Übungen zur TI

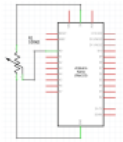
4.Übung

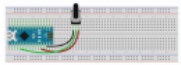
Inhalt

- Zusammenfassung der letzten Woche
- Verbesserung der Hausaufgabe
- Motor
  - Motor mit Button
  - Motor Strom messen
  - Motor mit Transistor
- Piezo Speaker
  - Piezo input
  - Piezo ToneMelody
  - Piezo
- Testat

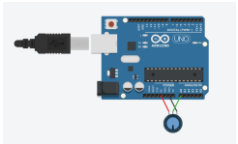
Zusammenfassung Übung 3

01.Basics
→ AnalogReadSerial

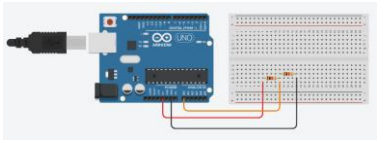




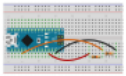
Starter Arduino
→ Analogeingang

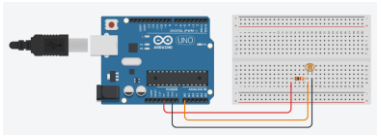


Pull-up Pull-down

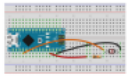


Spannung messen

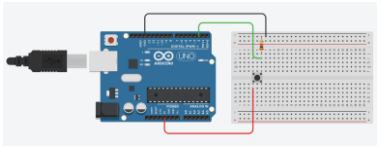




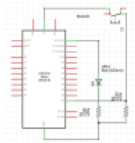
Widerstand messen

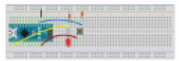


LDR messen

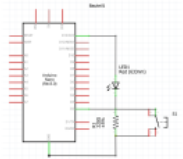


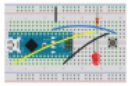
02.Digital
→ Button



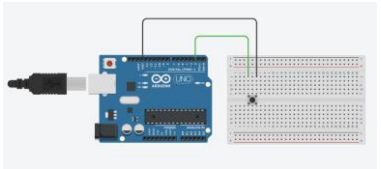


02.Digital
→ DigitalInputPullup



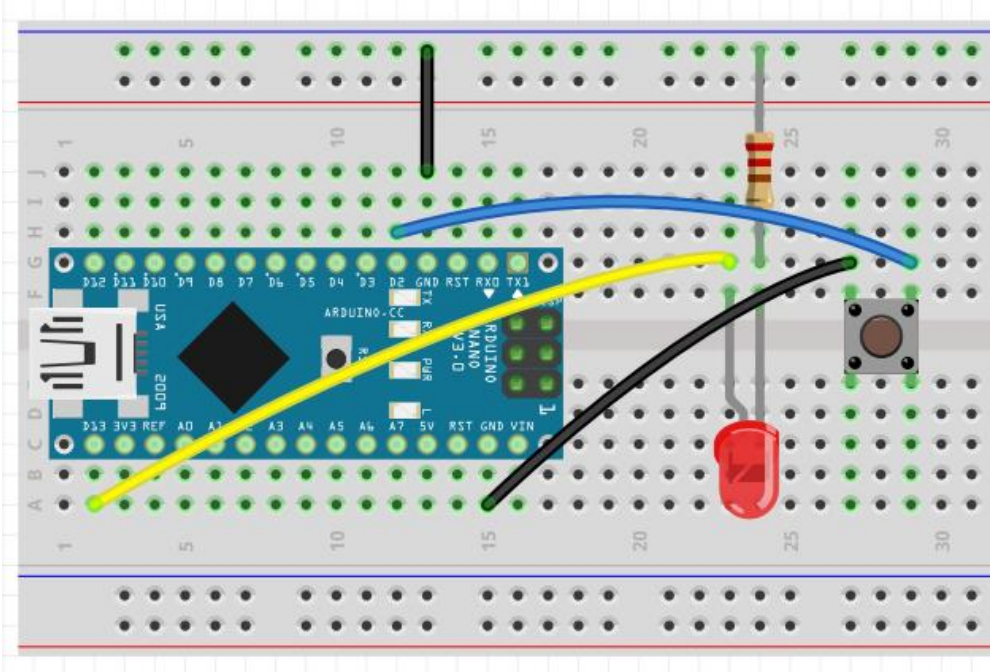


Starter Arduino
→ Seriellen Pullup eingeben



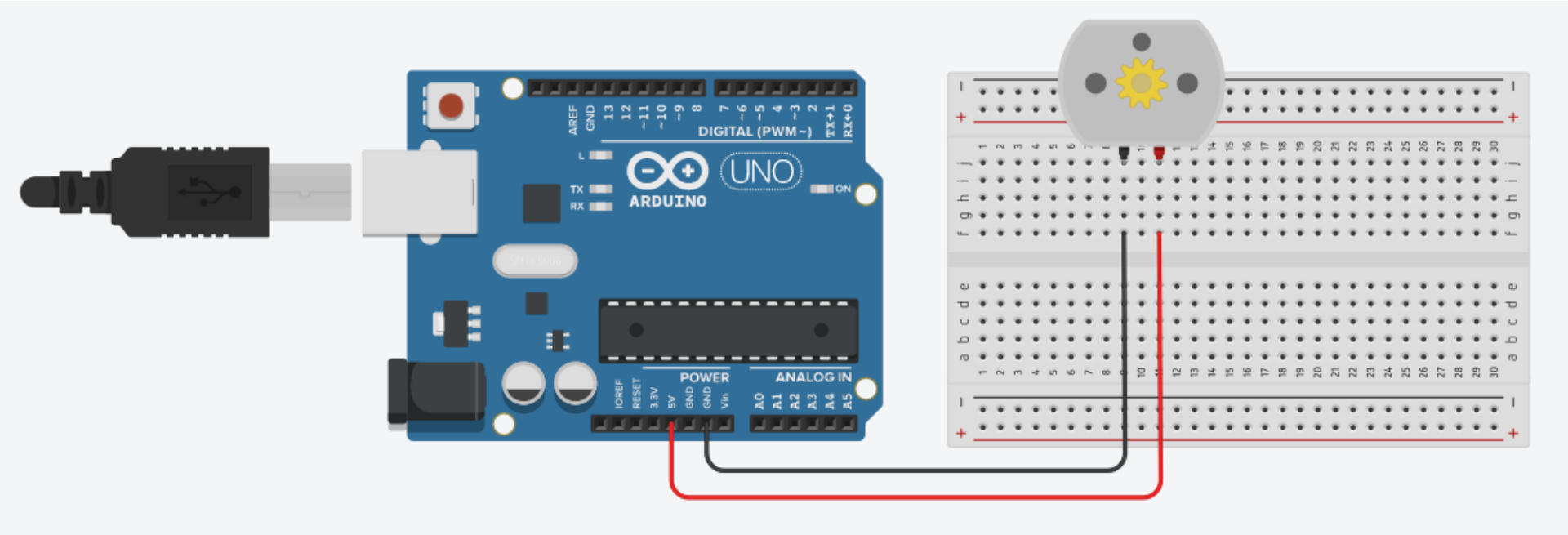
Testat Übung 3

Ein Arduino sketch
mit einer Funktion “ledBlinken”,
der fünf mal das LED blinkt,
wenn man den Pushbutton drückt.



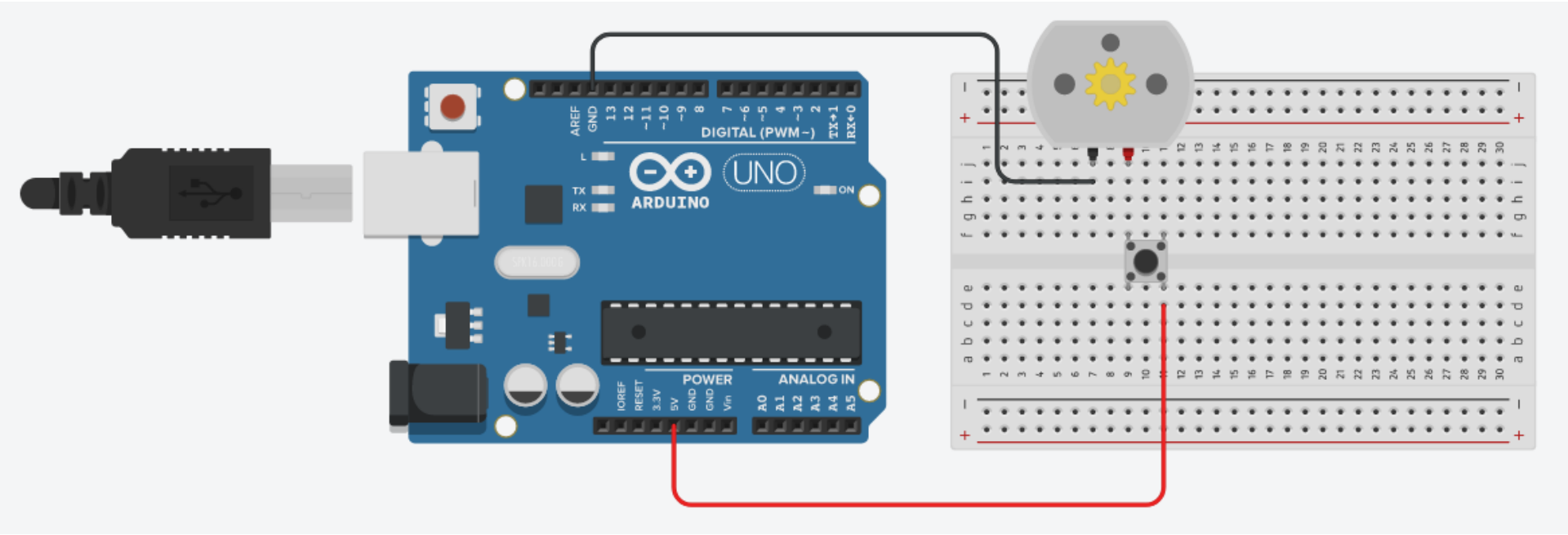
Motor

Motor an 5V und GND



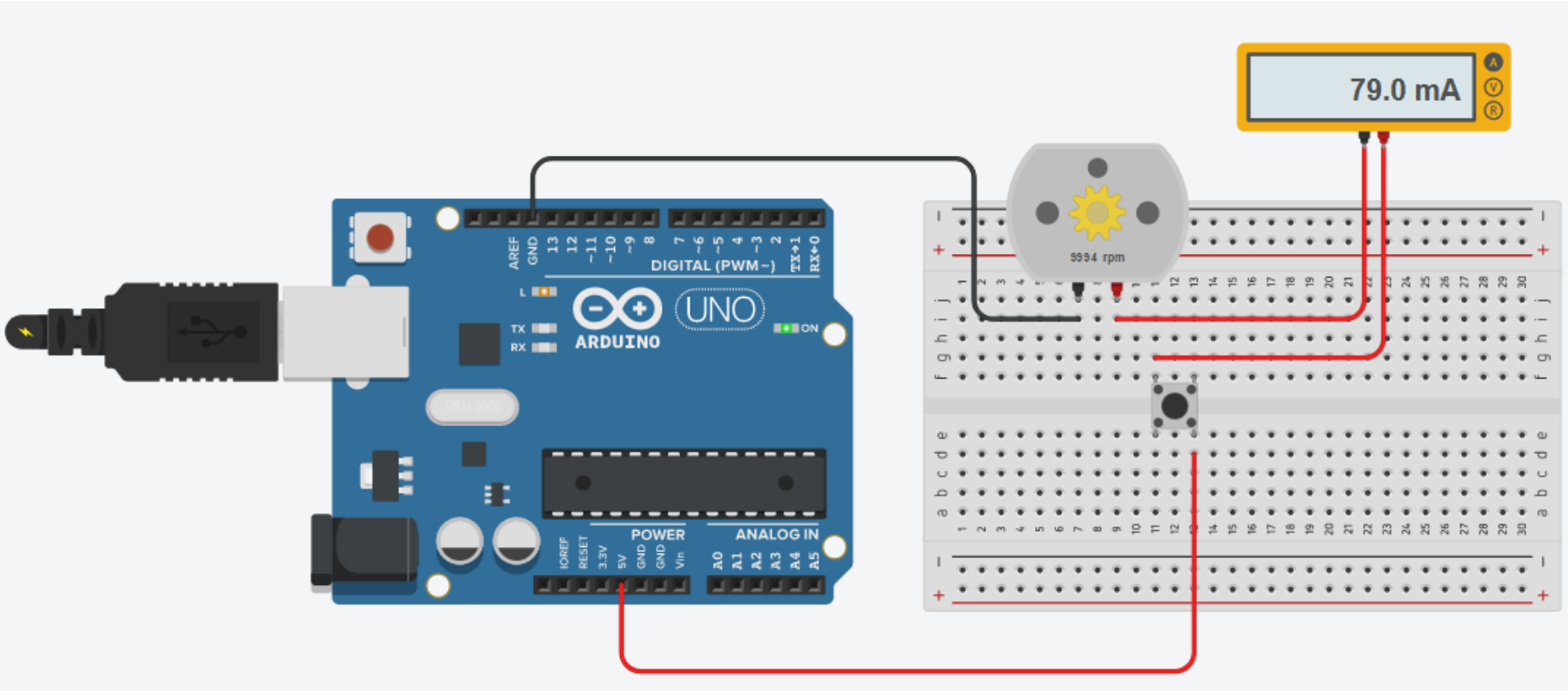
Motor

Motor mit Schalter



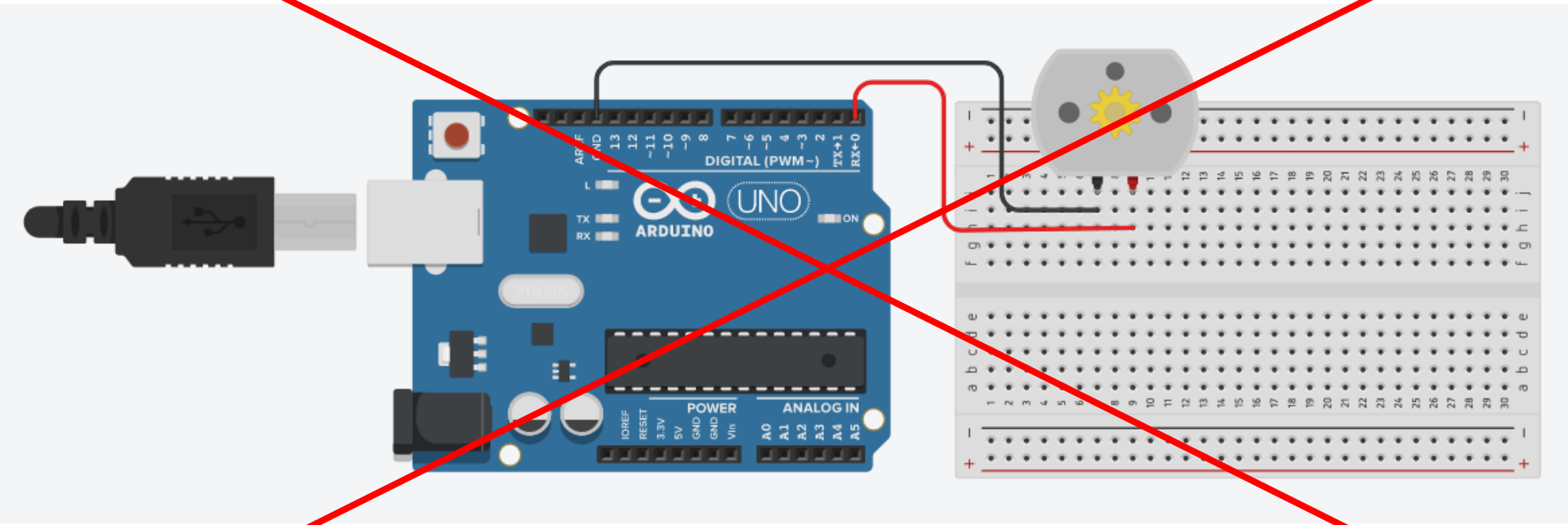
Motor

Strom messen



Motor

Motor an digitalem Pin



Motor

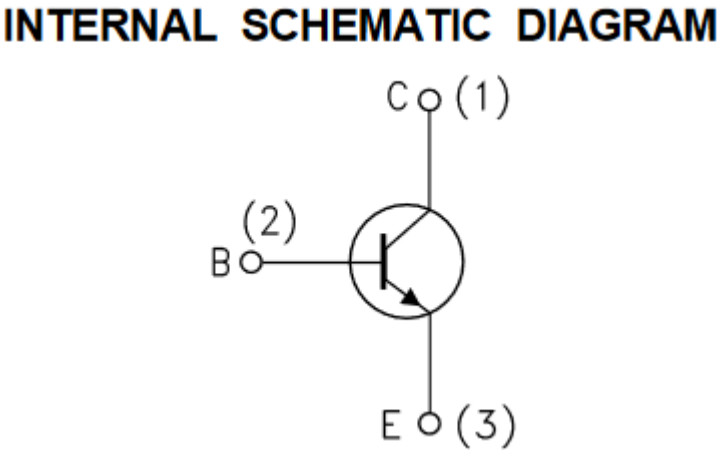
https://store.arduino.cc/arduino-uno-rev3

OVERVIEW | TECH SPECS | DOCUMENTATION | FAQ

Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA

Motor

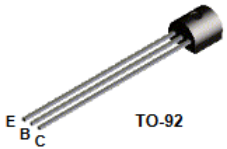
Datasheet BC547C

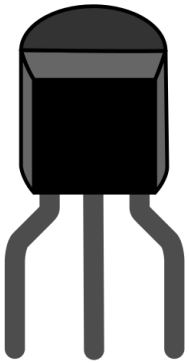


FAIRCHILD SEMICONDUCTOR™

Discrete POWER & Signal Technologies

BC547
BC547A
BC547B
BC547C





Collector Base Emitter

BC547 / BC547A / BC547B / BC547C

NPN General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300 mA. Sourced from Process 10. See PN100A for characteristics.

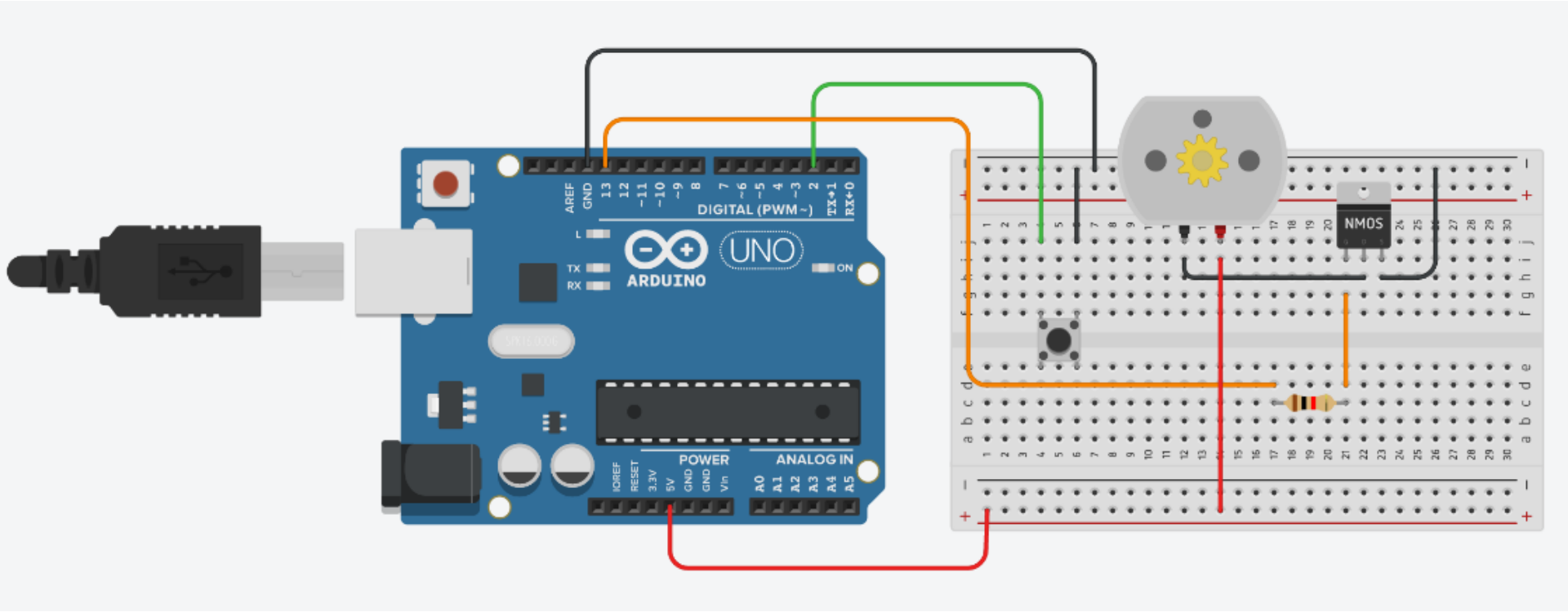
Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	45	V
V_{CES}	Collector-Base Voltage	50	V
V_{EBO}	Emitter-Base Voltage	6.0	V
I_C	Collector Current - Continuous	500	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

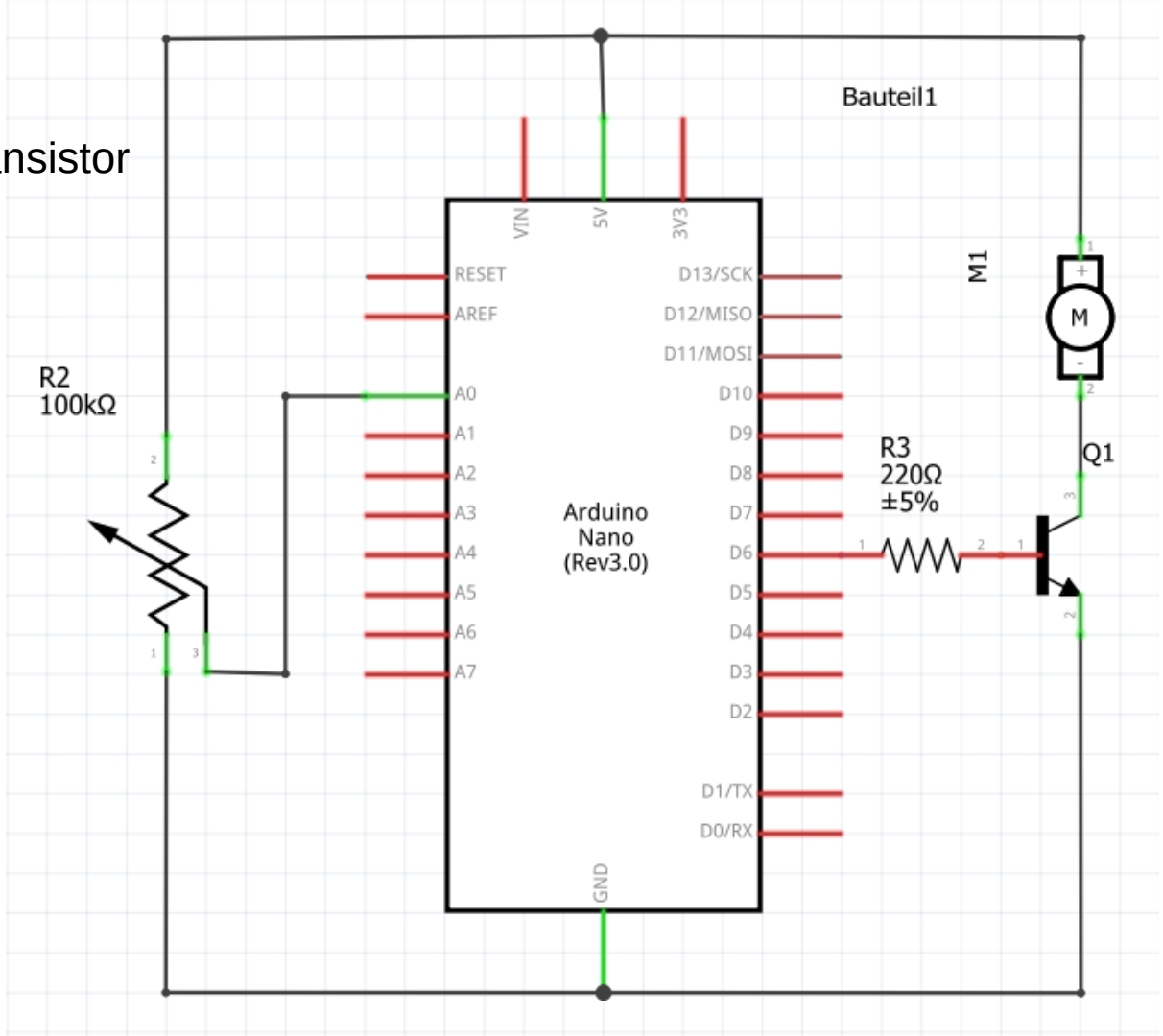
Motor

Motor mit Transistor



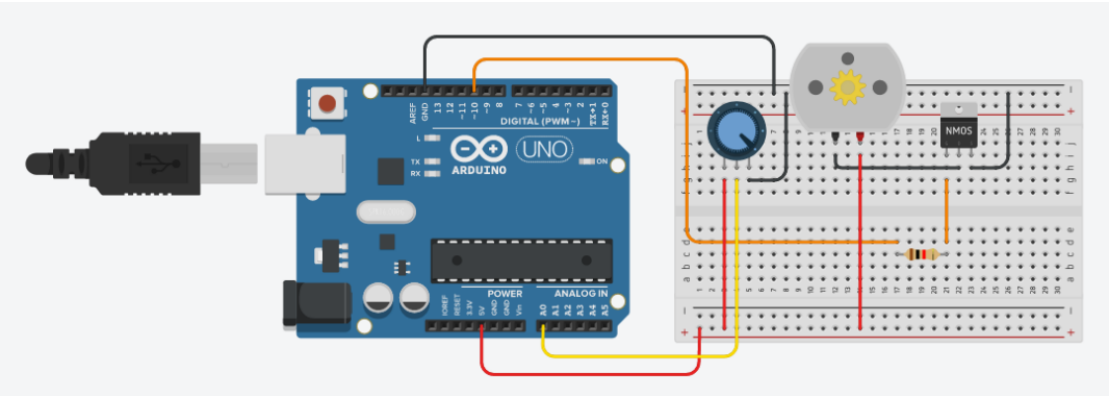
Motor

Motor mit Transistor



Motor

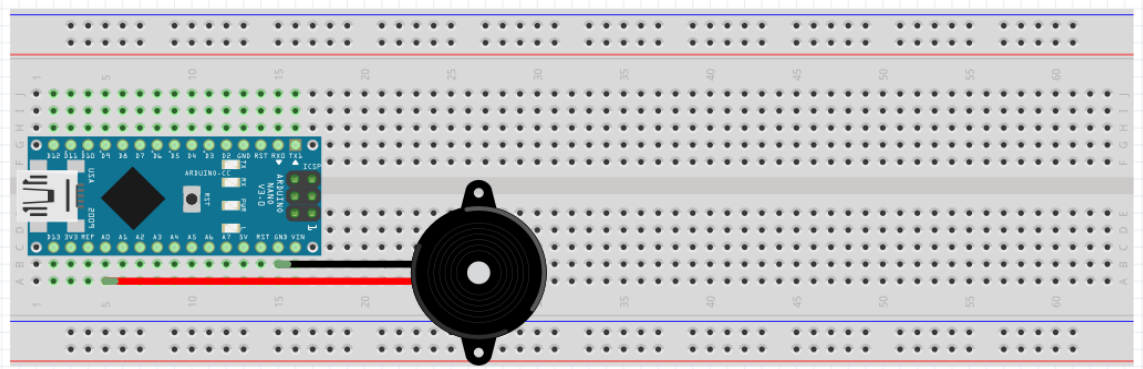
Steuerung der Geschwindigkeit mit Potentiometer

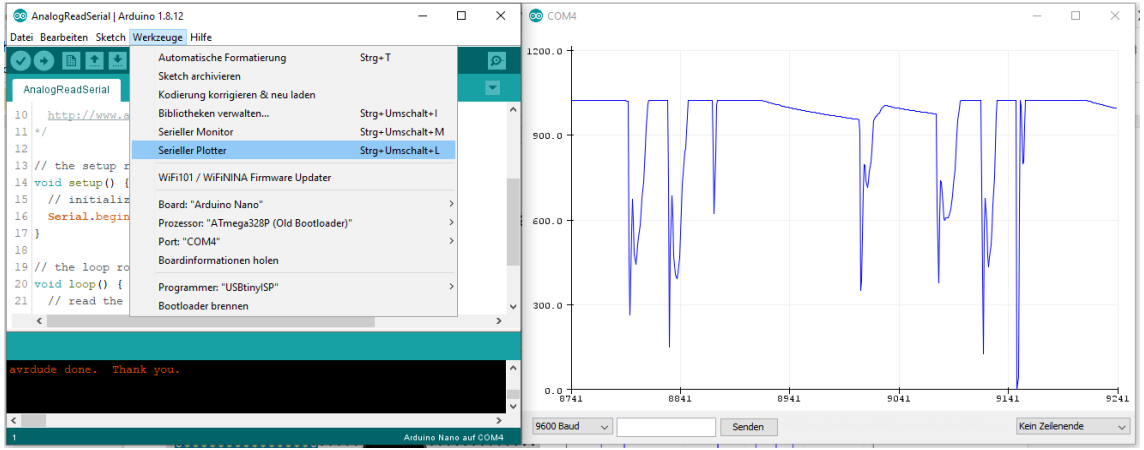



```
int sensorValue = 0;  // variable to
store the value coming from the sensor

void setup() {
  // declare the ledPin as an OUTPUT:
  pinMode(6, OUTPUT);
}

void loop() {
  // read the value from the sensor:
  sensorValue = analogRead(A0);
  // write the value as PWM to pin10
  analogWrite(6, sensorValue/8);

}
```

Piezo Speaker

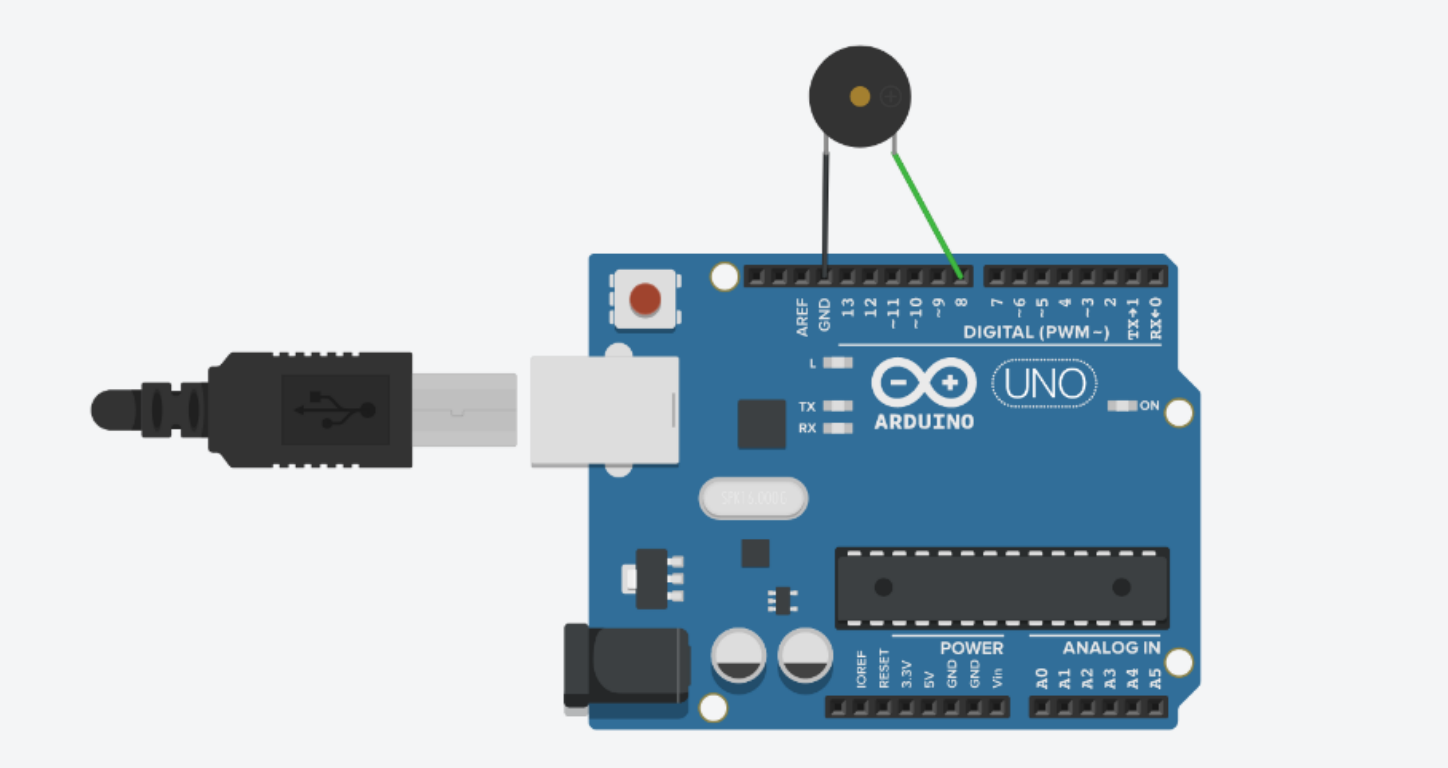
https://www.arduino.cc/en/Tutorial/BuiltInExamples/AnalogReadSerial





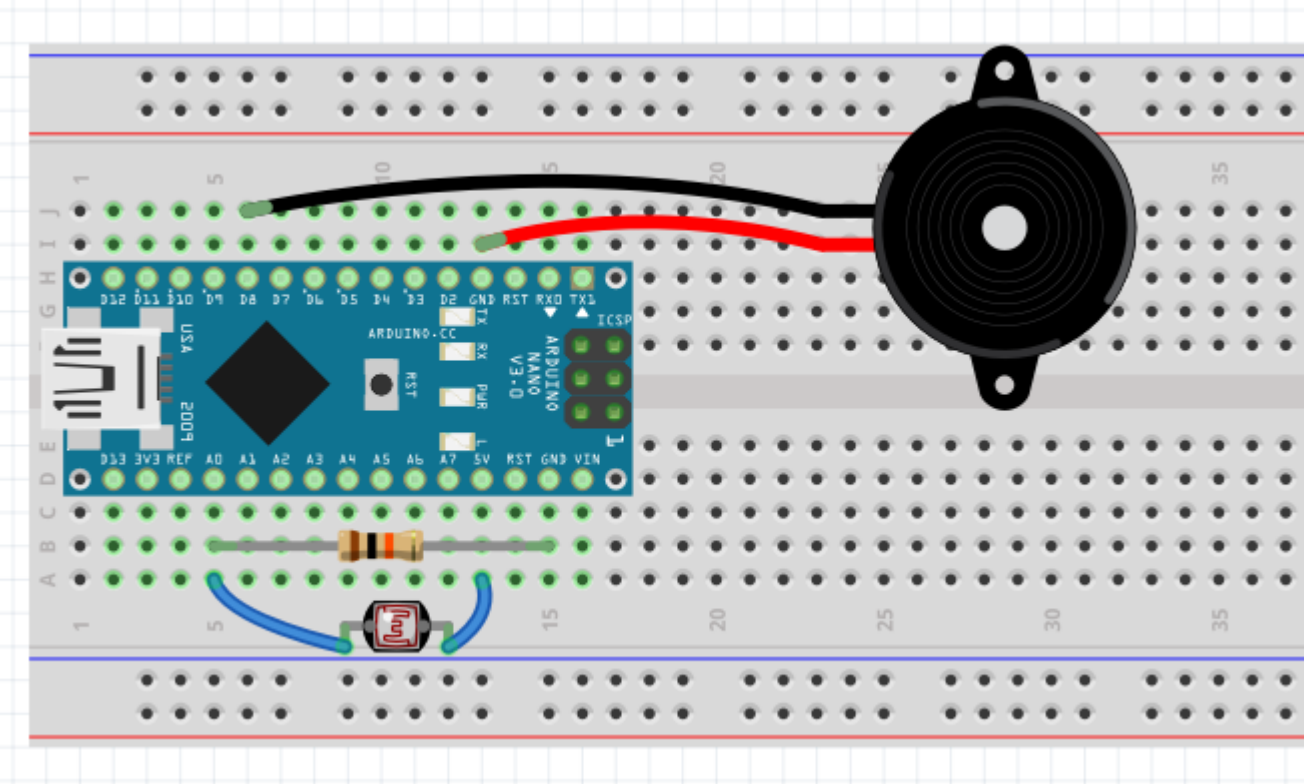
Piezo Speaker

Starter Arduino → Ton-Melodie



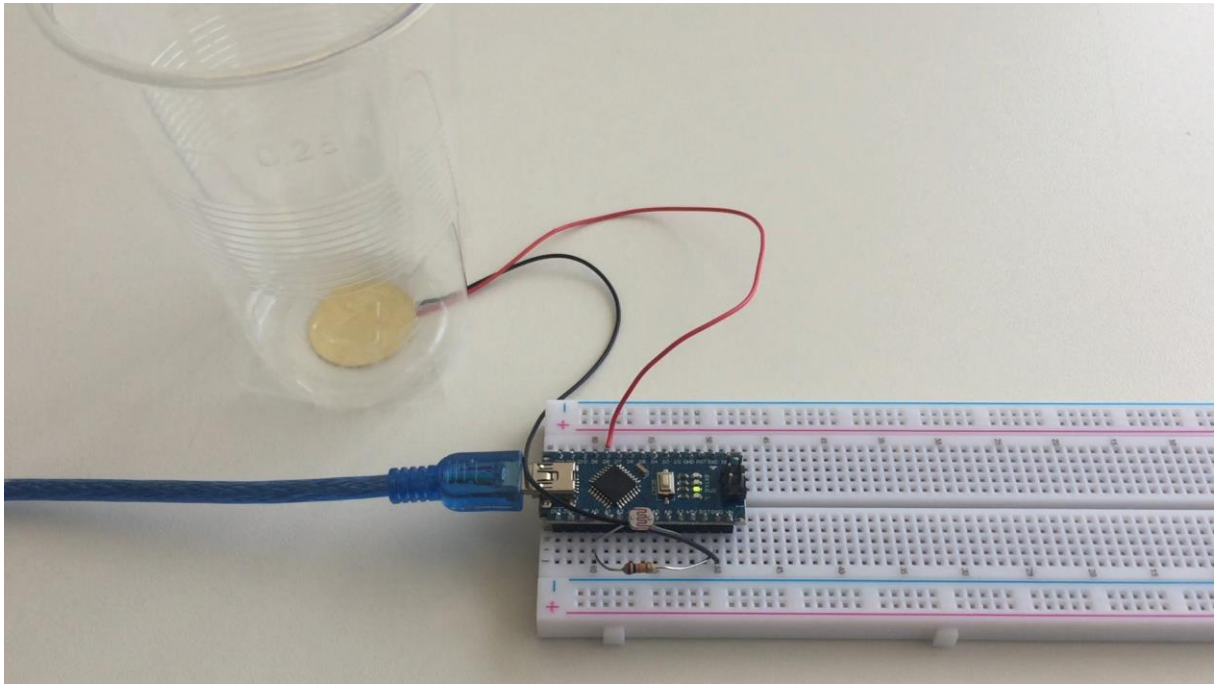
Piezo Speaker

https://programminginarduino.wordpress.com/2016/03/02/project-06/



Testat

Programmiere eine Melodie die sich wiederholt und von dem Lichtsensor beeinflußt wird.



Vielen Dank fürs Mitmachen!

Ferdinand Meier
FME@hsrw.eu

Bis übernächste Woche!