

# Arduino: dag 1

(C) Richèl Bilderbeek 

October 28, 2014

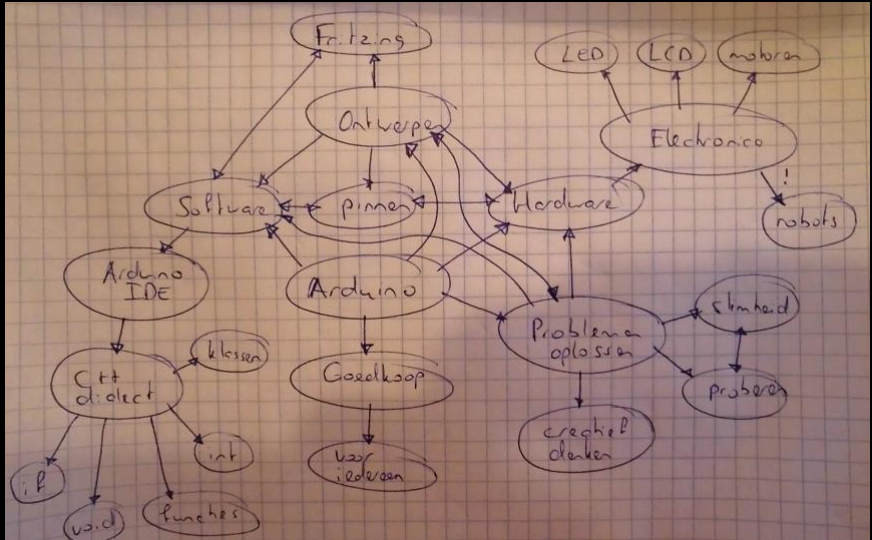
## 0.1 Overzicht

1. Doel
2. Wat is Arduino?
3. Blink
4. Pauze
5. AnalogReadSerial
6. Afsluiting

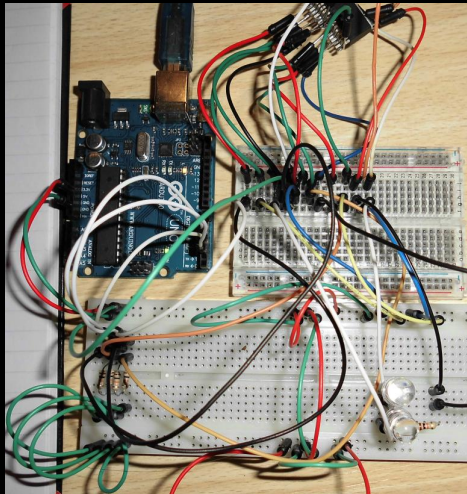
## 0.2 Doel

- Vaste grond onder de voeten krijgen met Arduino

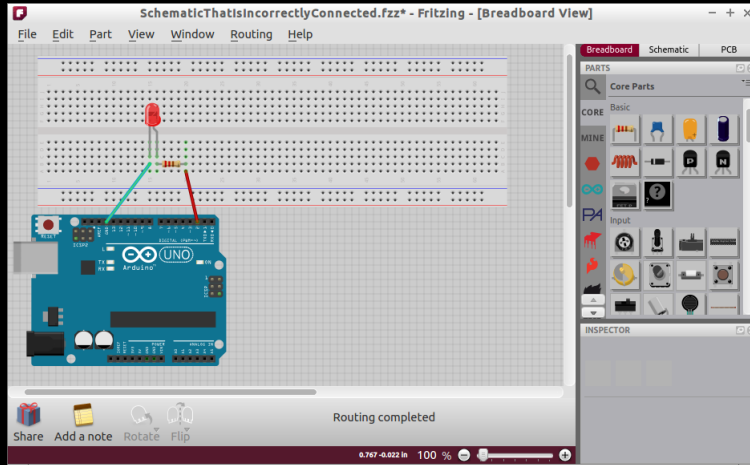
## 0.3 Wat is Arduino volgens mij?



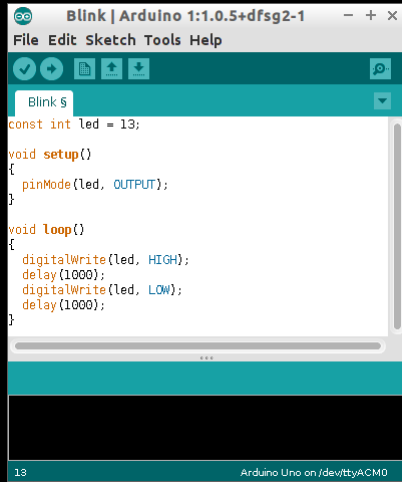
## 0.4 Hardware



## 0.5 Ontwerpen



## 0.6 Software



The screenshot shows the Arduino IDE interface. The title bar reads "Blink | Arduino 1:1.0.5+dfsg2-1". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". The toolbar contains icons for checking, running, saving, uploading, and downloading. The sketch editor shows the following code:

```
const int led = 13;

void setup()
{
  pinMode(led, OUTPUT);
}

void loop()
{
  digitalWrite(led, HIGH);
  delay(1000);
  digitalWrite(led, LOW);
  delay(1000);
}
```

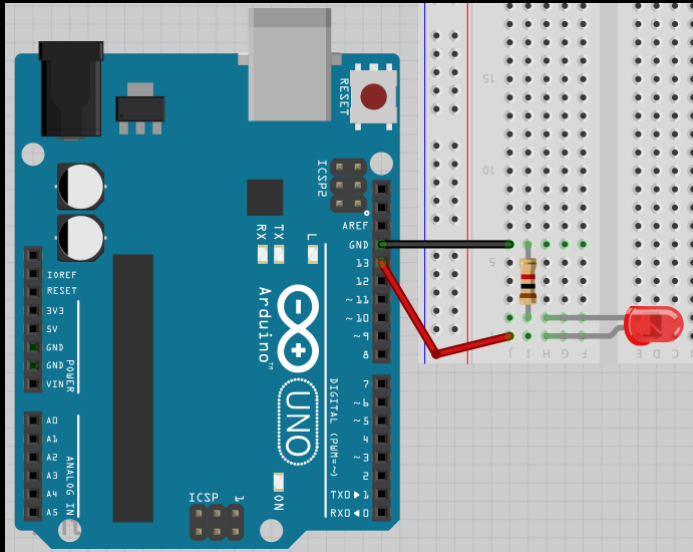
The status bar at the bottom indicates "13" and "Arduino Uno on /dev/ttyACM0".

## 0.7 Blink

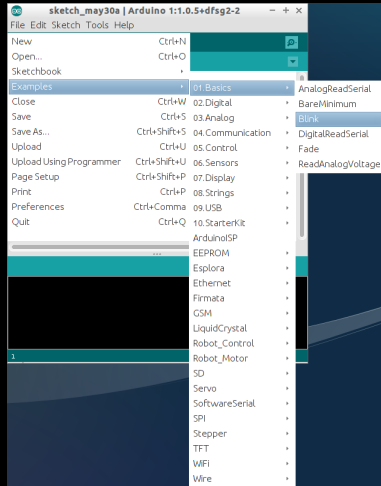
- Simpelste output voorbeeld: laat een LEDje knipperen



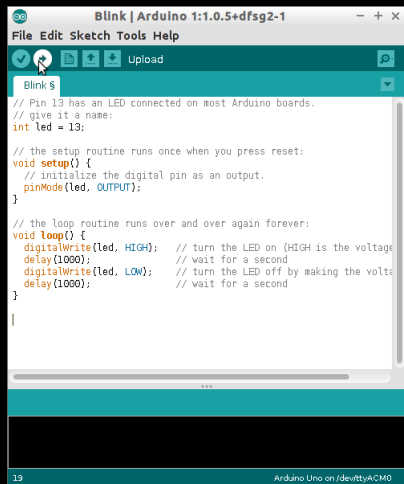
## 0.8 Blink: stroomschema



## 0.9 Blink: code



## 0.10 Blink: code



The screenshot shows the Arduino IDE interface. The title bar reads "Blink | Arduino 1:1.0.5+dfsg2-1". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". Below the menu bar is a toolbar with icons for opening files, saving, uploading, and a search icon. The main text area contains the following C++ code:

```
Blink $  
  
// Pin 13 has an LED connected on most Arduino boards.  
// give it a name:  
int led = 13;  
  
// the setup routine runs once when you press reset:  
void setup() {  
  // initialize the digital pin as an output.  
  pinMode(led, OUTPUT);  
}  
  
// the loop routine runs over and over again forever:  
void loop() {  
  digitalWrite(led, HIGH); // turn the LED on (HIGH is the voltage  
  delay(1000);             // wait for a second  
  digitalWrite(led, LOW);  // turn the LED off by making the voltage  
  delay(1000);             // wait for a second  
}  
  
|
```

At the bottom of the window, a status bar shows "19" on the left and "Arduino Uno on /dev/ttyACM0" on the right.

## 0.11 Opdracht

- Sluit de LED aan
  - Pin 13 naar (lange poot van) LED naar weerstand naar GND
- Upload het voorbeeld 'Blink'

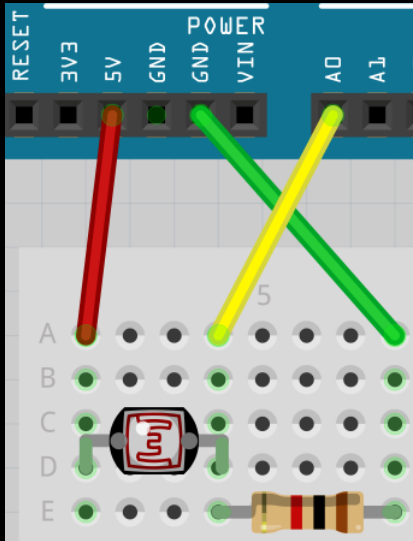
Dan:

1. Varieer de knippersnelheid
2. Sluit een LED aan op pin 12, laat deze knipperen
3. Laat beide LEDs knipperen

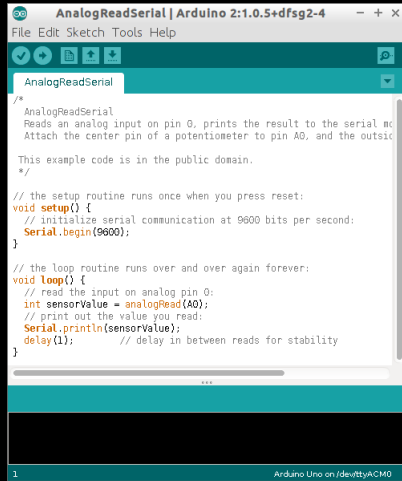
## 0.12    `analogReadSerial`

- Simpelste input voorbeeld: lees een LDR uit

## 0.13 analogReadSerial: stroomschema



## 0.14 analogReadSerial: code



```
/*
  AnalogReadSerial
  Reads an analog input on pin 0, prints the result to the serial monitor.
  Attach the center pin of a potentiometer to pin A0, and the outside pins to
  ground and +5V.

  This example code is in the public domain.
  */

// the setup routine runs once when you press reset:
void setup() {
  // initialize serial communication at 9600 bits per second:
  Serial.begin(9600);
}

// the loop routine runs over and over again forever:
void loop() {
  // read the input on analog pin 0:
  int sensorValue = analogRead(A0);
  // print out the value you read:
  Serial.println(sensorValue);
  delay(1); // delay in between reads for stability
}
```

## 0.15 Opdracht

- Sluit de LDR aan
  - 5V via LDR naar A0, van A0 via weerstand naar GND
- Upload het voorbeeld 'analogReadSerial'
- Bekijk de output in de Serial Monitor

Dan:

1. Laat de LEDs reageren op de sensor inputs



## 0.16 Afsluiting

- Doel: vaste grond onder de voeten krijgen met Arduino

## 0.17 Afsluiting

- Cursus: vrijdag 19:00-22:00 bij De Jonge Onderzoekers

