

Digital Ports

Networks and Embedded Systems

Second Grade Level

Wolfgang Neff

Digital Ports (1)

- Basics

- Direction of pins

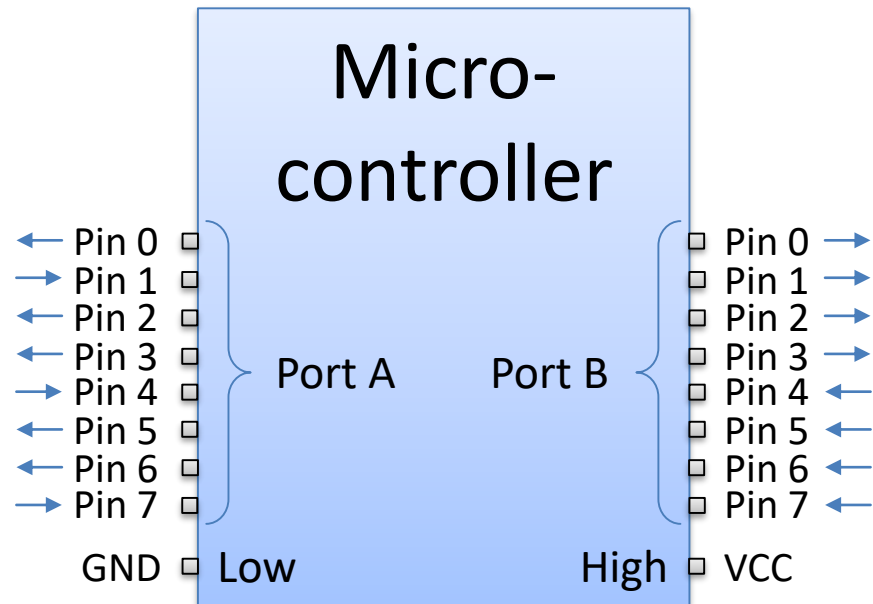
- Input
- Output

- State of pins

- 1: High (VCC)
- 0: Low (GND)

- Group of pins

- Ports

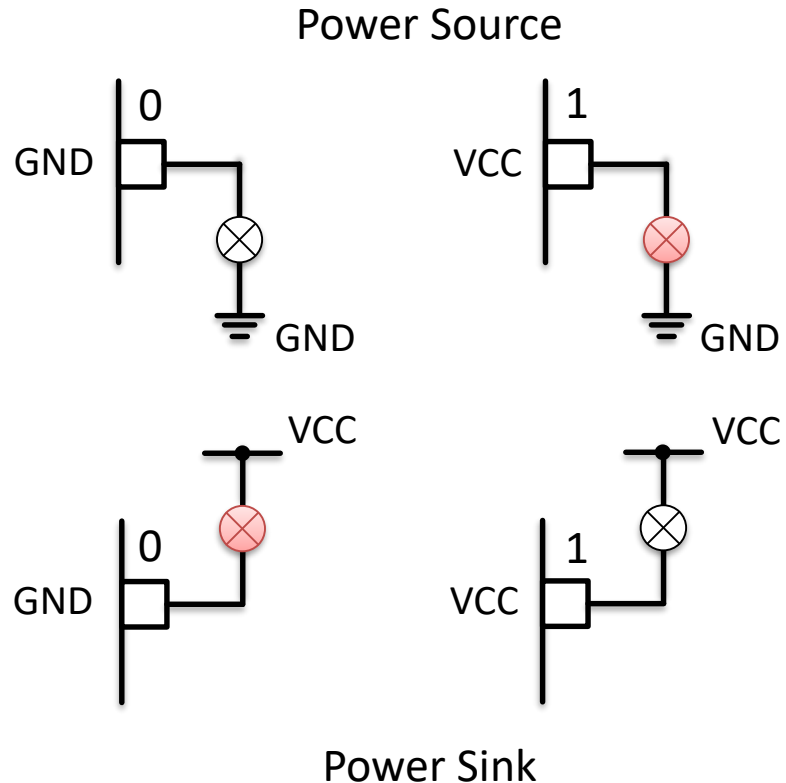


Digital Ports (2)

- Output Pins

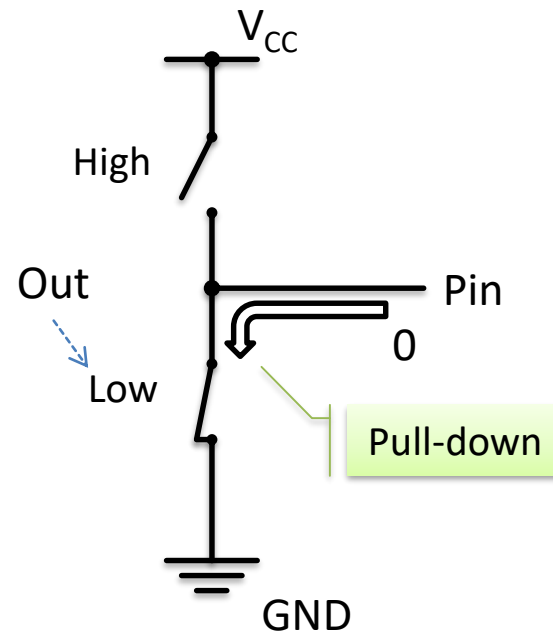
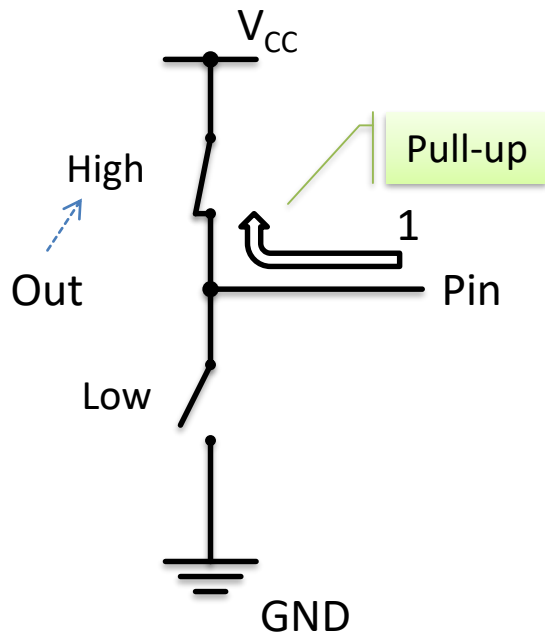
- Power sources

- High
 - Positive pole
 - Source
 - Low
 - Negative pole
 - Sink



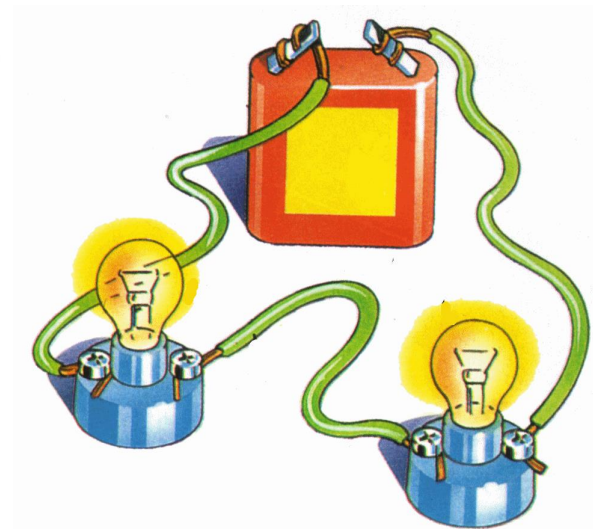
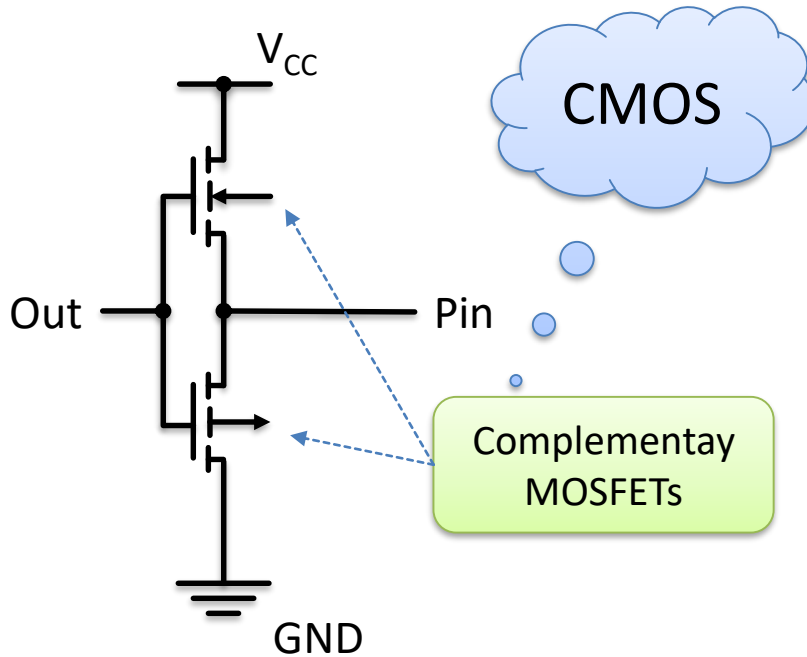
Digital Ports (3)

- Output Pins (continued)
 - Push-pull output



Digital Ports (4)

- Output Pins (finished)
 - Technical Implementation



Digital Ports (5)

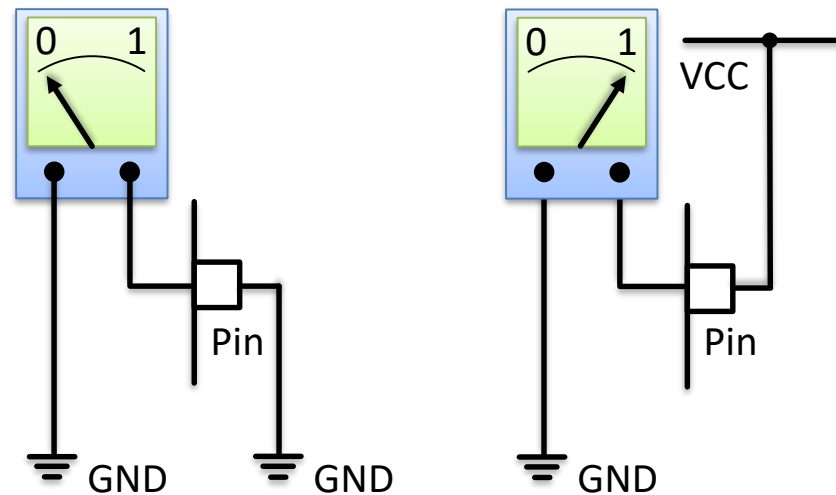
- Input pins

- Probes

- Voltmeter
 - GND → 0
 - VCC → 1

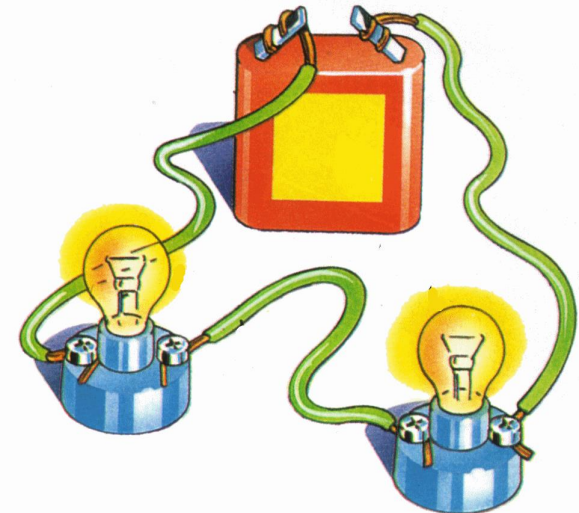
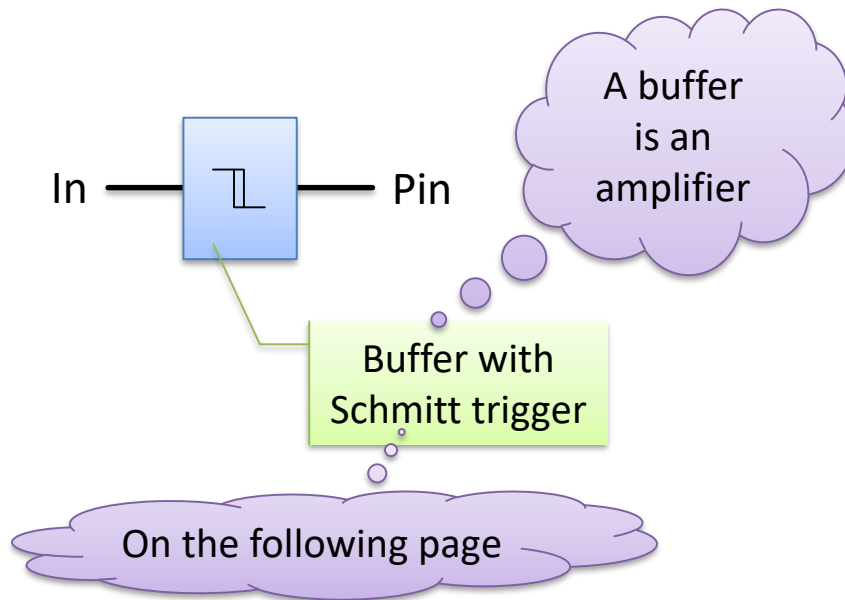
- No current

Voltage Probe



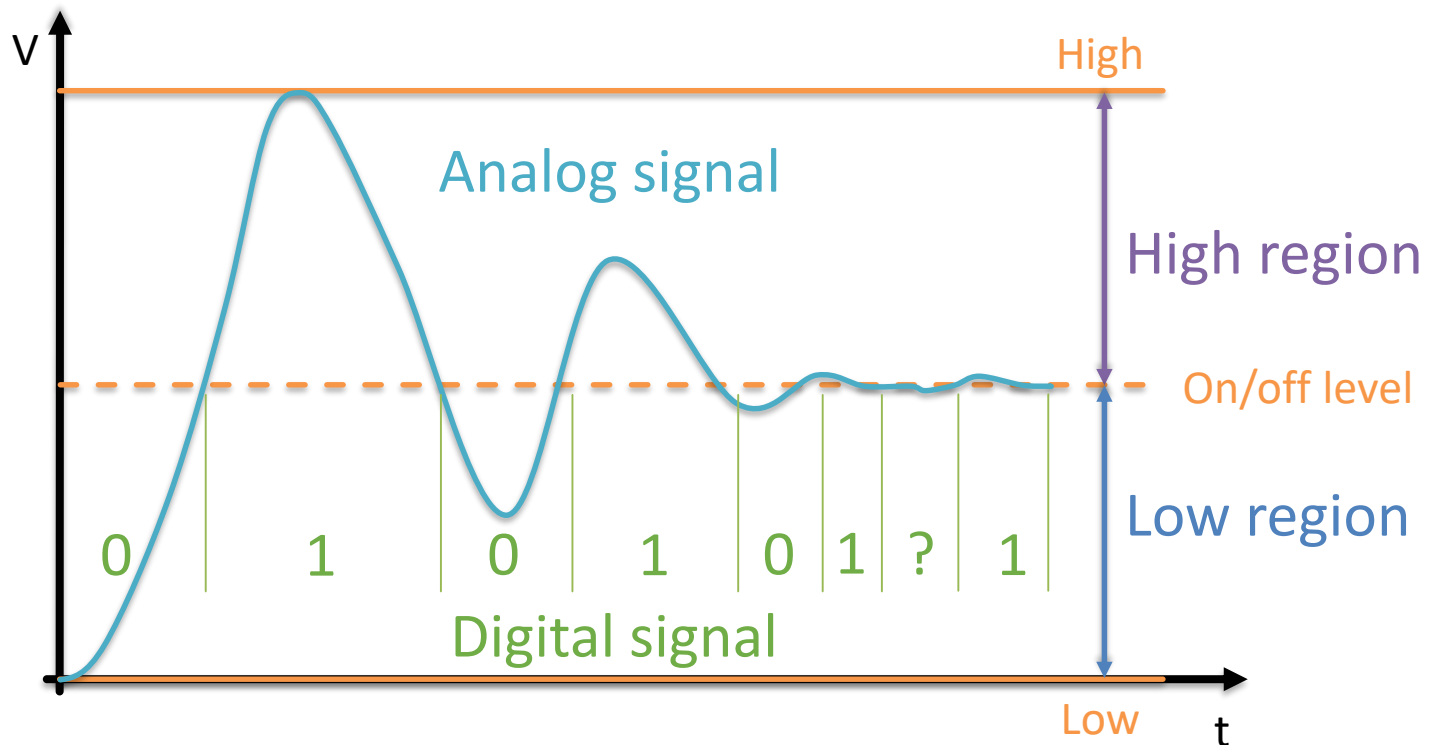
Digital Ports (6)

- Input pins (continued)
 - Technical Implementation



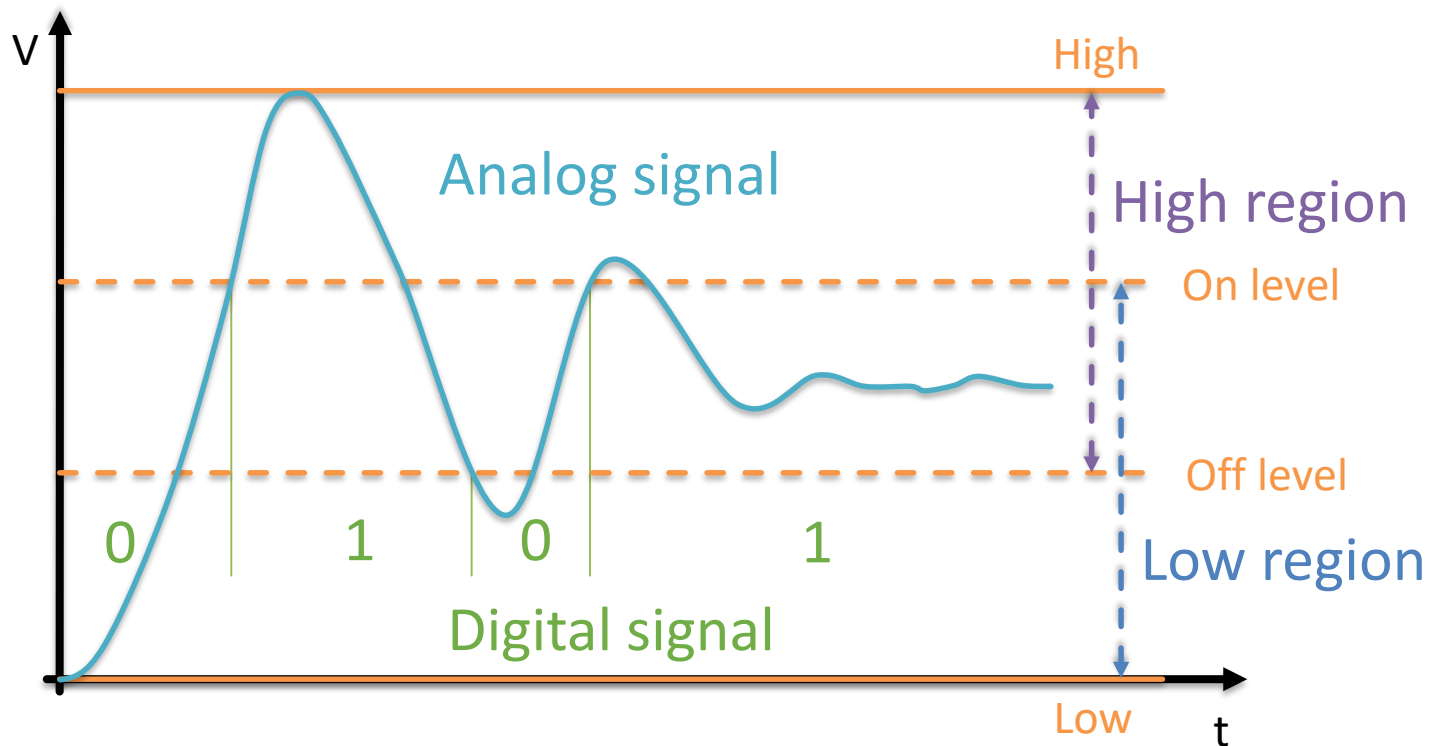
Digital Ports (7)

- Input pins (continued)
 - Without Schmitt trigger



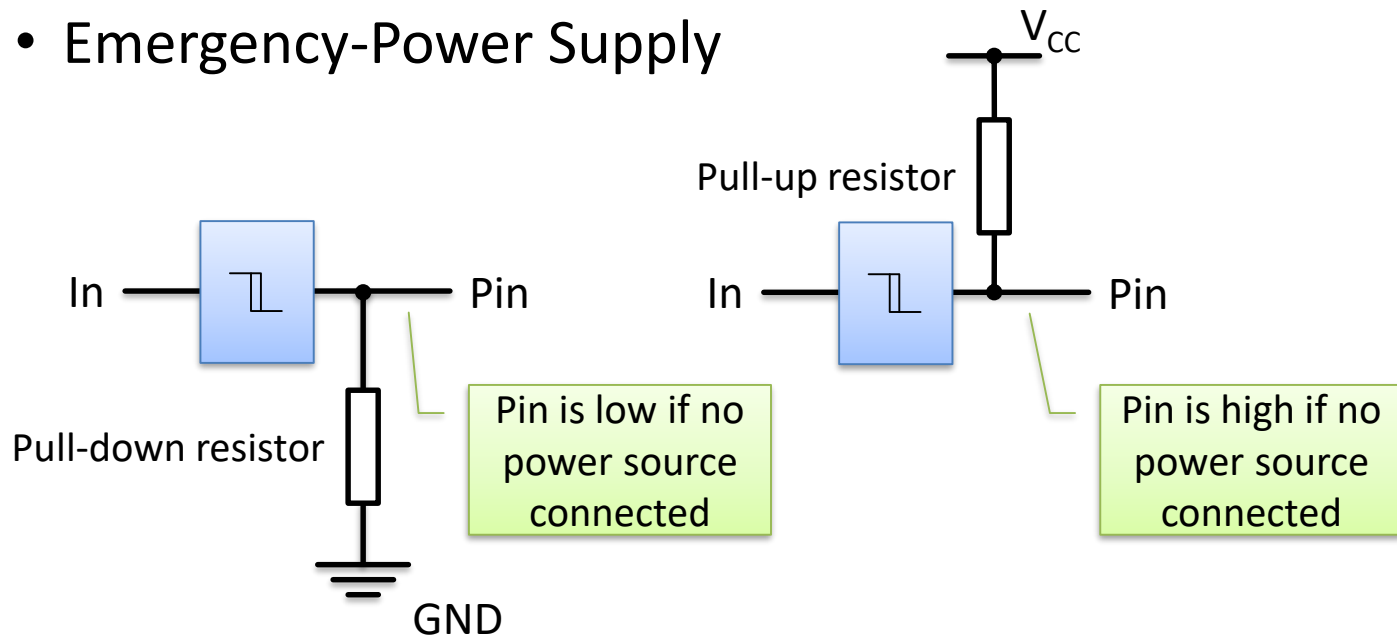
Digital Ports (8)

- Input pins (continued)
 - With Schmitt trigger



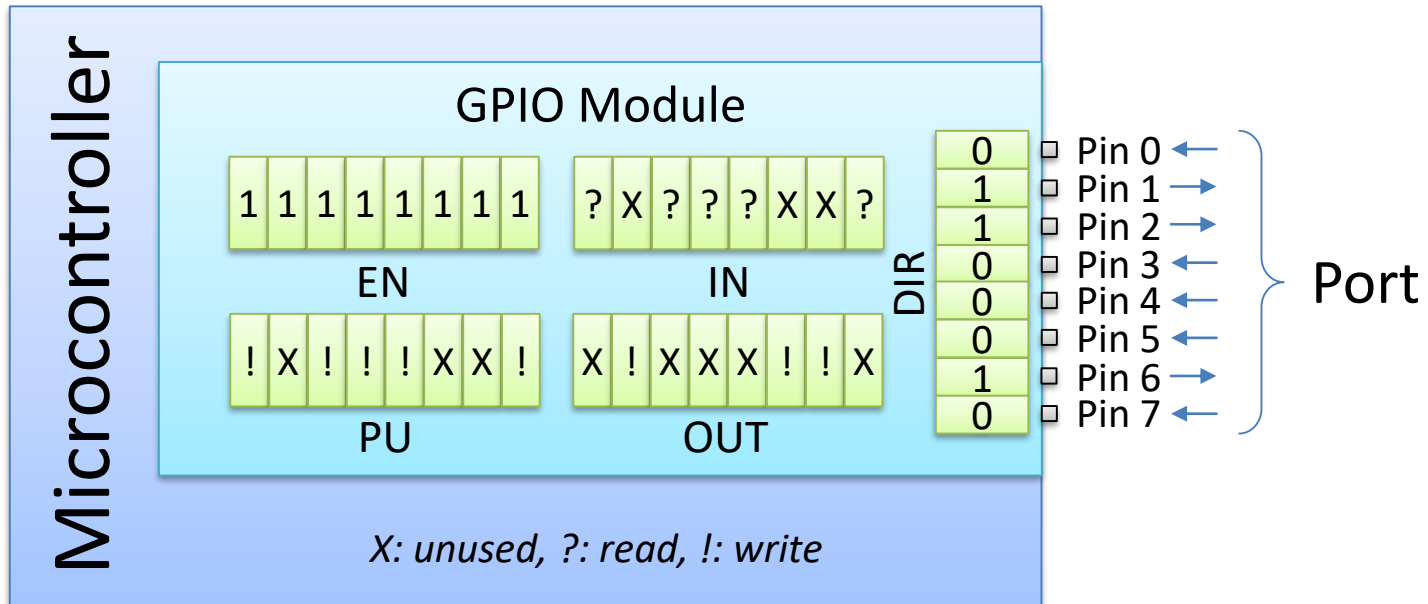
Digital Ports (9)

- Input pins (finished)
 - Pull Configuration
 - Emergency-Power Supply



Digital Ports (10)

- GPIO Module



Digital Ports (11)

- Electrical Characteristics
 - Operating voltage
 - Typ. 3.3 V / 5.0 V
 - Max pin current
 - Typ. 20.0 mA
 - Consult Datasheet

