DUCSTeach Workshop 07 - Motion Detector
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Time: 45 Minutes
People: 10 - 15 People
Materials:

- 5 Arduino Unos with 170 pin breadboard
- 5 HC-SR04 Modules
- Jumper Wires
- 1 Red LED
- USB Type B Cable
- Laptop with Arduino IDE installed
- motor_sensor.ino file

Steps:

1. Insert the Red LED, long stick into Breadboard A10
2. Insert the Red LED, short stick into Breadboard, A11
3. Insert HC-SR04 Module GND pin into Breadboard A30
    a. HC-SR04 Echo in Breadboard A31
    b. HC-SR04 Trig in Breadboard A32
    c. HC-SR04 VCC in Breadboard A33
4. Wire from E30 to GND
5. Wire from E31 to Arduino 10
6. Wire from E32 to Arduino 9
7. Wire from E33 to 5v
8. Wire from Arduino 6 to Breadboard E10
9. Wire from GND to Breadboard E11
10. Wires from Arduino GND, 5V to Breadboard rows

Code:

```
// defines pins numbers
const int trigPin = 9;
const int echoPin = 10;
// defines variables
long duration;
int distance;
```

```
void setup() {
pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
pinMode(echoPin, INPUT); // Sets the echoPin as an Input
pinMode(6, OUTPUT); // Sets the LED
Serial.begin(9600); // Starts the serial communication
}
void loop() {
// Clears the trigPin
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
// Sets the trigPin on HIGH state for 10 micro seconds
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
// Reads the echoPin, returns the sound wave travel time in microseconds
duration = pulseIn(echoPin, HIGH);
// Calculating the distance
distance= duration*0.034/2;

if(distance <= 10){
  digitalWrite(6, LOW);
} else {
  digitalWrite(6, HIGH);
}
// Prints the distance on the Serial Monitor
Serial.print("Distance: ");
Serial.println(distance);
}
```