Circuito a implementar

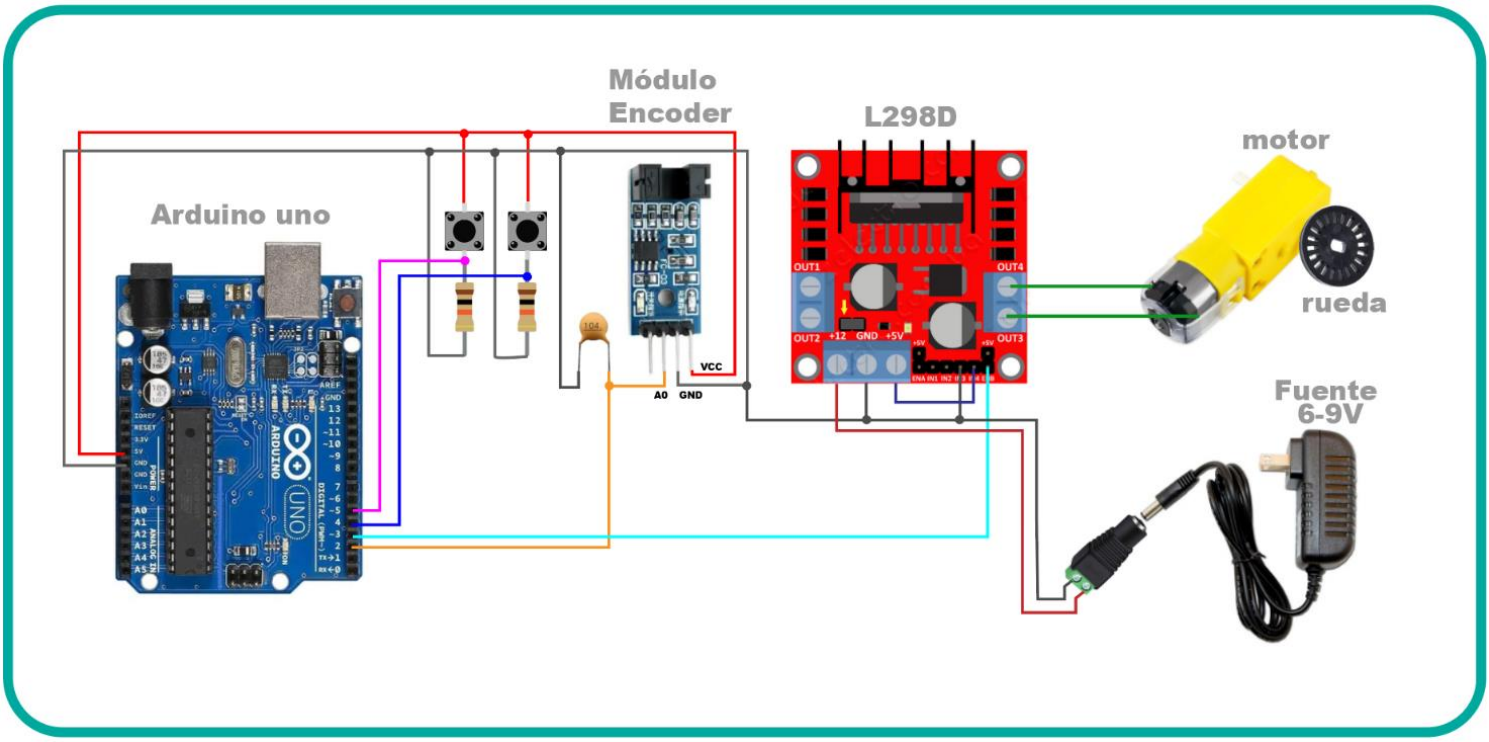
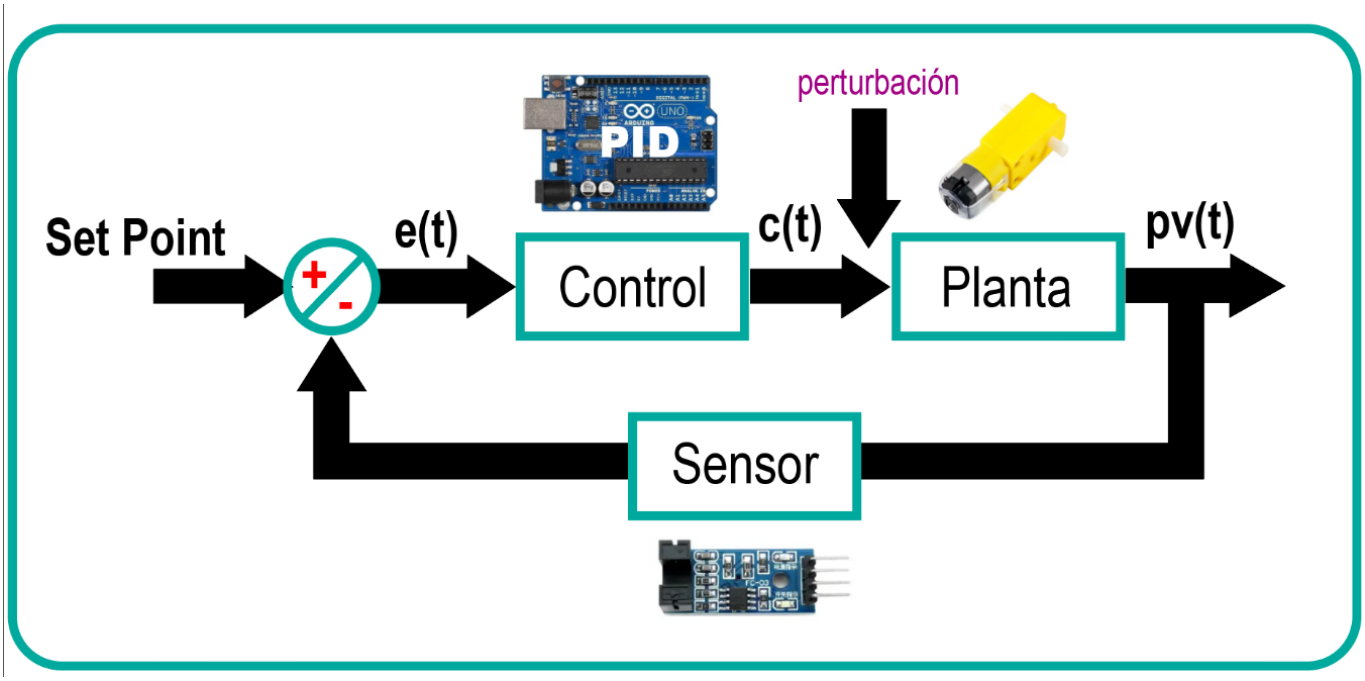
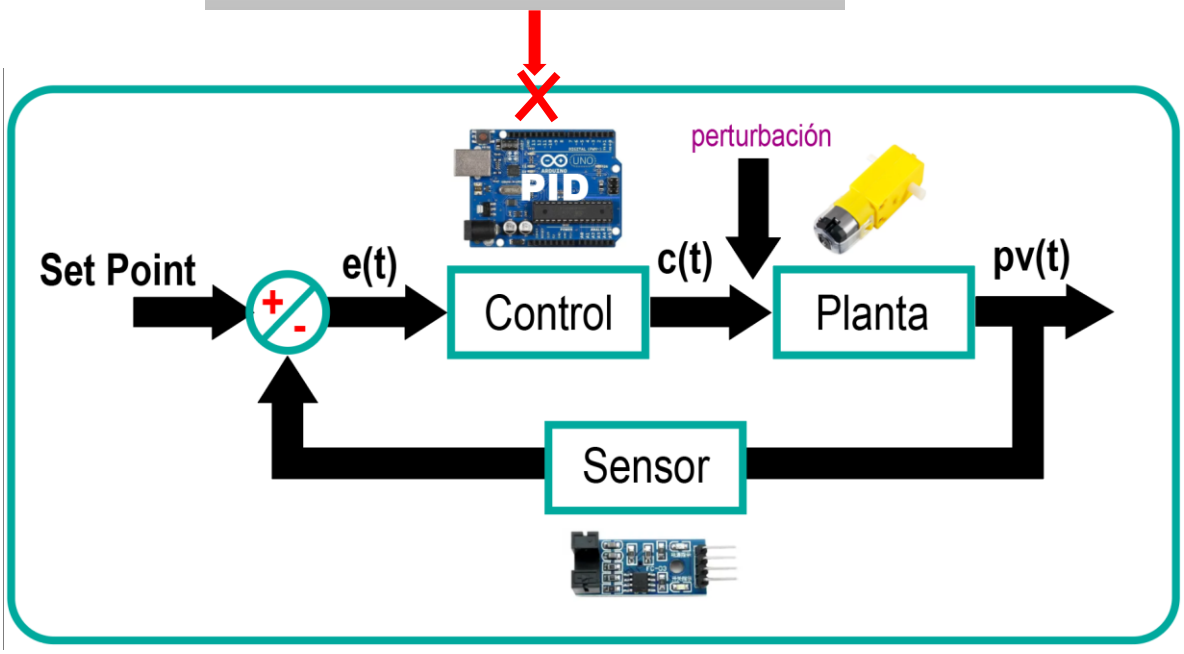


Diagrama de Bloques



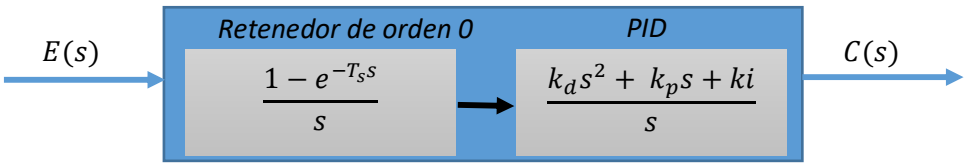
Explicación PID

$$c(t) = kp * e(t) + ki \int e(t) + kd \frac{d\,e(t)}{dt}$$



Dominio de Laplace (tiempo continuo)

$$C(s) = \frac{k_d s^2 + k_p s + ki}{s} E(s)$$



Dominio Z (tiempo discreto)

$$\frac{C(z)}{E(z)} = K_p + K_i T_s \frac{1}{z-1} + \frac{K_d}{T_s} \frac{z-1}{z}$$

Ecuación en Diferencias de un PID discreto

$$\boldsymbol{c(n) = c(n-1)} + \left(K_p + \frac{K_d}{T_s}\right) e(n) + \left(-K_p + K_i T_s - 2\frac{K_d}{T_s}\right) e(n-1) + \frac{K_d}{T_s} e(n-2)$$