

# Digital Ports

Networks and Embedded Software

Module 4.2.1

by Wolfgang Neff

# Digital Ports (1)

- Basics

- Pins are either

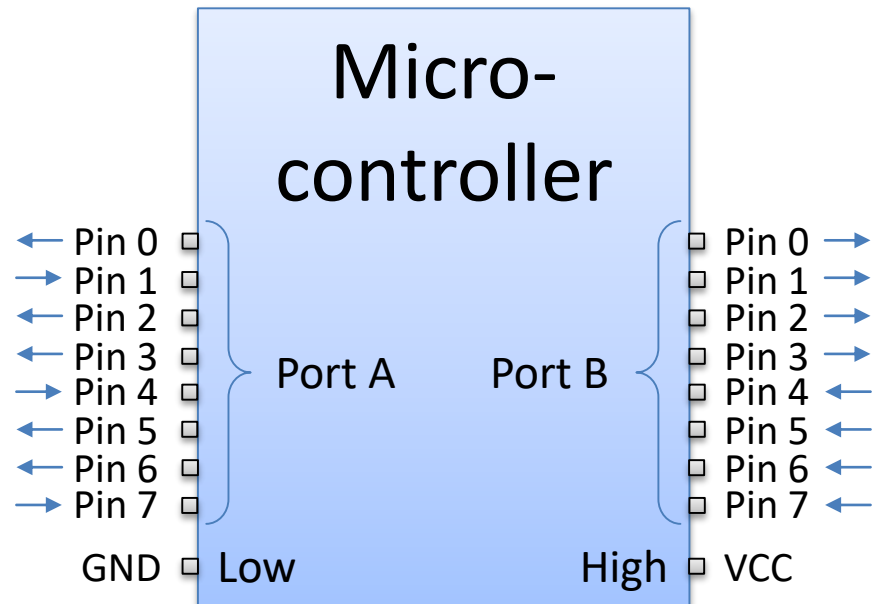
- Input
- Output

- Pins can be

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

- Ports

- Group of pins



# Digital Ports (2)

- Output pins

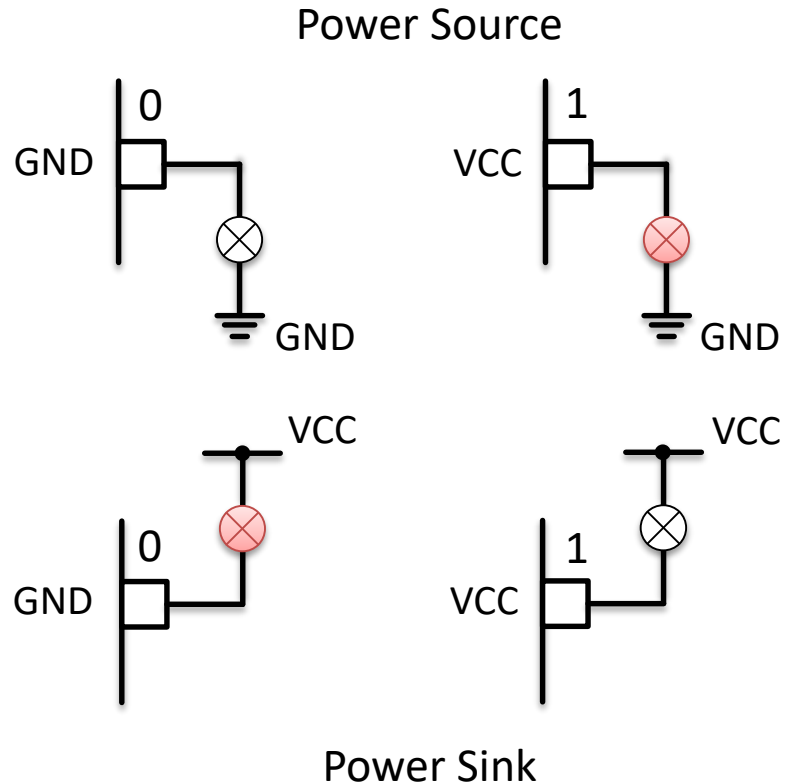
- Power sources

- High

- Positive pole
      - Source

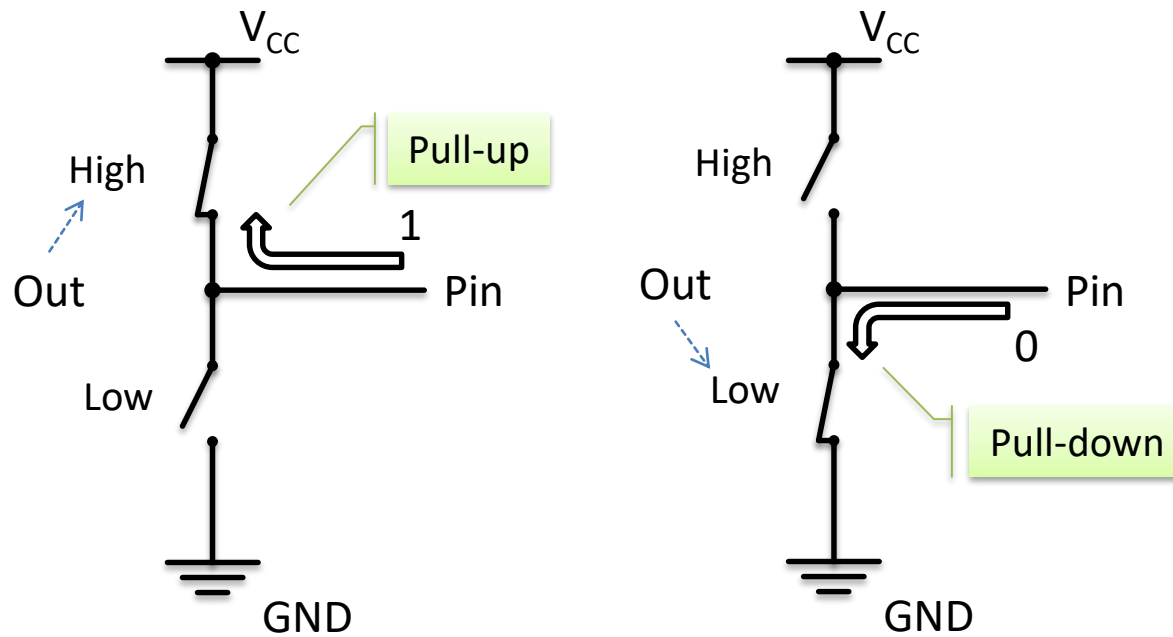
- Low

- Negative pole
      - Sink



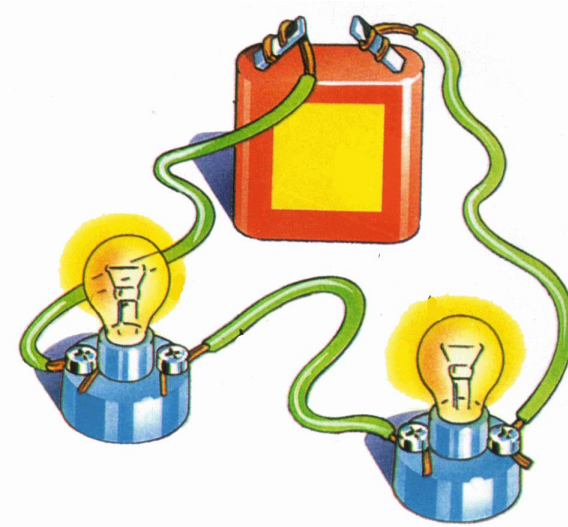
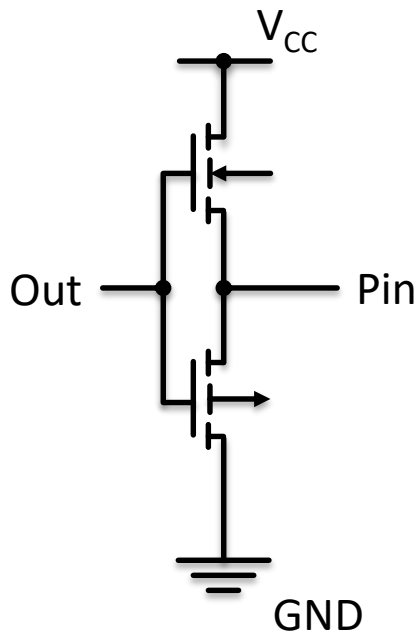
# Digital Ports (3)

- Output pins (continued)
  - Totem-pole configuration



# Digital Ports (4)

- Output pins (finished)
  - Technical Implementation



# Digital Ports (5)

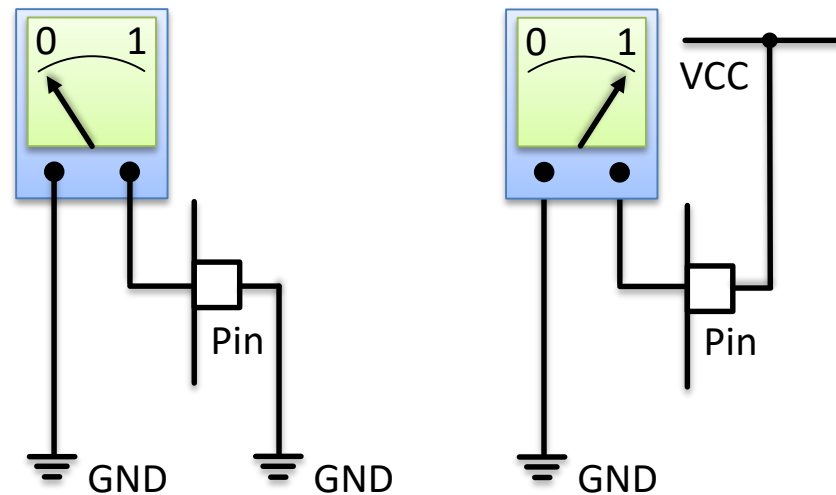
- Input pins

- Probes

- Voltmeter
    - GND → 0
    - VCC → 1

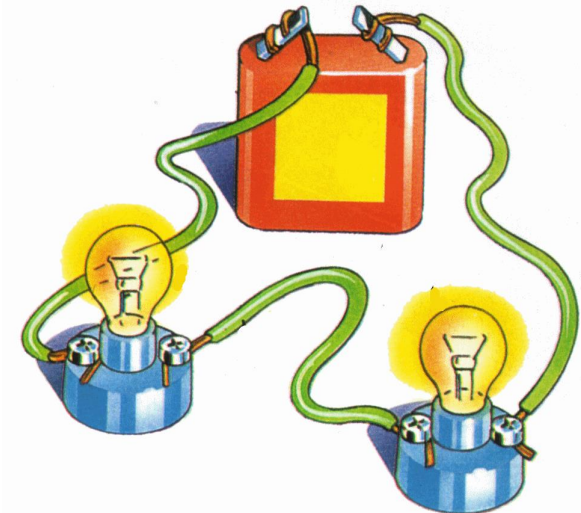
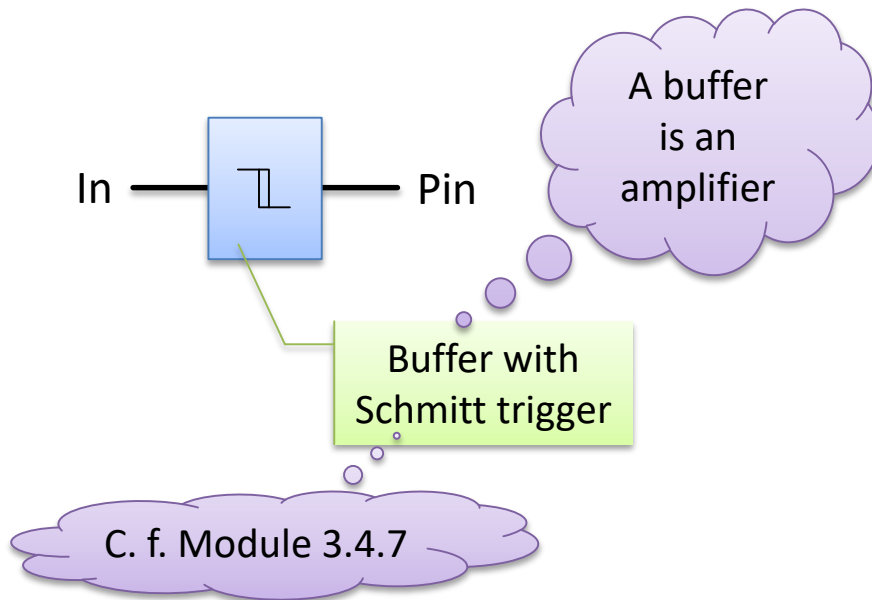
- No current

## Voltage Probe



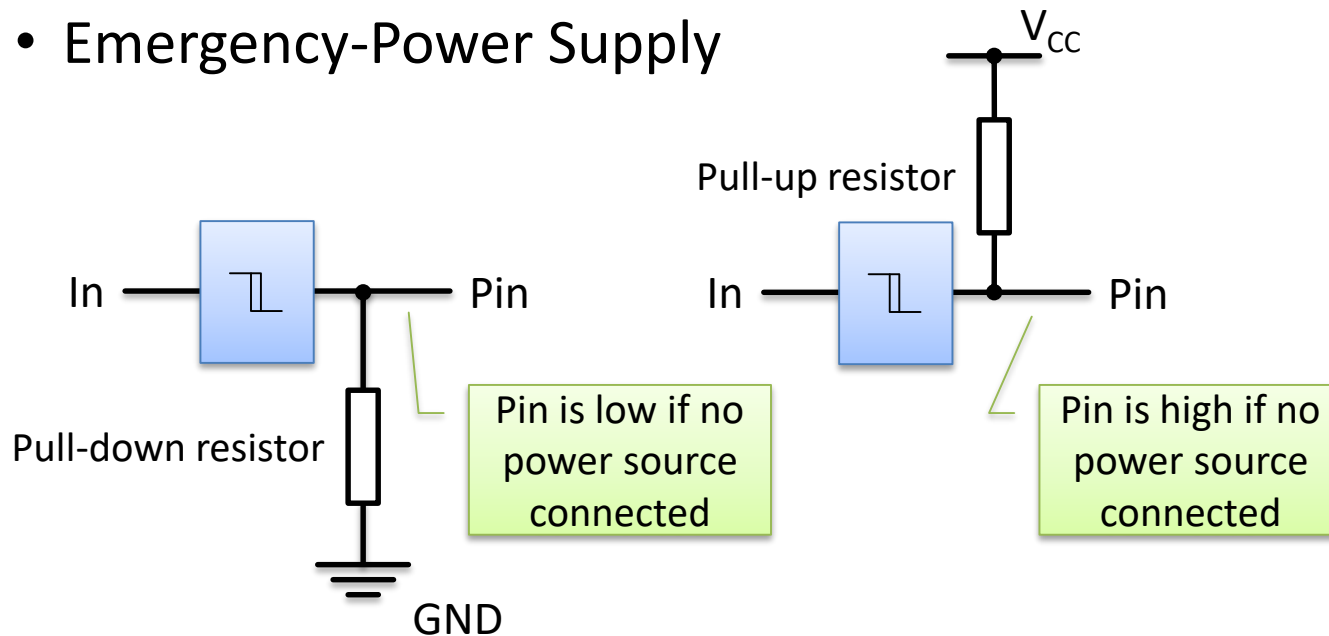
# Digital Ports (6)

- Input pins (continued)
  - Technical Implementation



# Digital Ports (7)

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





# Digital Ports (8)

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

