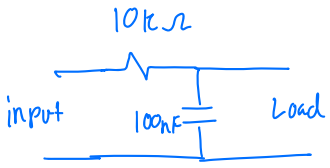
Challenge

Challenge: Design a passive RC filter.

Filter Requirements

- Attenuate frequencies above f-3dB ≈ 150 Hz.
- A 3dB cutoff frequency of f_c = of 150 Hz ± 10 Hz is "close enough."

Goal: Choose a combination of resistors and capacitors that meet the filter requirements.



$$f_c = 150\,Hz = \frac{1}{2\pi \cdot R \cdot C} \Rightarrow C = \frac{1}{2\pi \cdot 10{,}000 \cdot 150} = 106\,nF \Rightarrow 100\,nF$$

$R = 10k\Omega$
$C = 100nF$

$$f_c = \frac{1}{2\pi \cdot 10k\Omega \cdot 100nF} = 159\,Hz$$