This project uses a PIR (Passive Infrared) sensor to detect movement, which triggers an LED to light up when motion is detected. The setup consists of connecting a PIR sensor to an Arduino and using it to control an LED based on the motion detected by the sensor.

Circuit Setup:

1. PIR Sensor Connections:
    - Connect the VCC pin of the PIR sensor to the 5V pin of the Arduino (through the breadboard).
    - Connect the GND pin of the PIR sensor to the GND pin of the Arduino.
    - Connect the Signal pin of the PIR sensor to D13 (digital pin 13) on the Arduino.
2. LED Connections:
    - Connect the Anode (long leg) of the LED to D12 (digital pin 12) on the Arduino through a 220Ω resistor.
    - Connect the Cathode (short leg) of the LED to the ground rail on the breadboard, which is then connected to the GND of the Arduino.
3. Power Supply:
    - The Arduino will be powered through USB or an external power supply.

Working:

1. PIR Sensor: The PIR sensor detects infrared radiation (heat) from objects, typically in the form of human motion. When motion is detected, it sends a signal (HIGH) to the Arduino.

2. Arduino: The Arduino reads the signal from the PIR sensor on digital pin D13. When the signal is HIGH (indicating motion), it activates the LED connected to pin D12 by sending a HIGH signal to turn it on.

3. The LED will remain on as long as motion is detected. Once the motion stops, the PIR sensor will send a LOW signal to the Arduino, turning the LED off.