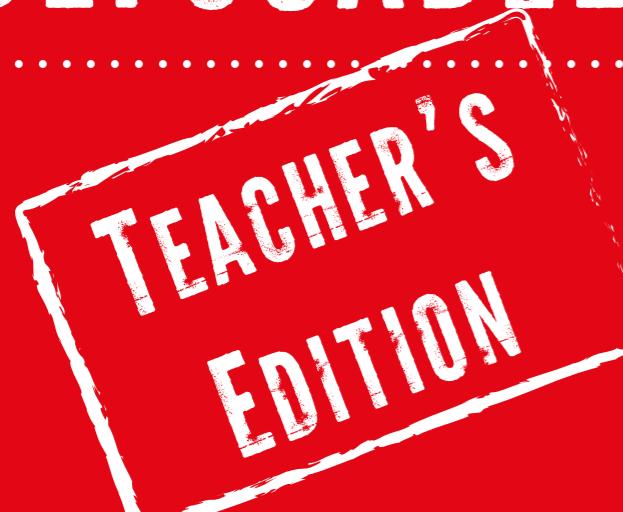


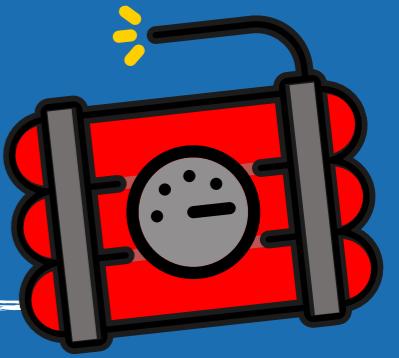
DEFUSABLE ALARM CLOCK MET ARDUINO



i&i praktijkdag 2017 - Johan Korten

jakorten@jksoftedu.nl

WAT GAAN WE DOEN



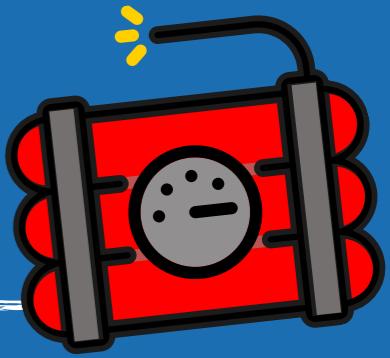
Download bestanden incl. handleiding van:

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DEFUSABLE ALARM CLOCK MET ARDUINO

WAT GAAN WE DOEN

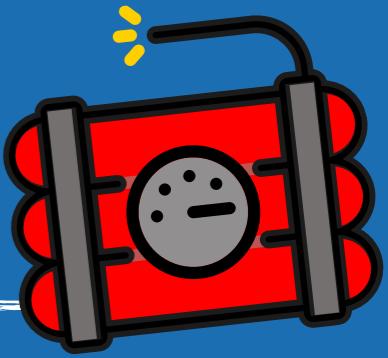


- Werken met libraries
- LED's laten branden
- Knoppen, draden en tilt-sensor lezen
- Timer met Millis()
- Buzzer
- Werken met i2c
- Werken met de HT16K33 en Segment Display
- Real Time Clock met DS3231



DEFUSABLE ALARM CLOCK MET ARDUINO

WERKEN MET LIBRARIES

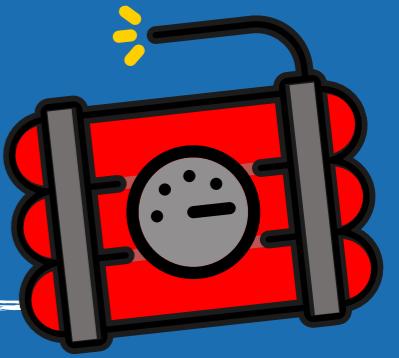


- Twee mappen:
 - Arduino / Libraries
 - Documenten / Arduino / Libraries
- .cpp en .h files (C++)
- Vaak ook voorbeelden!



DEFUSABLE ALARM CLOCK MET ARDUINO

LED'S LATEN BRANDEN



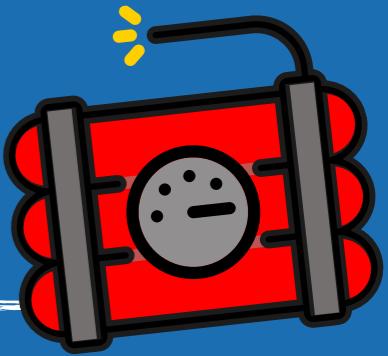
Zie H11: Gebruikte pinnen, Tabel 1.

- Twee acties:
 - a. pinMode(pin, OUTPUT)
 - b. digitalWrite(pin, HIGH/LOW)

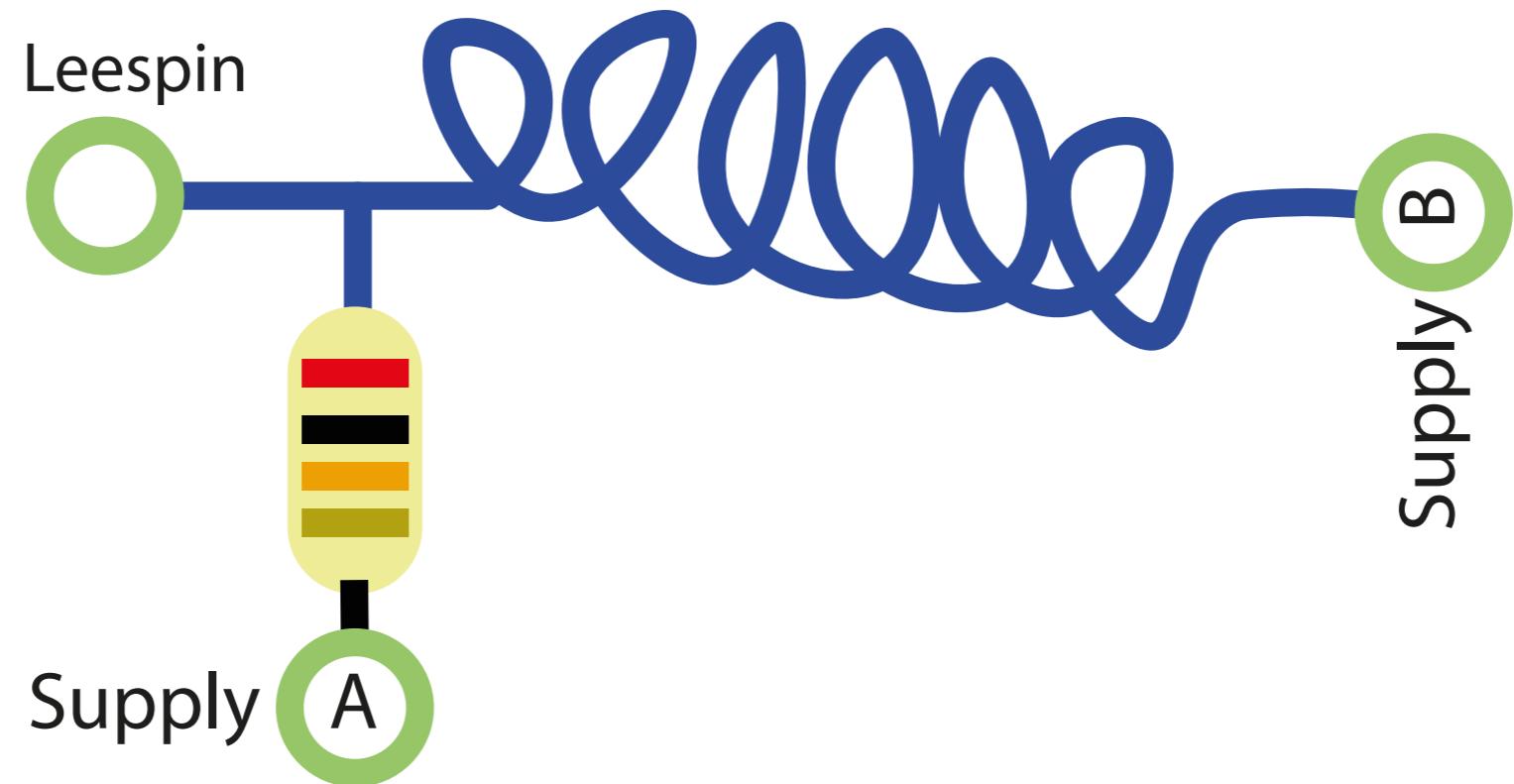


DEFUSABLE ALARM CLOCK MET ARDUINO

KNOPPEN, DRADEN EN TILT-SENSOR LEZEN



Floaten voorkomen met pull-up of pull-down.

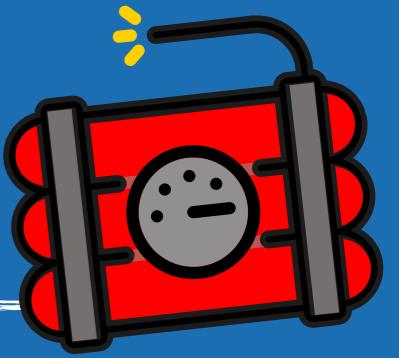


Optie 1. A aan GND en B aan 5V.

Optie 2. A aan 5V en B aan GND.



KNOPPEN, DRADEN EN TILT-SENSOR LEZEN



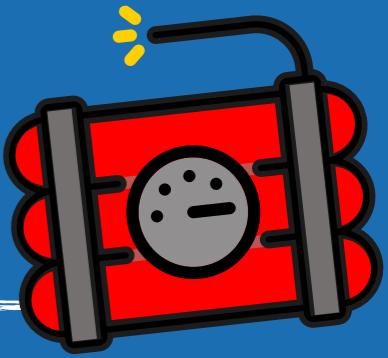
Zie H11: Gebruikte pinnen, Tabel 1.

- Twee acties:
 - a. pinMode(pin, INPUT)
 - b. digitalRead(pin)



DEFUSABLE ALARM CLOCK MET ARDUINO

TIMER MET MILLIS()

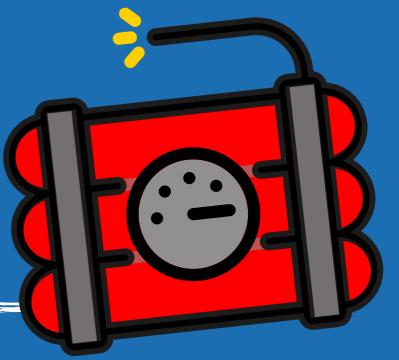


- Voorkom “blokkerende” acties
- unsigned long mijnTimer = 0;
const int mijnTimerTijd = 5000;
- if (millis() > mijnTimer + mijnTimerTijd) {
 mijnTimer = millis();
 // doe iets (bijv. LED laten knipperen).
}



DEFUSABLE ALARM CLOCK MET ARDUINO

BUZZER

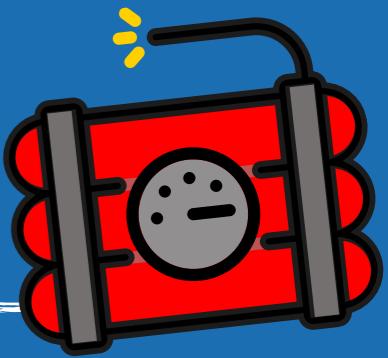


- Zit op PWM pin
- Wat is PWM?

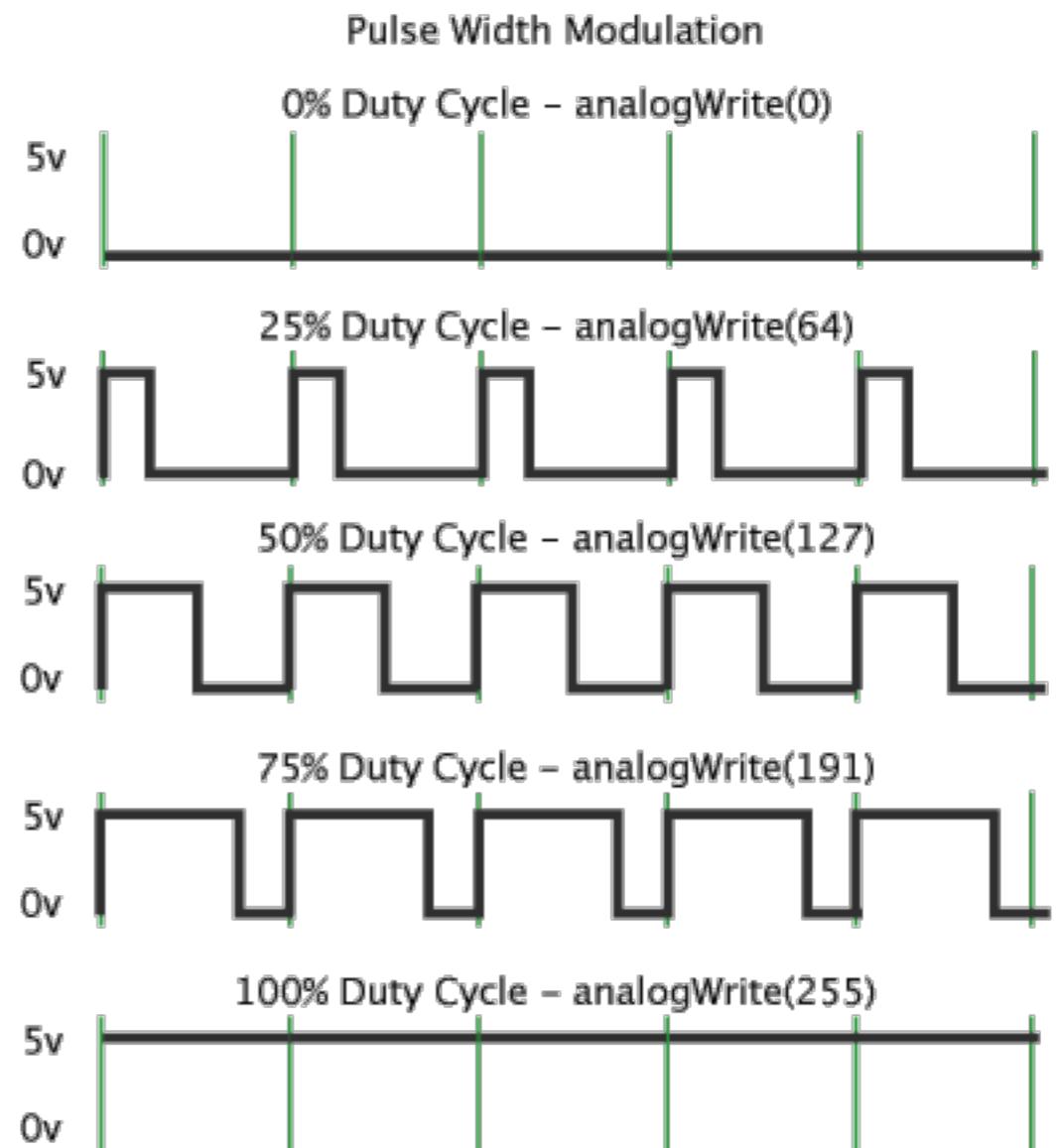


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BUZZER



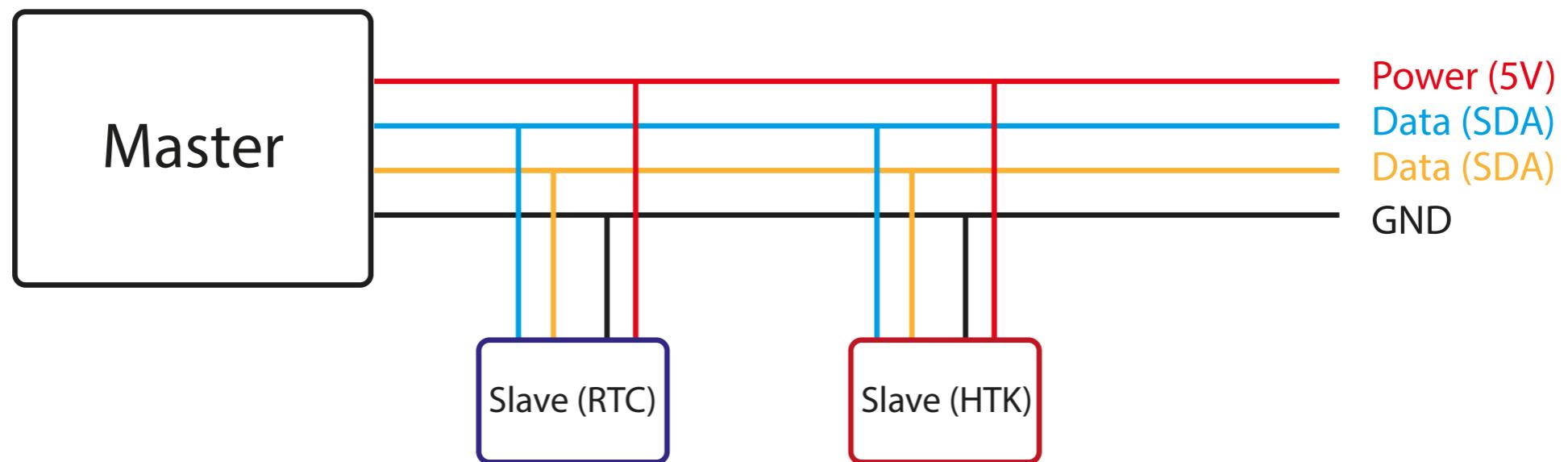
- Zit op PWM pin
- Wat is PWM?



bron: arduino.cc

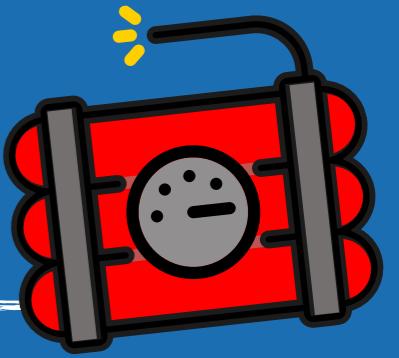


WERKEN MET I2C



DEFUSABLE ALARM CLOCK MET ARDUINO

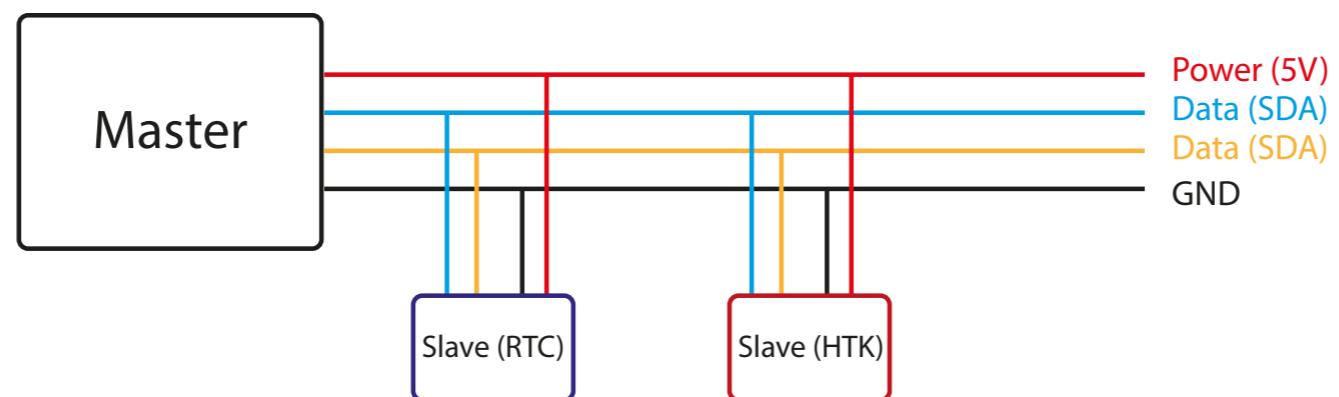
WERKEN MET I2C



I2C_Scanner voorbeeld

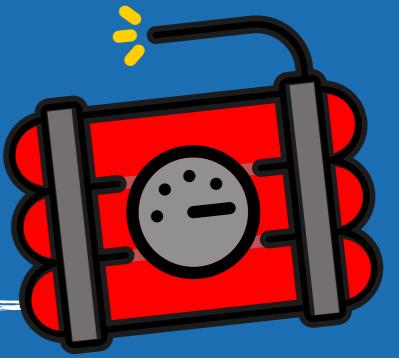
Debuggen: Scope

Pull-up weerstanden van SDA en SCL naar Power

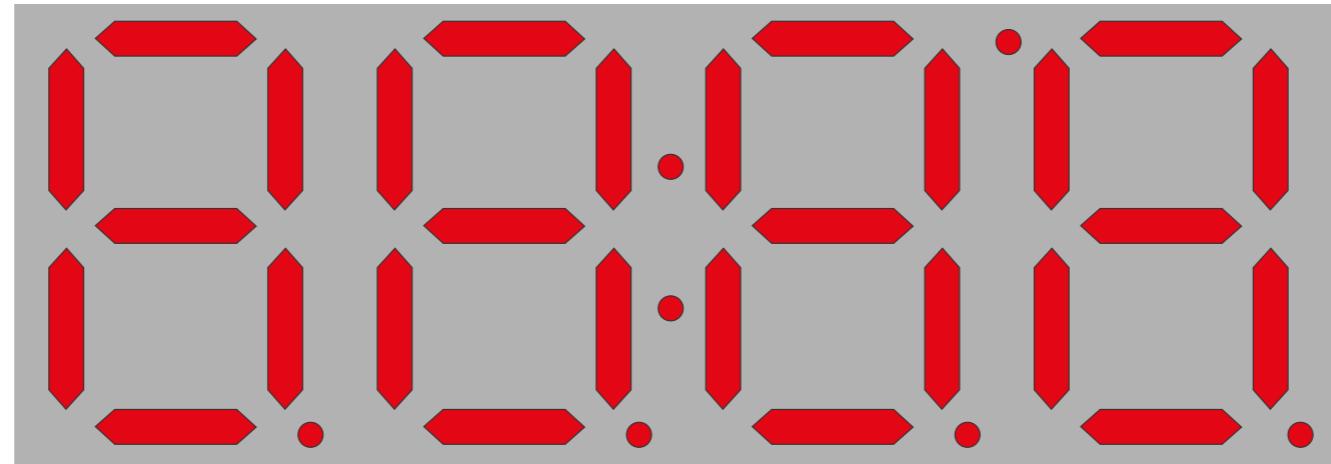


DEFUSABLE ALARM CLOCK MET ARDUINO

SEGMENT DISPLAY



Kathode = Negatief
Anode = Positief

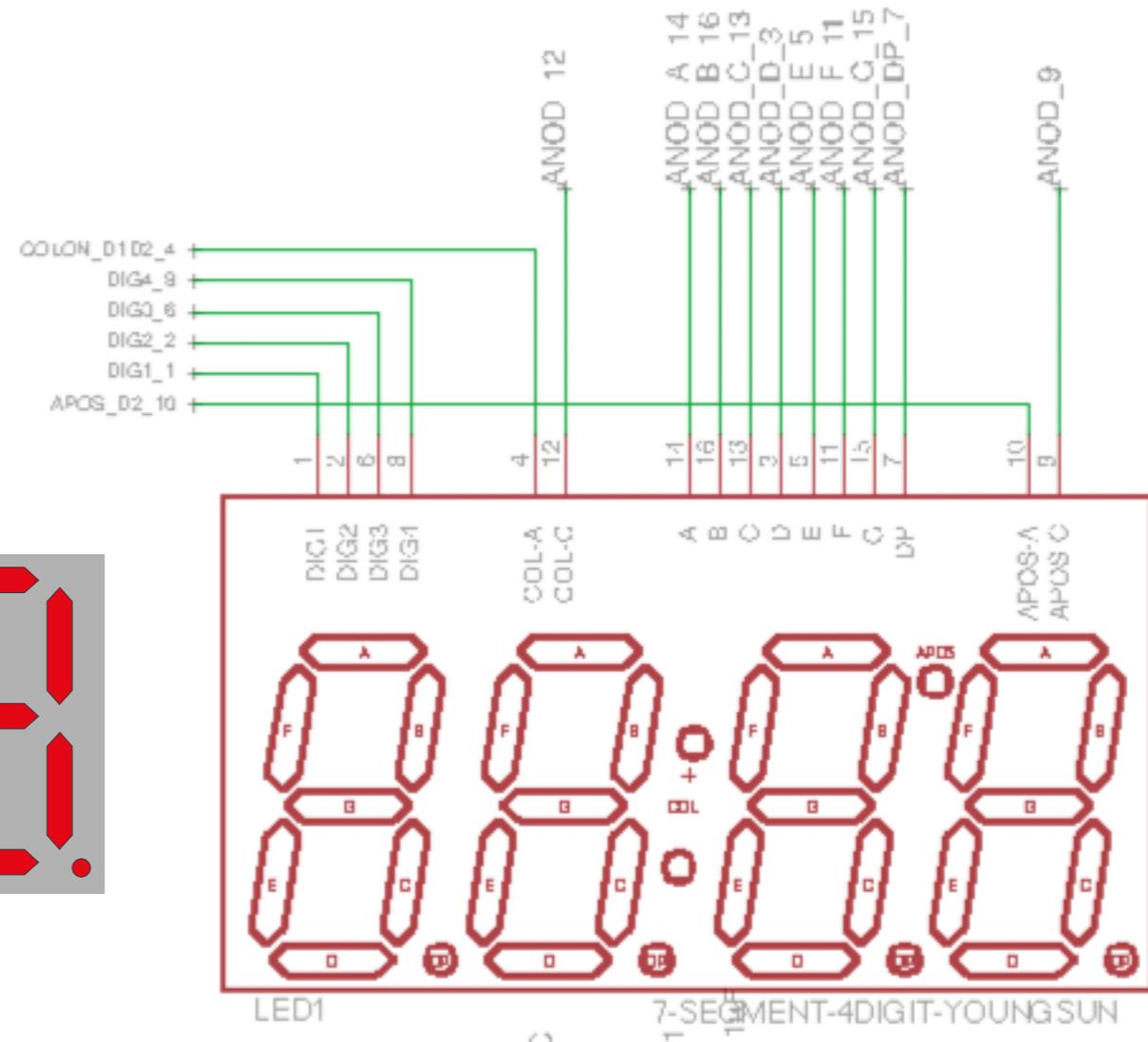
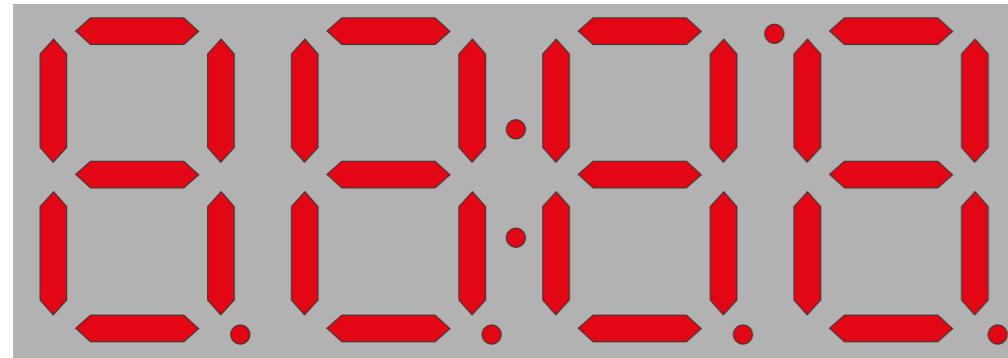
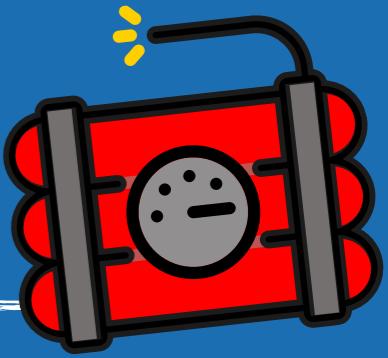


Common: Anode, positieve pinnen met elkaar verbonden
Kathode, positieve pinnen met elkaar verbonden



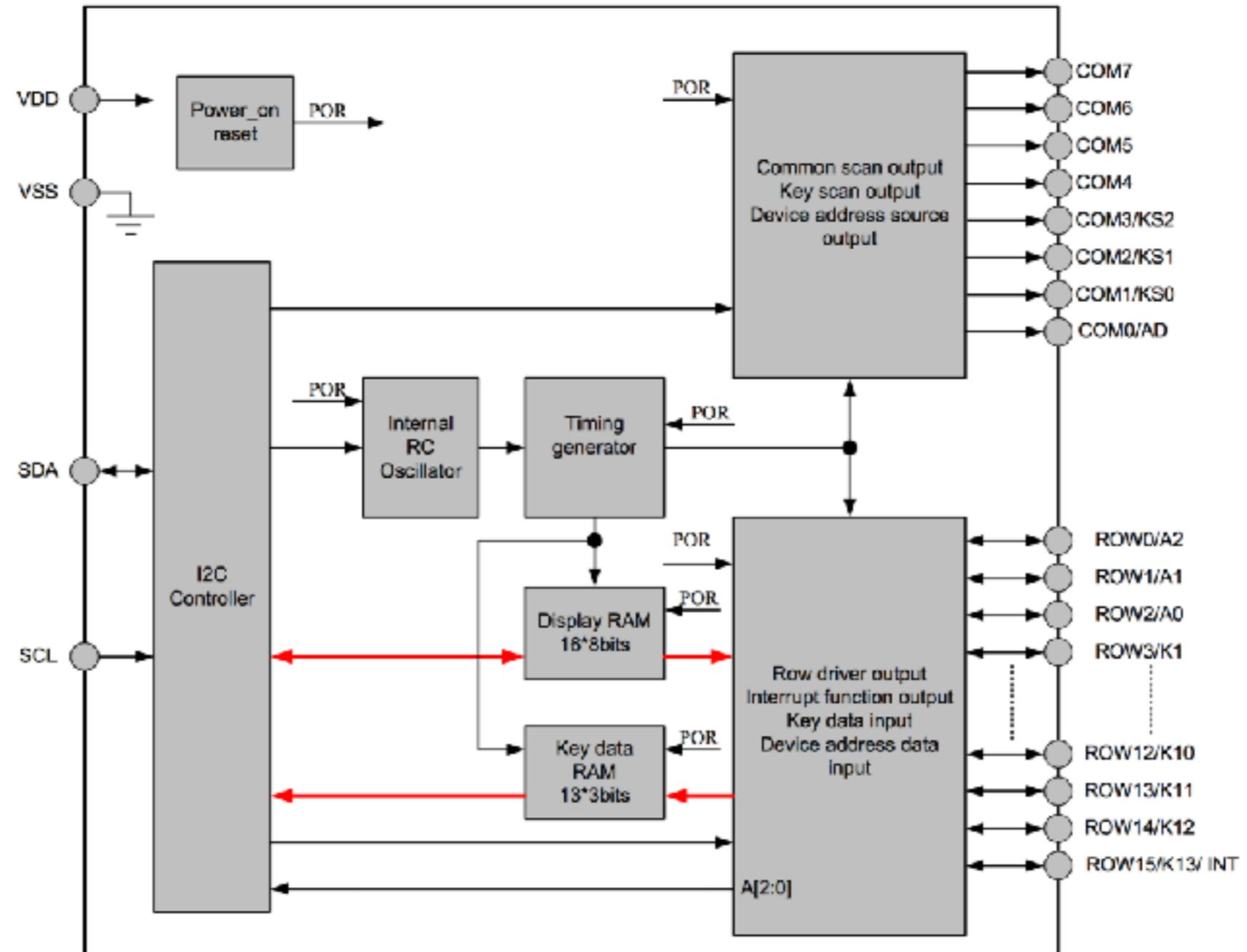
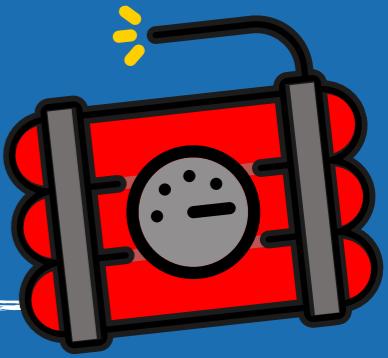
DEFUSABLE ALARM CLOCK MET ARDUINO

SEGMENT DISPLAY



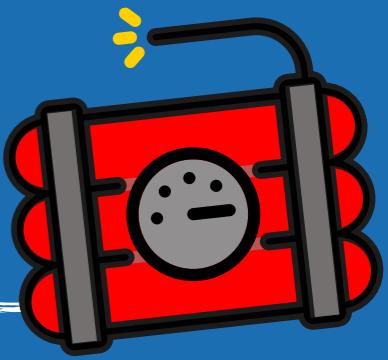
DEFUSABLE ALARM CLOCK MET ARDUINO

HT16K33

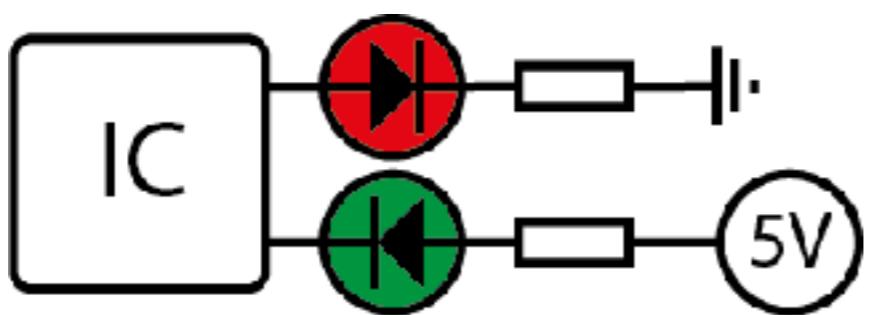


DEFUSABLE ALARM CLOCK MET ARDUINO

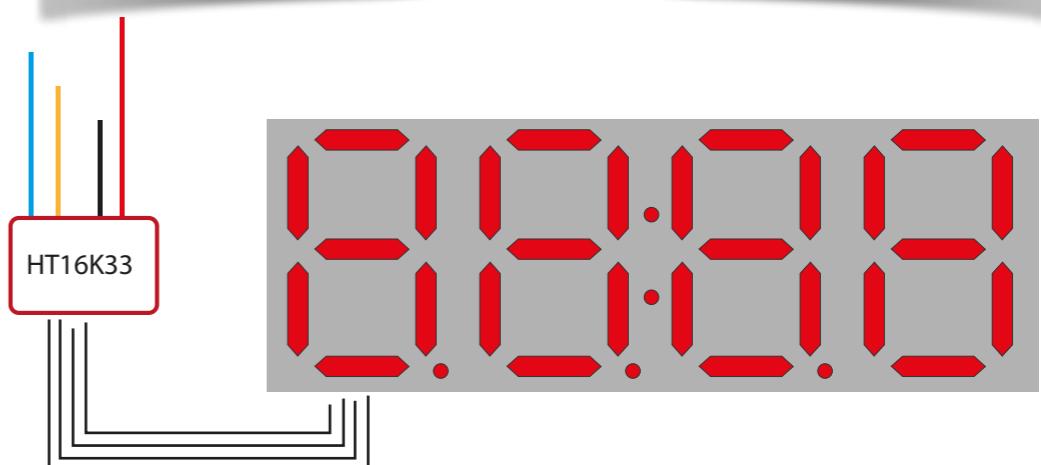
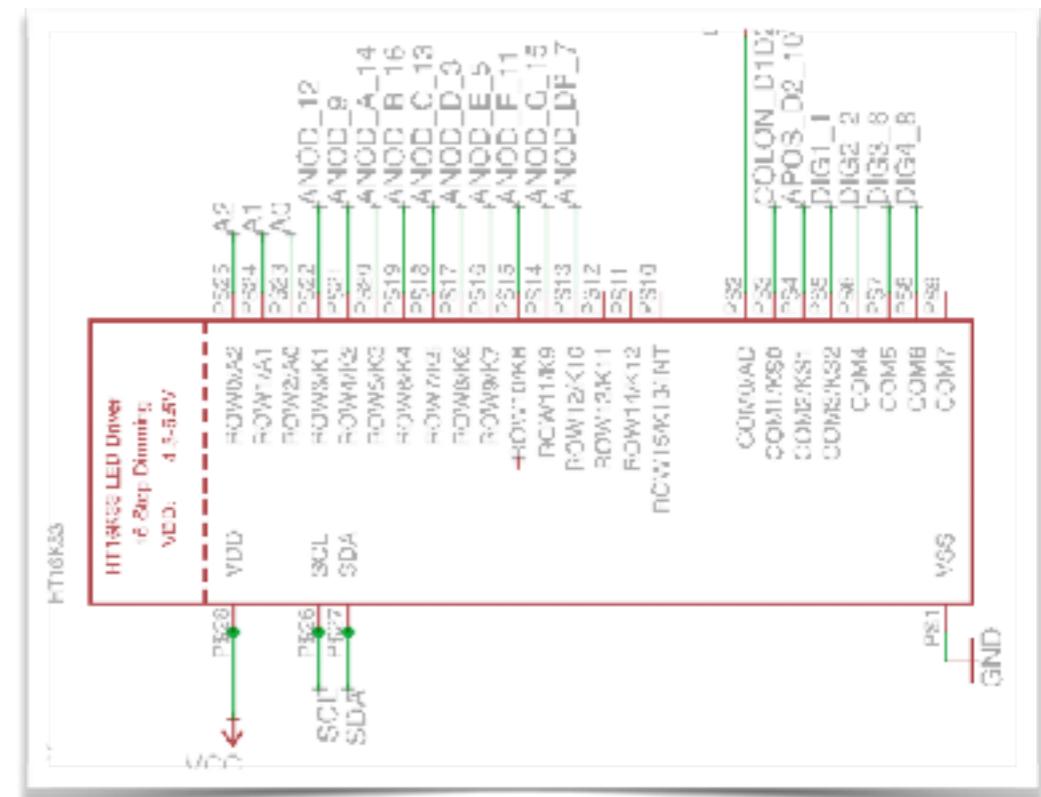
HT16K33 EN SEGMENT DISPLAY



Sinken

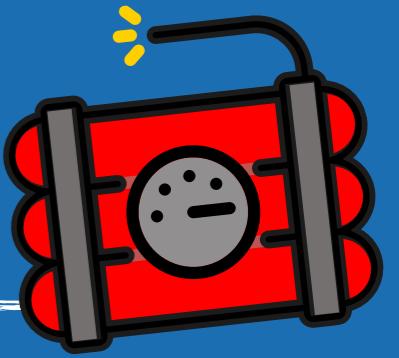


Sourcen



DEFUSABLE ALARM CLOCK MET ARDUINO

HT16K33 EN SEGMENT DISPLAY



Tip! Gebruik I2C_Scanner voorbeeld

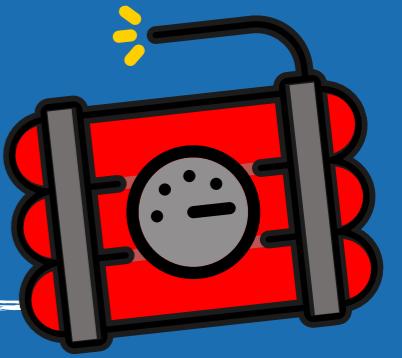
Library: BombDisplay.h / BombDisplay.cpp

Voorbeeld zonder library: Bomb_LCD_Direct



DEFUSABLE ALARM CLOCK MET ARDUINO

REAL TIME CLOCK MET DS3231



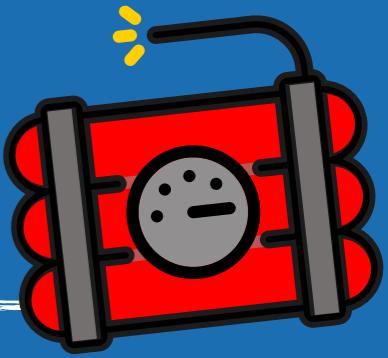
Tip! Gebruik RT_Clock voorbeeld

RTCLib



DEFUSABLE ALARM CLOCK MET ARDUINO

COMBINATIE BRONCODE



MegaBomb voorbeeld

Main:

- roept vooral methodes in andere bestanden aan...
- RTC object voor de real time clock
- bombDisplay object voor Display (HTK16K33)

Helpers voor code voor:

- Draden
- Knoppen
- Buzzer
- LED
- Tilt sensor
- Tijd
- pitches.h (tonen voor buzzer)



DEFUSABLE ALARM CLOCK MET ARDUINO



MEDIO MEI VERKRIJGBAAR

DEFUSABLE ALARM CLOCK SHIELD VOOR ARDUINO

VERWACHT MEDIO JUNI 2017:

EDUCATIEF WEERSTATION (ARDUINO COMPATIBLE) VOOR RASPBERRY PI

Mail naar jakorten@jksoftedu.nl en ik hou u op de hoogte...

