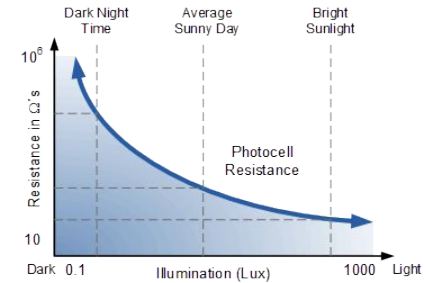# Monitorização Ambiental
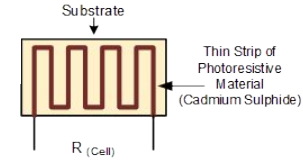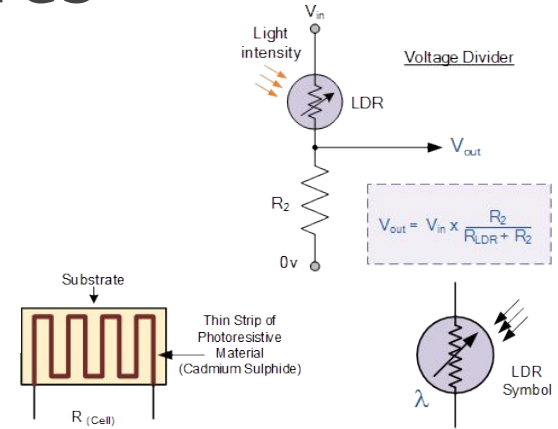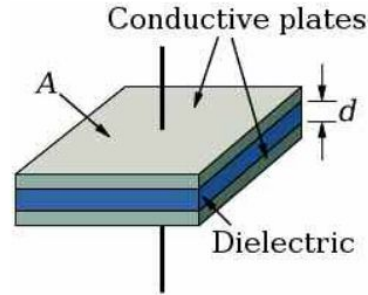
Mini-Projecto Sensores Inteligentes
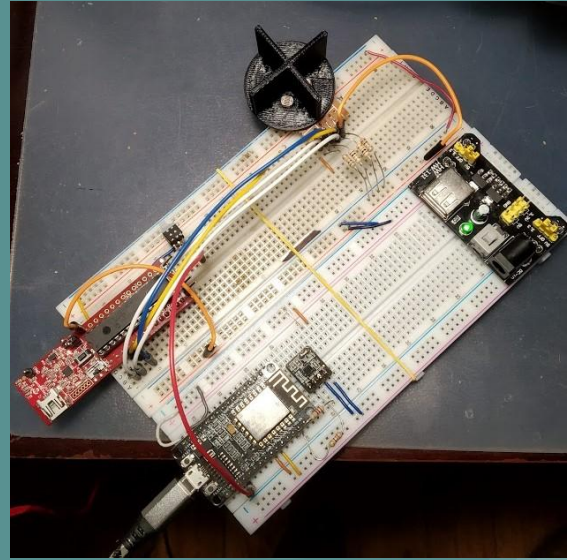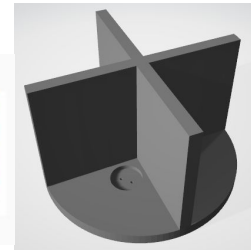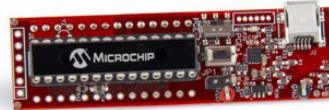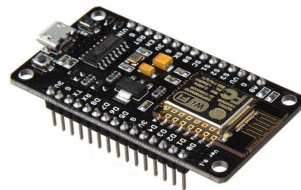
# Funcionamento Dos Sensores

two identical transistors are operated at a constant ratio of collector current densities, the difference in their base-emitter voltage is proportional only to absolute temperature. Other sensors are based on the behavior of the base-emitter voltage, $V_{BE}$, of a diode-connected transistor, which varies inversely with its temperature. The rate at which this voltage varies is a very consistent –2 mV/°C, but the absolute value of $V_{BE}$ varies from transistor to transistor. Compensating for this variation involves comparing ?$V_{BE}$ at different values of $I_E$.



Conductive plates

$A$

$d$

Dielectric

Substrate

Thin Strip of Photoresistive Material (Cadmium Sulphide)

R (Cell)

$V_{in}$

Light intensity

Voltage Divider

LDR

$V_{out}$

$R_2$

$V_{out} = V_{in} \times \dfrac{R_2}{R_{LDR} + R_2}$

0v

LDR Symbol

$\lambda$

Dark Night Time

Average Sunny Day

Bright Sunlight

$10^6$

Resistance in Ω's

Photocell Resistance

10

Dark 0.1

Illumination (Lux)

1000 Light

# Ponto de Partida

Sensores - SHT21 & LDR

Placas de Desenvolvimento:
PIC24 ESP8622 Raspberry Pi

# Contribuições do Grupo

| **Miguel** | **Luis** |
|---|---|
| PIC24 | NodeRED |
| Arduino | Arduino |
| Instalação de Raspberry PI | R&D |
| Trabalhos diversos | Trabalhos diversos |