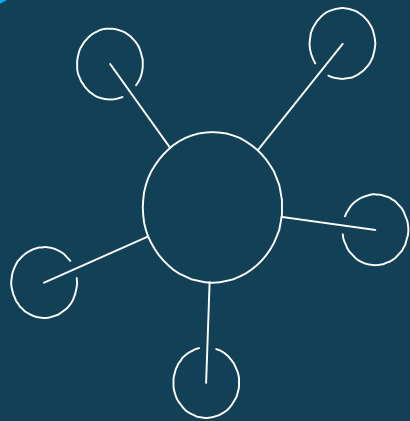




AARHUS UNIVERSITET



# Semester Project V2.0

Internet of Things -- Project

08/09/2019

MILLE Benjamin & CRESPEL Virgile





## Let's talk

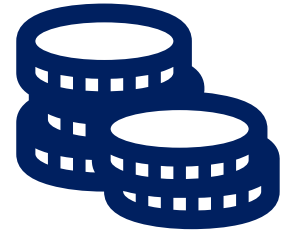
1. Introduction to your project
2. Key requirements
3. Technical challenges
4. Choice of sensors/actuators/web-data sources
5. How do you plan to test
6. Introduction to your github repository

Bored with Kroner coins  
in your wallet ?



# Danske Kroner Money Converter

Let the « DKMC » help you  
with your coins and let it  
count for you !



# 1

## Why ?

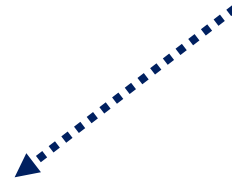
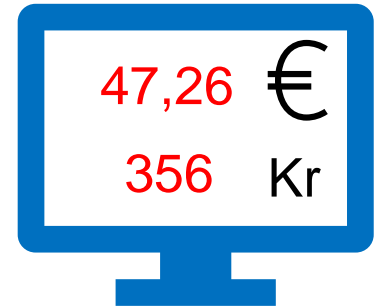
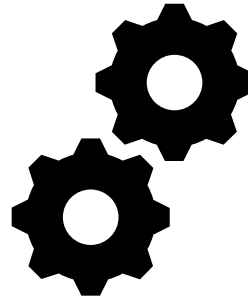
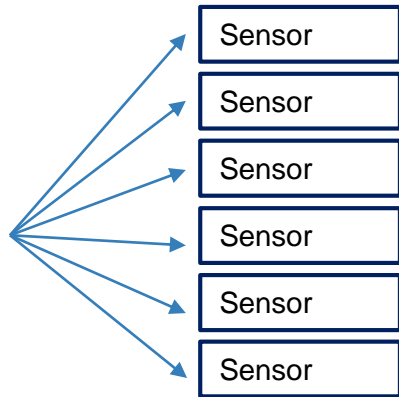
Let's start with the beginning

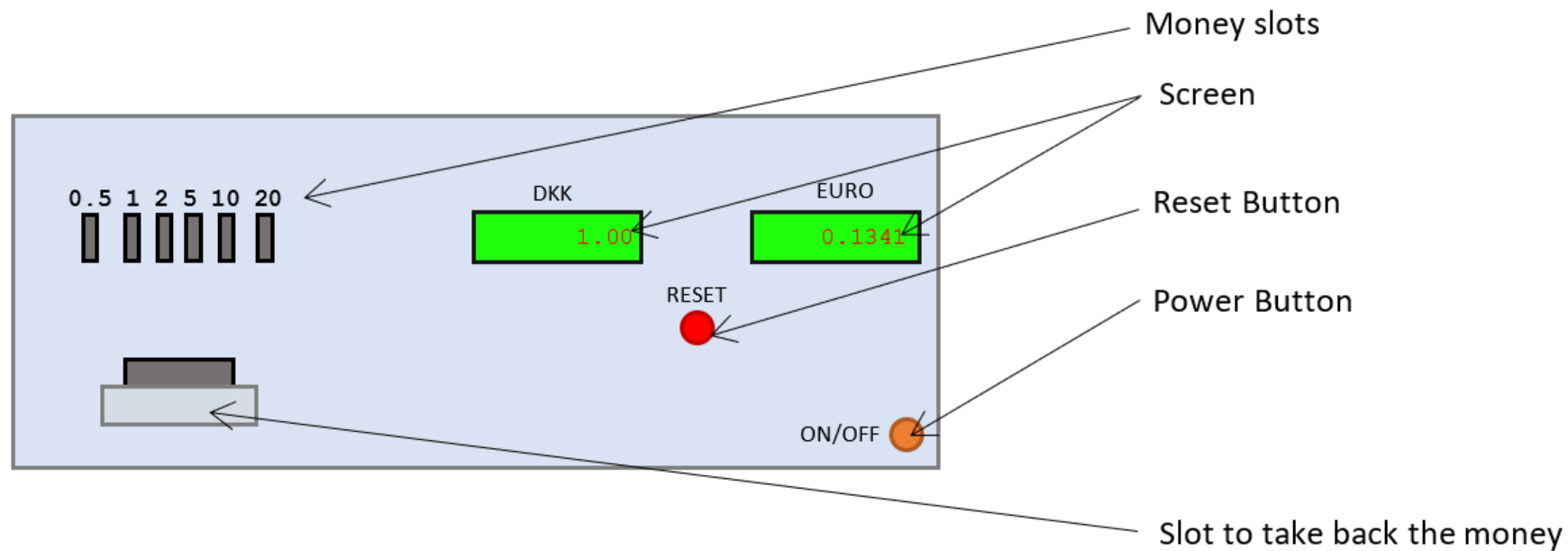




## How does it work ?

Kr







# 2

## **Key requirements**

Let's build !



## How to built it ?

We are going to use :

- 6 Sensors to count how many coins are inserted.
- The photon device that will compute with the exchange rate of the day.
- 2 buttons (Reset & Power)
- 2 screens to print the data.



# 3

## Technical Challenges

Let us think about it !



## **There are some challenges:**

The main problems :

- There is not many pin slot on the photon.
- We are not sure that the power will be enough to all the components.

# 4

## **Choice of sensors/actuators/web-data sources**

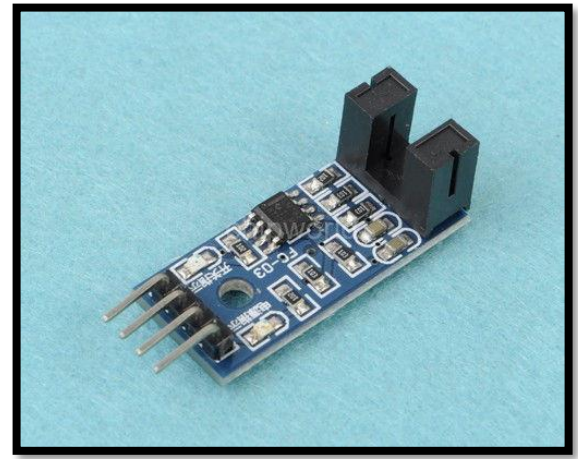
Let's build !



## Slot-type Optocoupler Module

### Module Features:

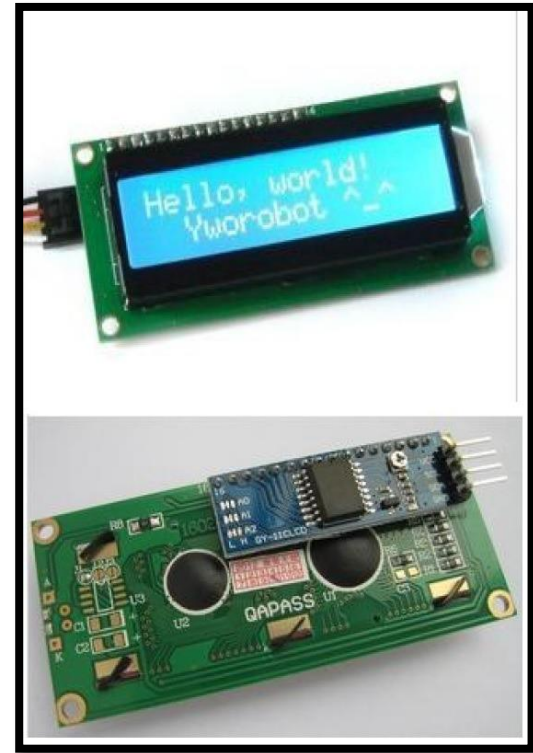
- use imported groove coupler sensor
- the groove width of 5mm.
- output status indicator, the lamp output high, output low lights.
- the comparator output, the signal is clean, the waveform, driving ability, more than 15mA.
- operating voltage 3.3V-5V
- The output in the form: Digital switching outputs (0 and 1)
- small plates PCB Dimensions: 3.2cm x 1.4cm





## LCD1602 IIC/I2C Blue Backlight

- I2C Address: 0x27
  - Backlight (White character on Blue background)
  - Supply voltage: 5V
  - Size: 82x35x18 mm
  - Come with IIC interface, which can be connected by DuPont
- Package Include:
- 1 X IIC/I2C/TWI 1602 Serial LCD Module



# 5

## How do we plan to test

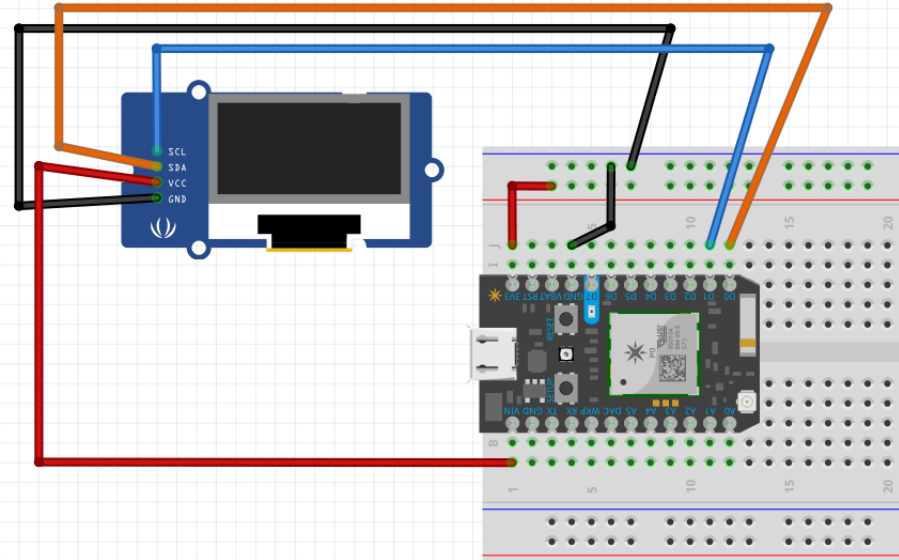
First step in the project



## Test the LCD

- The simplest way to test it:

```
1 #include<LiquidCrystal_I2C_Spark.h>
2 LiquidCrystal_I2C *lcd;
3 void setup() {
4   Serial.begin(9600);
5   lcd = new LiquidCrystal_I2C(0x3F, 16, 2);
6   lcd->init();
7   lcd->backlight();
8   lcd->clear();
9   Time.zone(+1.00); }
10 void loop() {
11   if (Time.now(), "%H:%M:%S" == "00:00:00") {
12     lcd->clear(); }
13   lcd->setCursor(0 ,0 );
14   lcd->print("Coins-Coins");
15 }
```

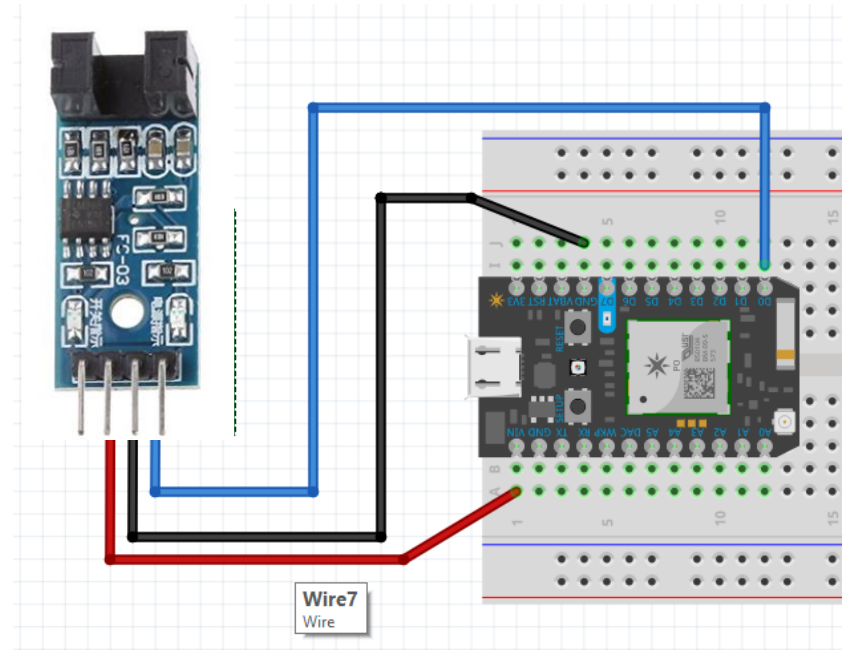


## Test Slot-type Optocoupler Module

- The simplest way to test it:

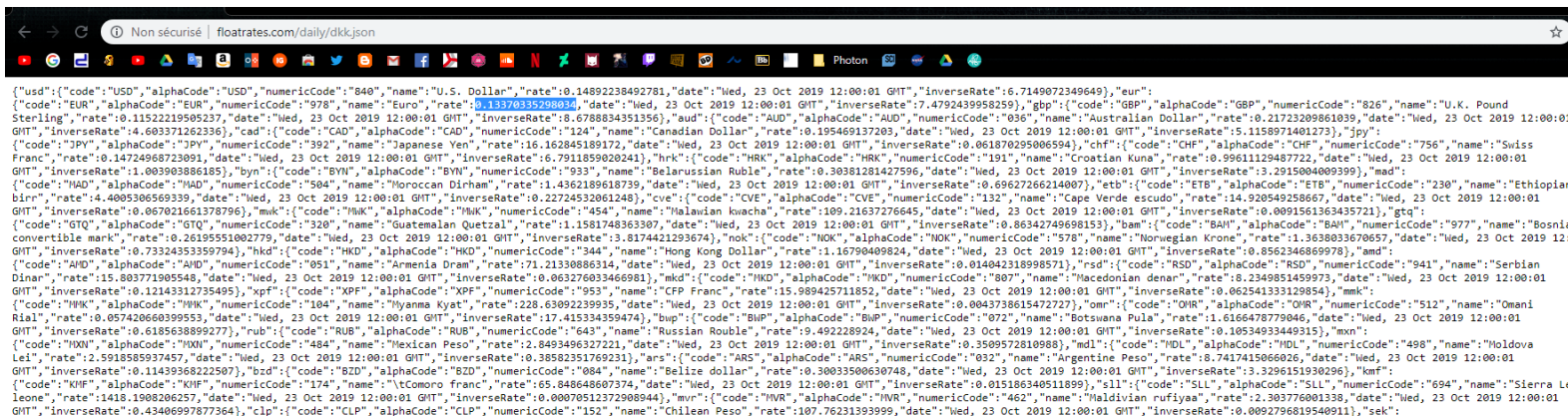
“The output in the form:  
Digital switching outputs (0  
and 1)”

We just need to plug it in  
and add a listener to the  
photon



## Test the rate currency

```
1 WEBHOOK
2 {
3     "event": "Elevation",
4     "url": "OUR_URL",
5     "requestType": "GET",
6     "query": {
7         "locations": "{{{lat}}},{{{lng}}}",
8         "key": "<paste your secret Google API key here>"
9     },
10    "responseTemplate": "{{{results.0.elevation}}}",
11    "noDefaults": true
12 }
```



[http://www.floatrates.com/daily/dkk.json?fbclid=IwAR2pINzplh0qDPdBoi09xpbDeyEoMjt\\_Az5RtZCq-6uiEvP5C333qdGibBA](http://www.floatrates.com/daily/dkk.json?fbclid=IwAR2pINzplh0qDPdBoi09xpbDeyEoMjt_Az5RtZCq-6uiEvP5C333qdGibBA)

6

**Follow us on  
GitHub**

Best project

## IoT-Project - DKMC

BENJAMIN MILLE  
VIRGILE CRESPEL

Hej ! Welcome to our IOT Project.

Project description : Work in progress

There will be updates on this read me file every time needed :

===== V2.0 ===== +Presentation IOT\_Project V2.0 +Change of material for  
detection ===== V1.0 ===== You can read our PDF about our proposition and see  
our video : <https://youtu.be/y0oe-8Krusg>

SOURCES:

JSON FILE FOR RATE: [http://www.floatrates.com/daily/dkk.json?fbclid=IwAR2pINzplh0qDPdBoi09xpbDeyEoMjt\\_Az5RtZCq-6uiEvP5C333gdGibBA](http://www.floatrates.com/daily/dkk.json?fbclid=IwAR2pINzplh0qDPdBoi09xpbDeyEoMjt_Az5RtZCq-6uiEvP5C333gdGibBA)

MATERIAL: <https://arduinotech.dk>

TEST THE MATERIAL: <https://docs.particle.io/reference/device-cloud/webhooks/?fbclid=IwAR14YTb9KTHh9BBWYFeBuFMvk1uWMndM9At9uy7JJ73LwQ7K7flGSpyMaO4> [https://www1.oanda.com/lang/fr/currency/live-exchange-rates/EURDKK/?fbclid=IwAR2wFW1A83cplR-CAIHA2AhXQO9cZM7Abx\\_ZOCkIT\\_BPjoeM\\_-4RqV75d6c](https://www1.oanda.com/lang/fr/currency/live-exchange-rates/EURDKK/?fbclid=IwAR2wFW1A83cplR-CAIHA2AhXQO9cZM7Abx_ZOCkIT_BPjoeM_-4RqV75d6c)

## Sources :

- <https://docs.particle.io/reference/device-cloud/webhooks/?fbclid=IwAR14YTb9KTHh9BBWYFeBuFMvk1uWMndM9At9uy7JJ73LwQ7K7fIGSpyMaO4>
- [https://www1.oanda.com/lang/fr/currency/live-exchange-rates/EURDKK/?fbclid=IwAR2wFW1A83cpIR-CAIHA2AhXQO9cZM7Abx\\_ZOckIT\\_BPjoeM\\_-4RqV75d6c](https://www1.oanda.com/lang/fr/currency/live-exchange-rates/EURDKK/?fbclid=IwAR2wFW1A83cpIR-CAIHA2AhXQO9cZM7Abx_ZOckIT_BPjoeM_-4RqV75d6c)
- <https://arduinotech.dk>

**THANKS!**

Any questions?

