Reading an Encoder with an Arduino

Grand Valley State University

pdm

Encoder Signals Background

- https://youtu.be/jBjt1ZOb9PI

pdm

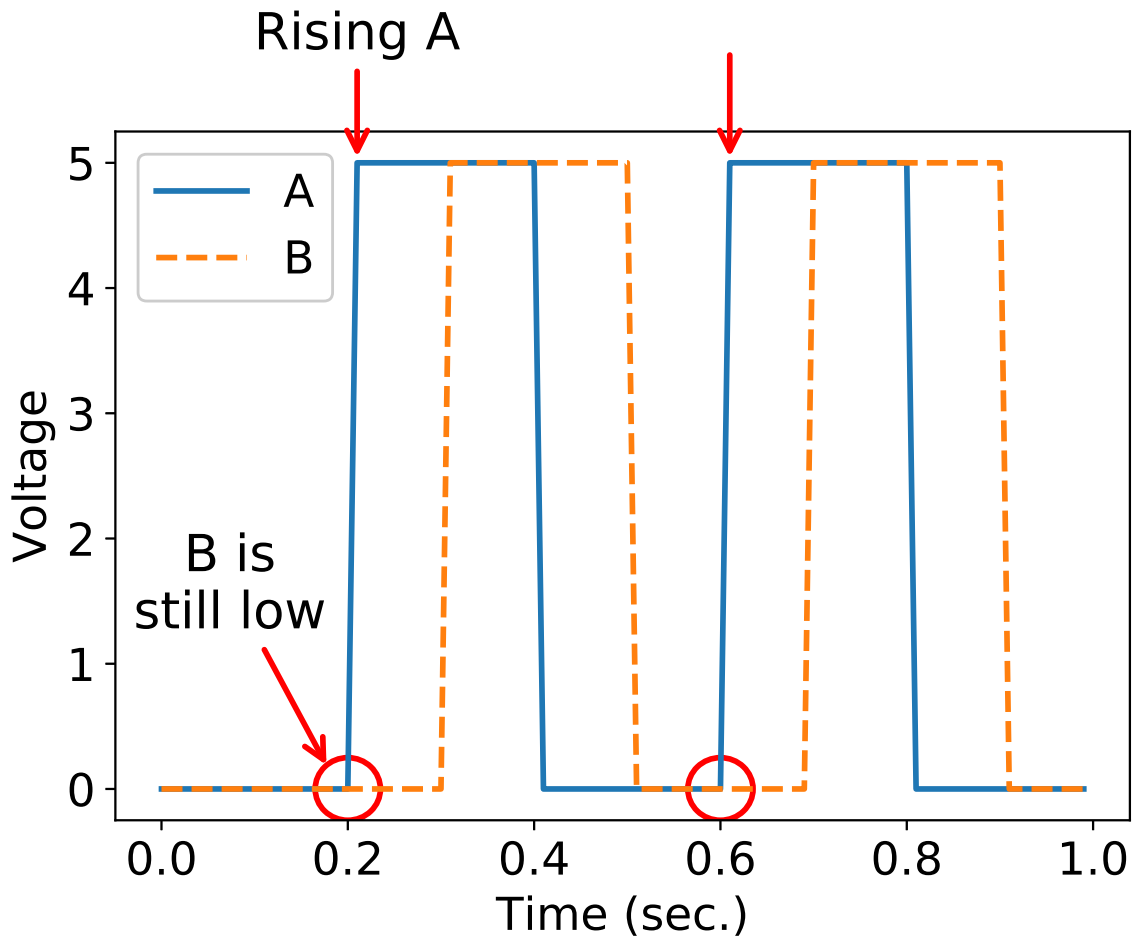
Big Ideas

- global variable `encoder_count`
- `encoder_count` gets incremented or decremented at each interrupt edge
  - rising edges of the encoder channel A for this example
- must specify a function called an interrupt service routine (ISR) to be called when the rising A edges occur
- the ISR determines whether to increment or decrement `encoder_count`

pdm

A Leading B

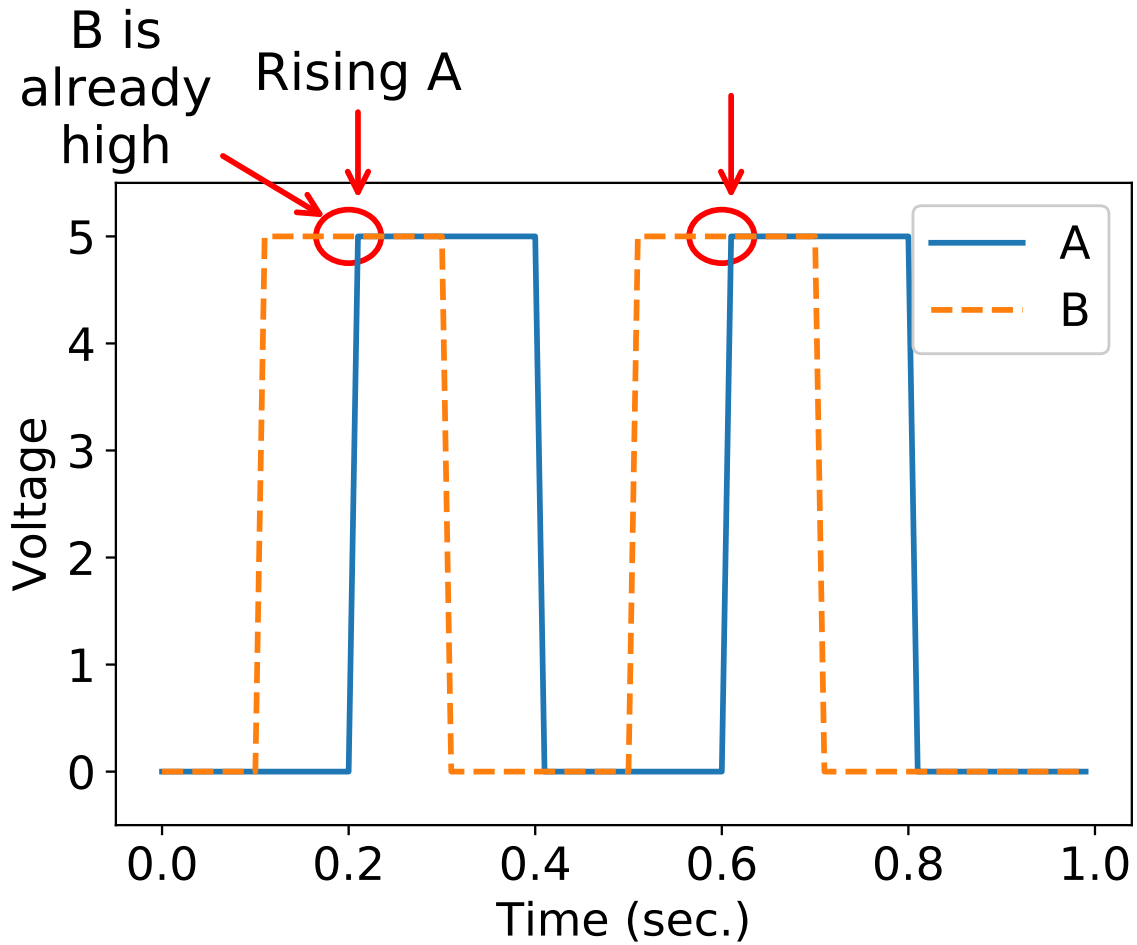
- positive rotation
- `encoder_count` should be incremented on each rising edge



pdm

B Leading A

- negative rotation
- `encoder_count` should be decremented on each rising edge



pdm

Arduino Code Overview

- define encoder pins A and B
  - encoder A must be connected to pin 2
  - set as inputs
  - might need to turn on pullup resistors
- attach interrupt 0 (pin 2) to function that determines whether to increment or decrement `encoder_count`
  - I called my function `doEncoderL`, but you can use any name
- print `encoder_count` in `loop` to verify that it is working
  - turn motor forward and backward and make sure `encoder_count` goes up and down

pdm

Arduino Starter Code

- https://drive.google.com/uc?export=download&id=1rUFAnH5lK7iD76E5lXdCtTjYBtr41NTY

pdm