int LEDa = 6;

int LEDb = 7;
```

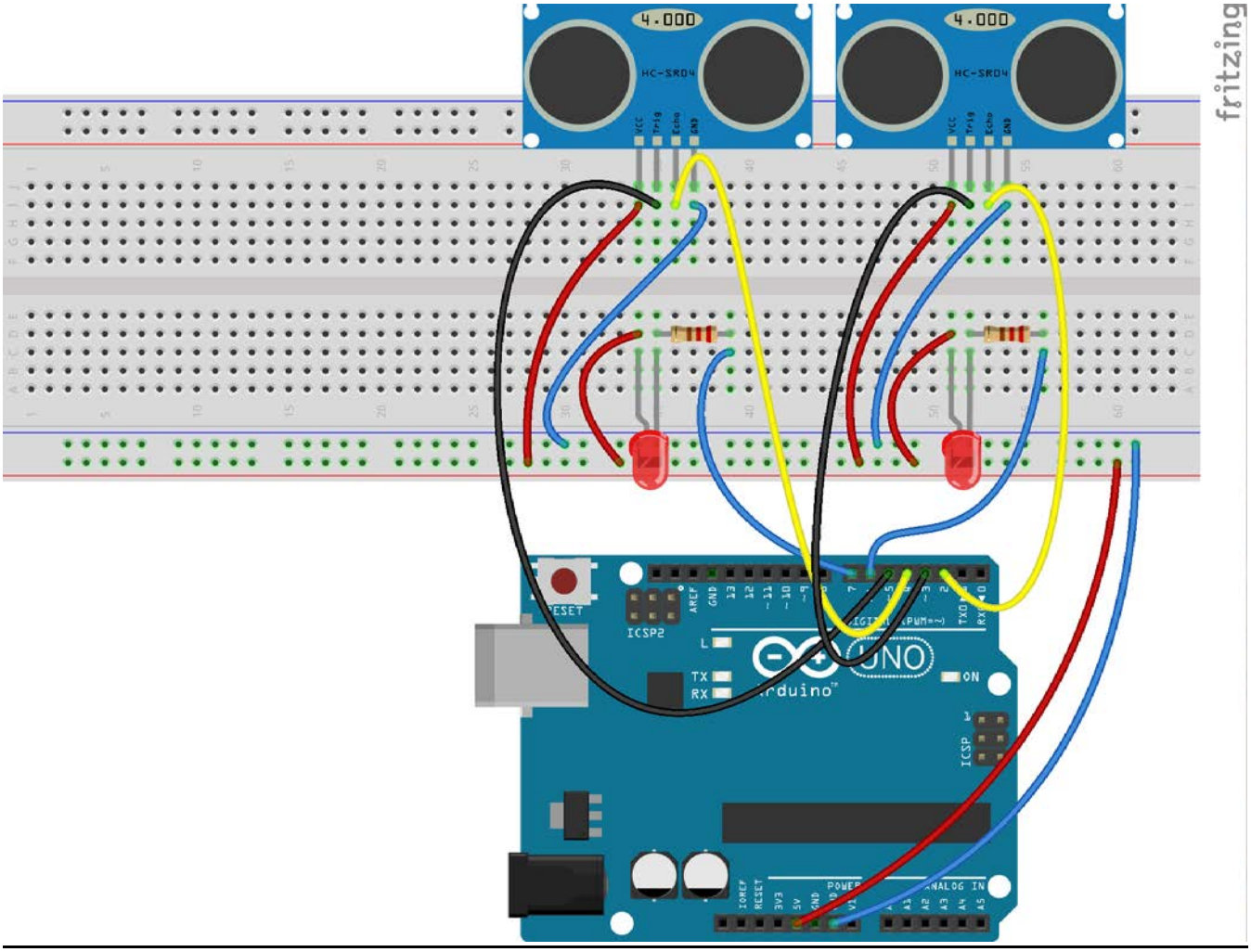
```
void setup()
{
  pinMode(aIR, INPUT);
  pinMode(bIR, INPUT);
  pinMode(LEDa, OUTPUT);
  pinMode(LEDb, OUTPUT);
}

void loop()
{
  if (digitalRead(aIR) == HIGH)
  {
    digitalWrite(LEDa) = HIGH;
  }
  else if (digitalRead(aIR) == LOW)
  {
    digitalWrite(LEDa) = LOW;
  }

  if (digitalRead(bIR) == HIGH)
  {
    digitalWrite(LEDb) = HIGH;
  }
  else if (digitalRead(bIR) == LOW)
  {
    digitalWrite(LEDb) = LOW;
  }
}
```

Dual Ultrasonic

This exercise will demonstrate how to set up two ultrasonic sensors to work together to control LEDs

Supplies Needed:

- 1x Arduino
- 1x Breadboard
- 14x jumper wires
- 2x Ultrasonic sensor
- 2x 1k resistor
- 2x LED



```
int echoA = 2;
int trigA = 3;
int echoB = 4;
int trigB = 5;
int LEDa = 6;
int LEDb = 7;
long duration1;
long distance1;
long duration2;
long distance2;

void setup()
{
  pinMode(echoA, INPUT);
  pinMode(trigA, OUTPUT);
  pinMode(echoB, INPUT);
  pinMode(trigB, OUTPUT);
  pinMode(LEDa, OUTPUT);
  pinMode(LEDb, OUTPUT);
}

void loop()
{
  digitalWrite(trigA, LOW)
  digitalWrite(trigB, LOW)

  delayMicroSeconds(2);

  digitalWrite(trigA, HIGH)
  digitalWrite(trigB, HIGH)
```

```
  delayMicroseconds(10);

  digitalWrite(trigA, LOW)
  digitalWrite(trigB, LOW)

  duration1 = pulseIn(echoA, HIGH);
  duration2 = pulseIn(echoB, HIGH);

  distance1 = (duration1/2) / 29.1;
  distance2 = (duration2/2) / 29.1;

  if (distance1 < 15)
  {
    digitalWrite(LEDa, HIGH);

  }
  else if (distance2 < 15)
  {
    digitalWrite(LEDb, HIGH);
  }
  else
  {
    digitalWrite(LEDa, LOW);
    digitalWrite(LEDb, LOW);
  }
  delay(5);
}
```

Changing It Up

Try to combine both projects together, can you make two IR and two Ultrasonic sensors work together?