

Auteur(s)	Laissac Roucaute	All proc test bench procedure v1.0:
date	08 03 2020	

Time for this procedure: 3h

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Check by: Benoît Heintz

### List of Abbreviations:

AU	Arduino Uno
BB	Breadboard

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## Tools:

-Wrench (13)



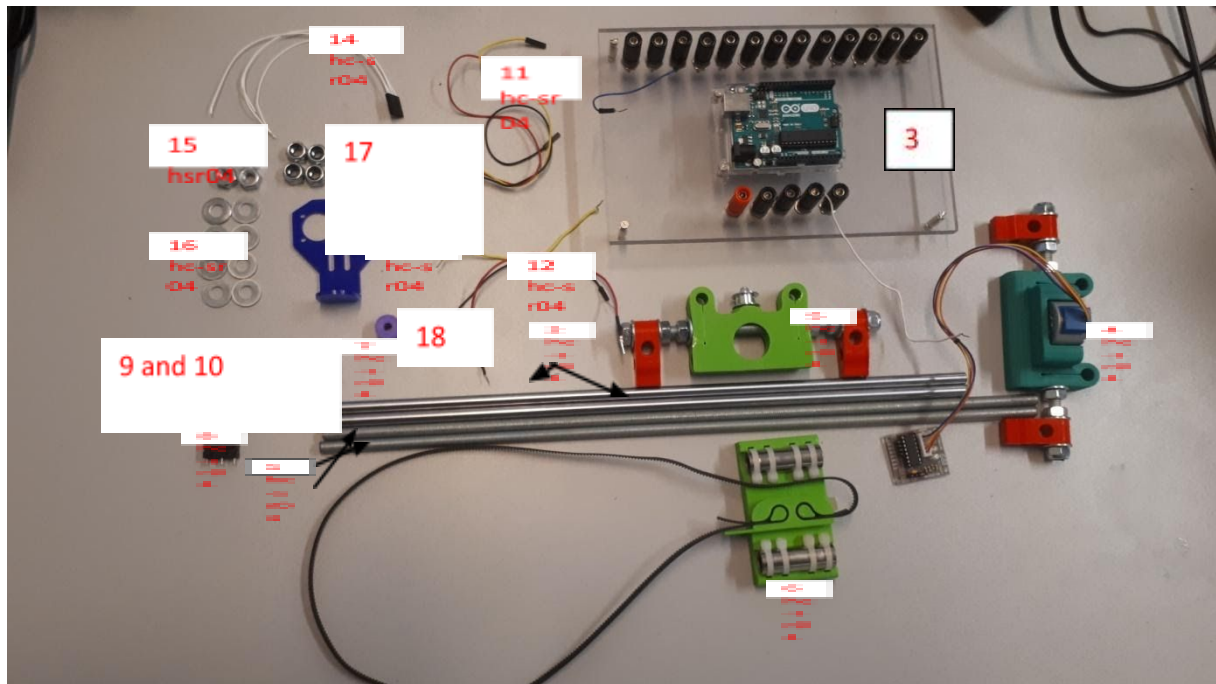
-Allen key (1.5)



- Pliers



### Items to manipulate:

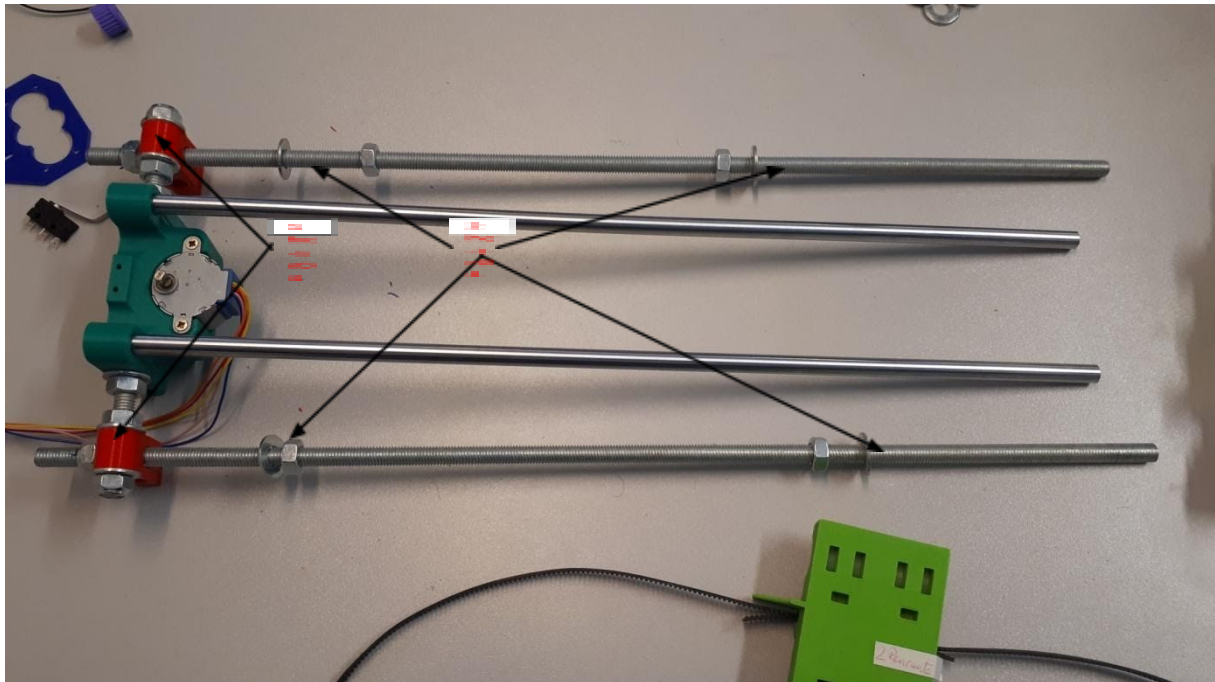


- 2 Worm screws **1**
- 2 Stems **2**
- Arduino Uno **3**
- Motor support with motor, motor control board and 2 red feet **4**
- Pulley Support with 2 red feet **5**
- Screen support with toothed belt **6**
- Sensor hc-sr04 **7**
- Limit sensor **8**
- 6 screw m2 for the limit sensor (2) and sensor hc-sr04 (4) **9**
- 4 nuts m2 for the sensor hc-sr04 **10**
- temperature sensor **11**

- 3 cables to connect the temperature sensor 12
- Support for the sensor hc-sr04 13
- cables for the motor 14
- 4 nuts 15
- 8 washers 16
- 4 nuts with seals 17
- motor pulley 18

### Assembly steps:

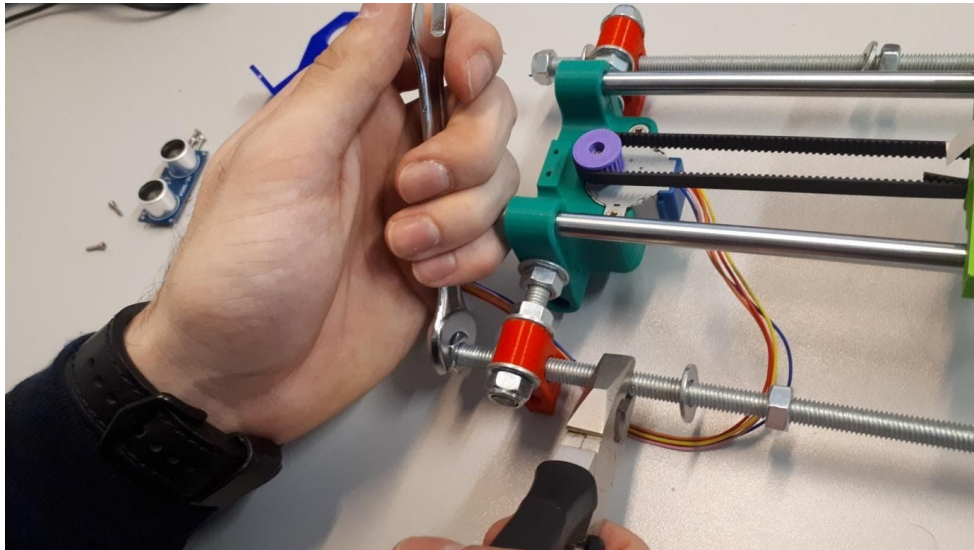
Step 1: place the base



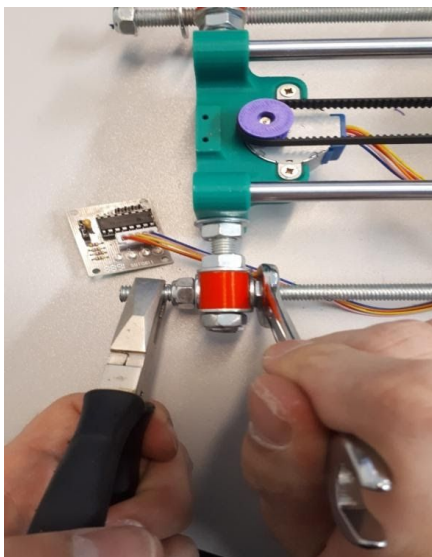
Place the stems in the support like the pictures. Use your fingers to place 4 nuts and 4 washers (2) with the 2 worm screws.

To grip the 2 washers between the feet and the nut with seal (1) and 2 nuts with seals with the 2 worm screws follow the next step.

Step 2: tightening

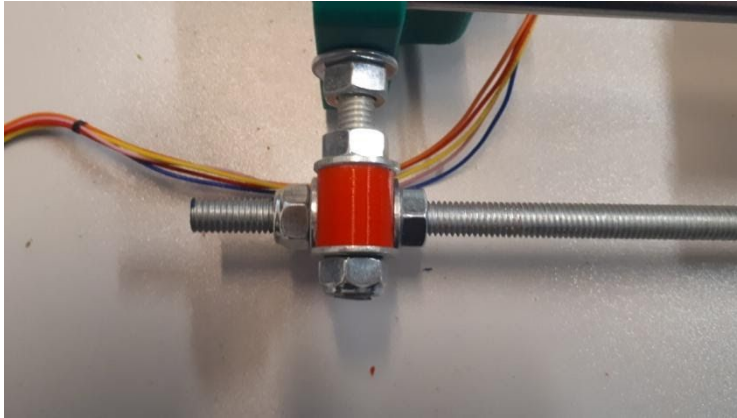


Use the pliers and the wrench to screw the nut with seal



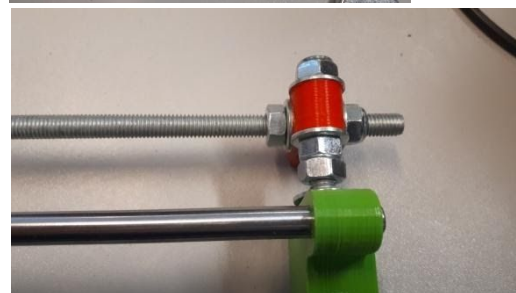
Use the pliers and the wrench to screw the nut

Result:



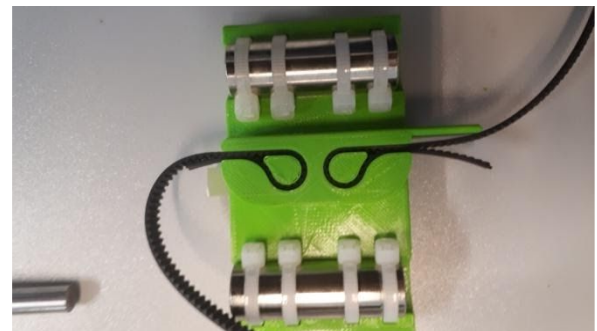
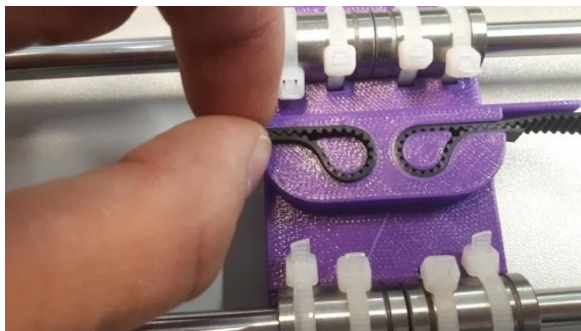
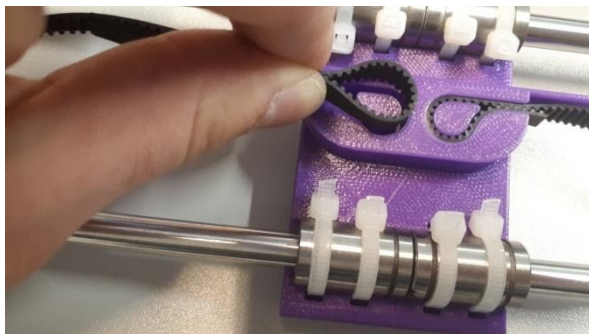
Warning:

This is the same procedure for the 3 other feet (see the pictures bellow).



Step 3: placement for the toothed belt

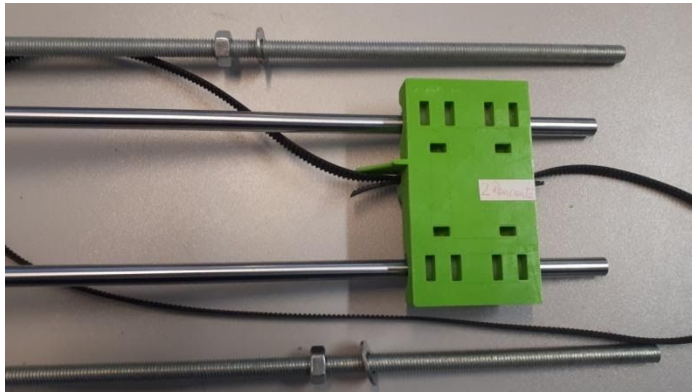




Use your fingers for the placement

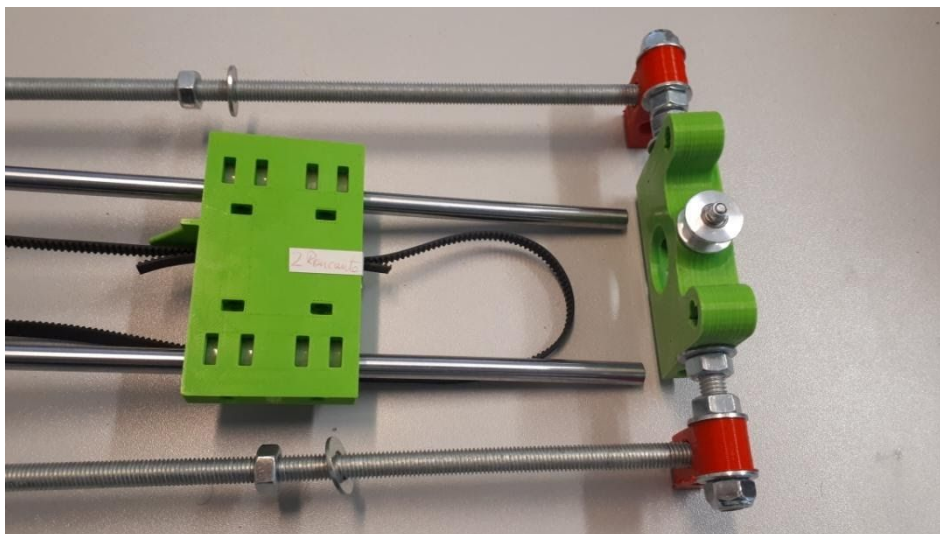
First pinch and create a loop like the support loop. With your another hand push the toothed in the support like the pictures above.

#### Step 4: place the screen support



Place the support like the pictures.

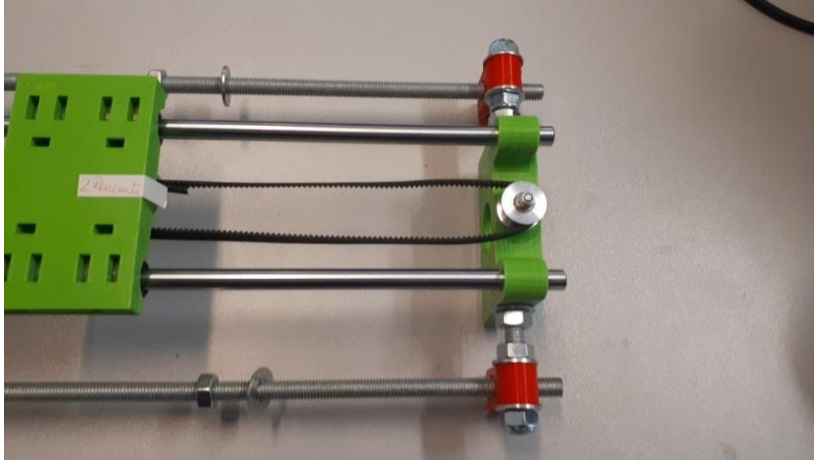
#### Step 5: place the pulley support



Place the pulley support like this picture (the worm screws in the hollowness2 red feet of the pulley support)



Step 6: place the toothed belt

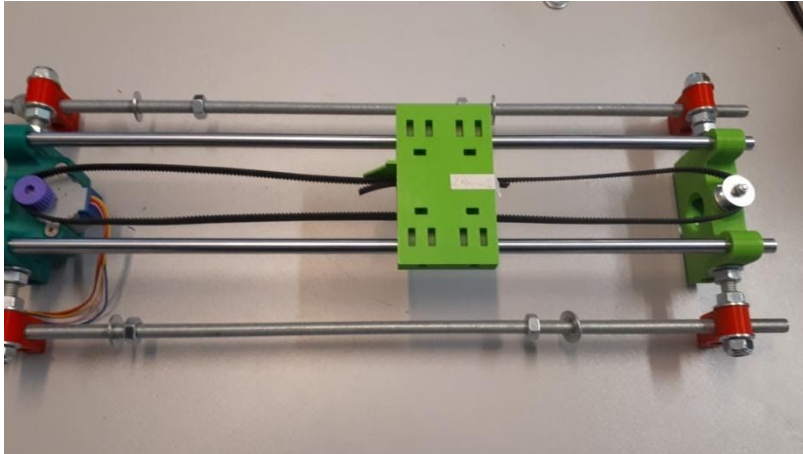


Place the toothed belt like this picture allow. Push the stems like this picture.

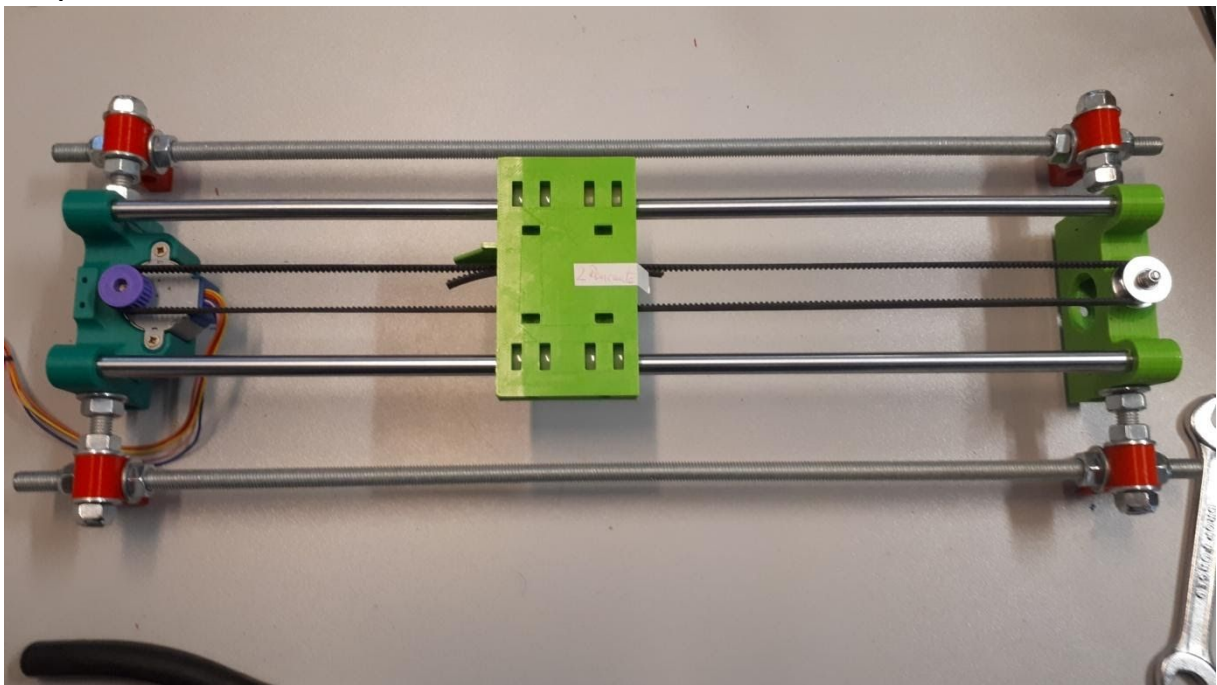


Place the toothed belt like this picture allow

Result:



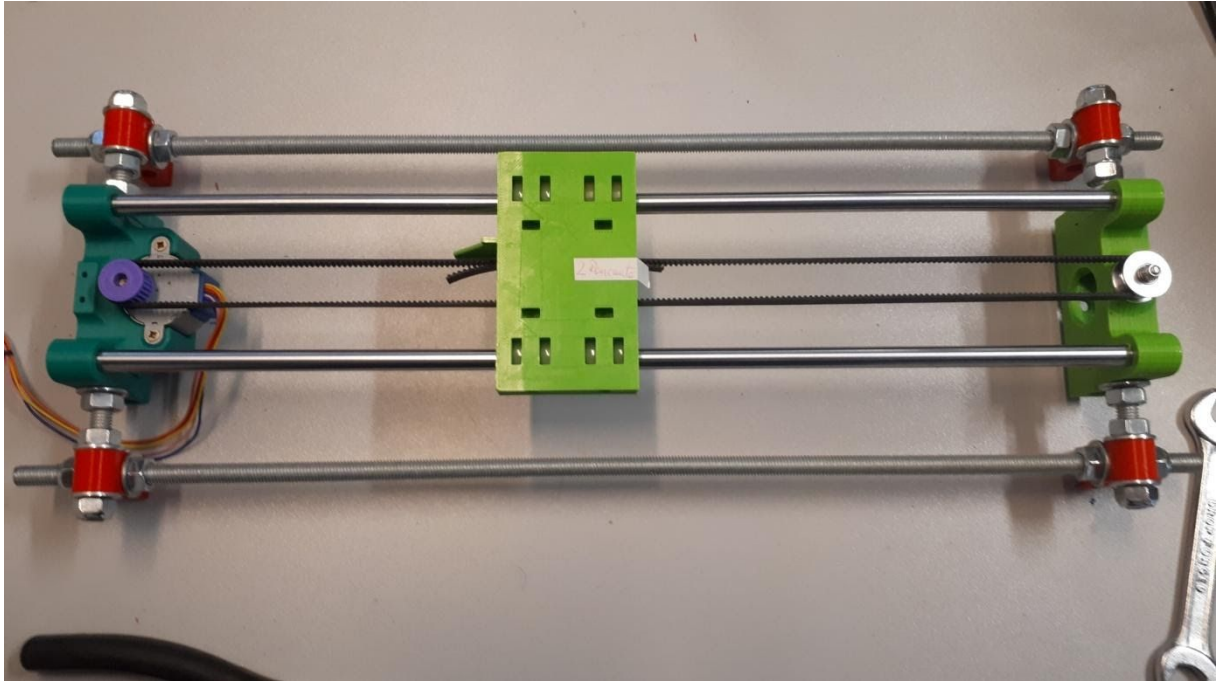
### Step 7: stretch the toothed belt



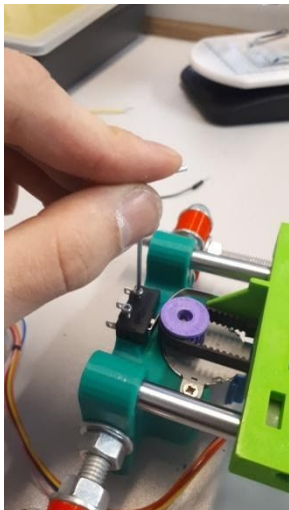
Take the two parts and take away the two parts for stretch the toothed belt like the picture above.

Use the pliers and the wrench to screw the nut with seal and nut use the step 2 for that.

Result:



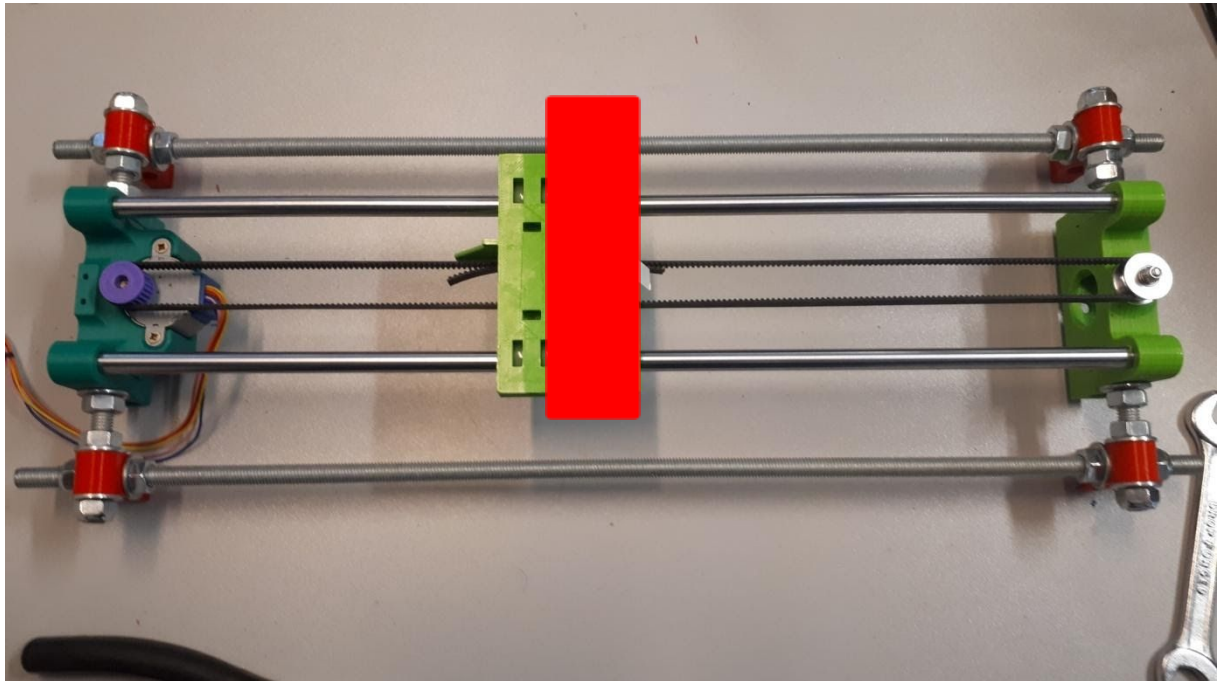
### Step 8: screw the limit sensor



Use two screw M2 and bolt

### Step 9 : Place the screen

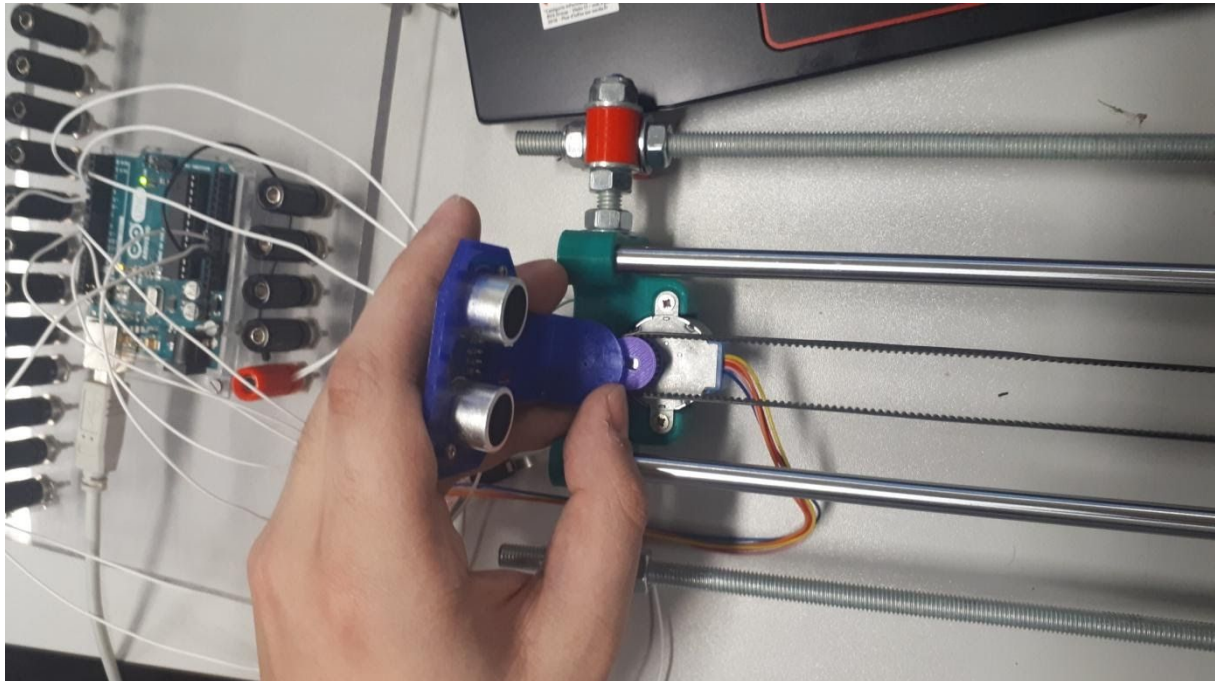
For this step use a book on the screen support (see the next picture for the position of the book) .



### Step 10 Place the support with the sensor hc-sr04

Place the support like this (after design a part to connect the support hc-sr04 with others parts of the test bench)





## Cabling :

Cabling the Arduino Uno :

-Connect the alimentation USB **1**

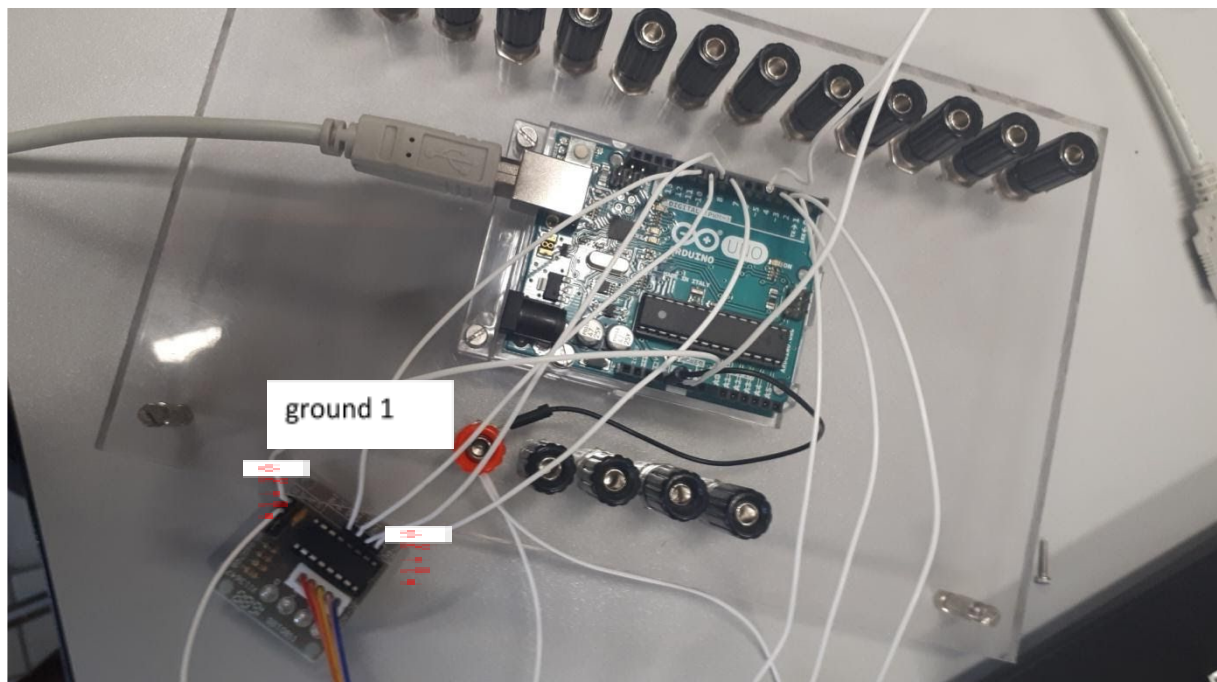
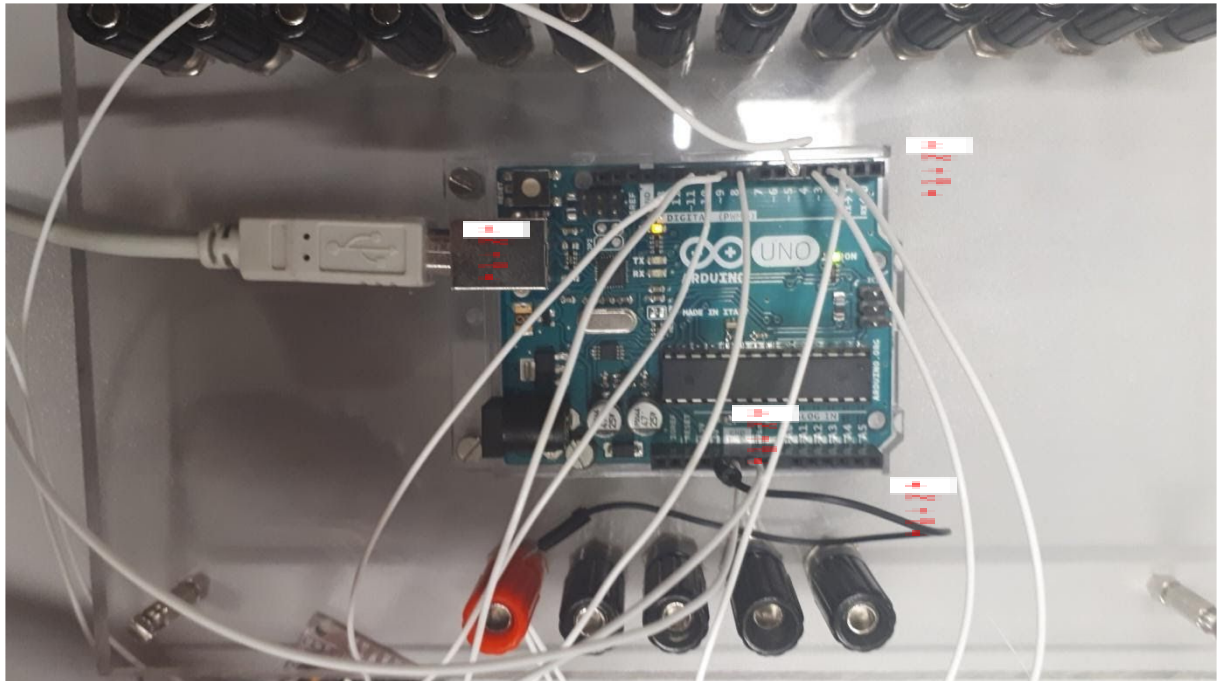
-digital pins **2**

Pin	Connect
1	Tx (hc-sr04)
2	Ground (hc-sr04)
3	Rx (hc-sr04)
4	Pin 7.b (the limit sensor)
8	Input 1 DC motor
9	Input 2 DC motor
10	Input 3 DC motor
11	Input 4 DC motor

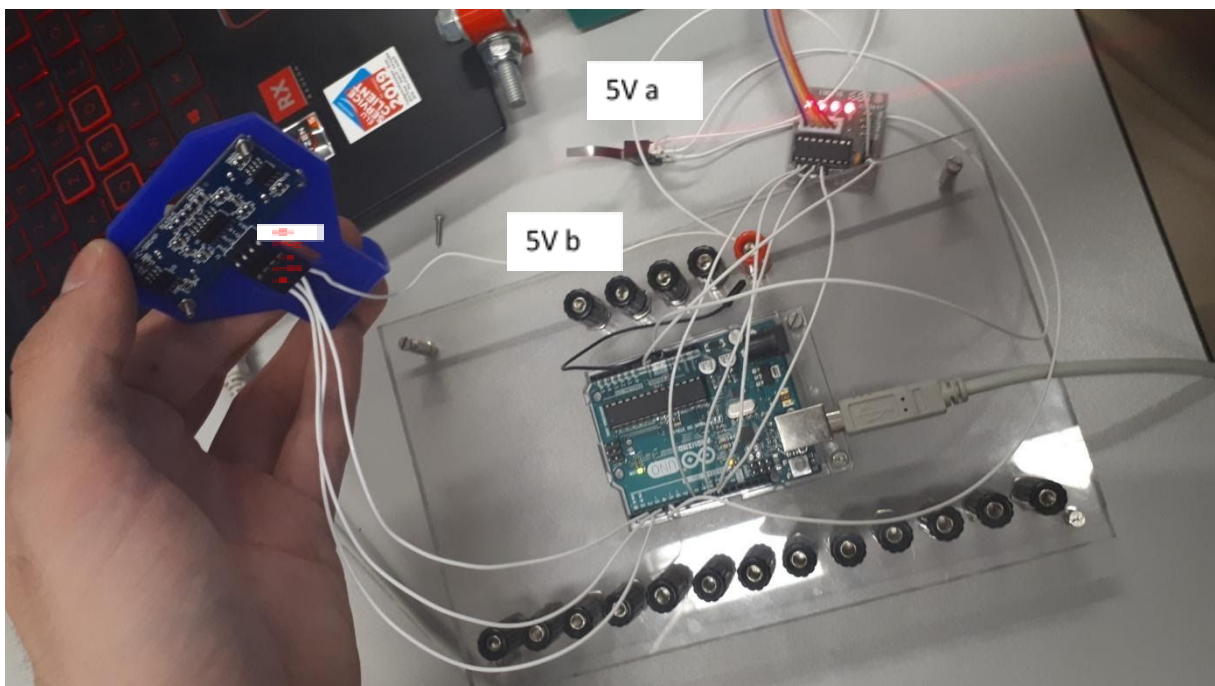
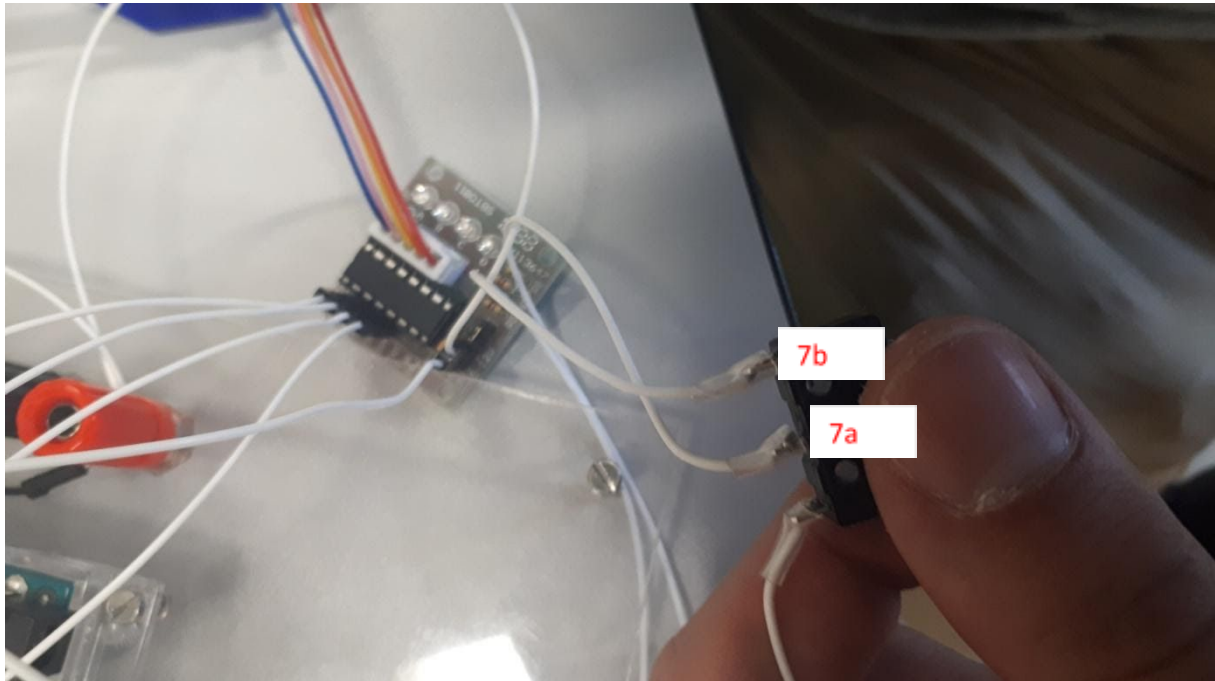
- Analog pin **3**

Pin	Connect
Ground 1	DC motor pin 0V
5V with the black cable	a connect the limit sensor with pin 12V 5REALITY VCC 5V) + b pin VCC
Ground 2	<b>7b</b> the limit sensor





- derivation cable to give 2 cable on the 5V 4



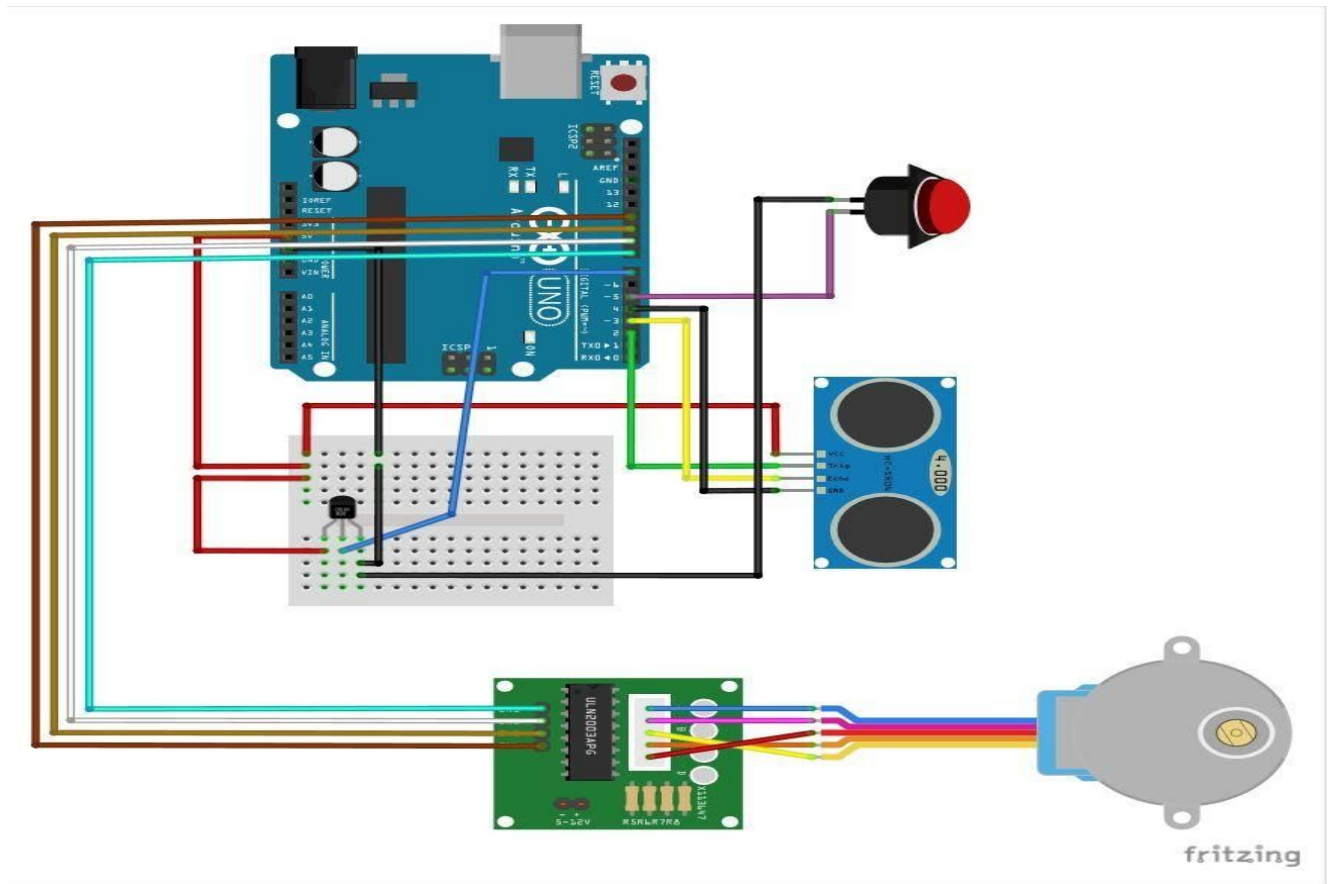
Two cables it's necessary (no three) to use the limit sensor :

**7a**- Command on the pin 4 AU

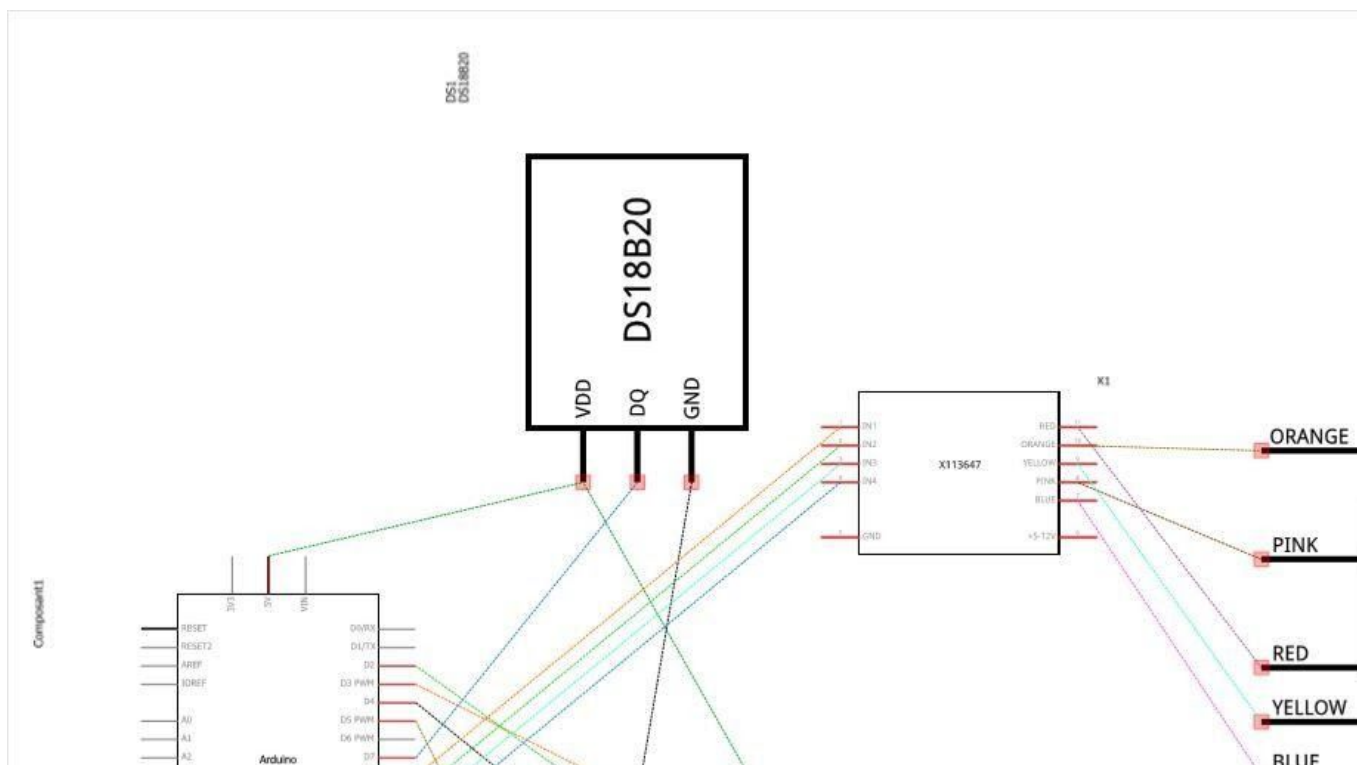
**7b**-ground 2



## Test-Bench-Schematic\_BB :



## Test-Bench-Schematic\_draw:







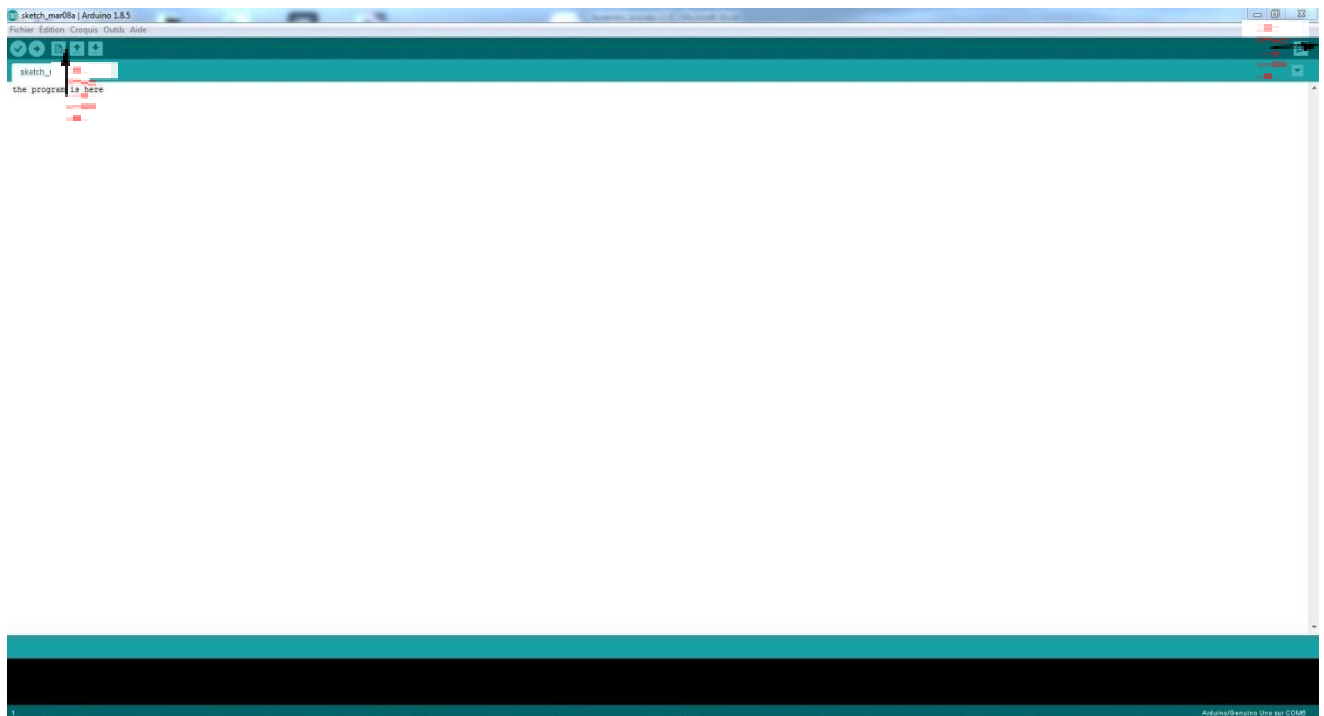
## Arduino Uno Software:

To install this program go to the website:

<https://www.arduino.cc/en/main/software>

After follow the indication by the website.

After installation open the program :



- Click on the button arrow **1** to run the program.

- Click on the button console **2** (monitor series )

If the number of the port isn't correct go to: tools and port to choose the correct port COM.

## Test procedure:

In the monitor series see if you have false or true.

## Bibliography:

All reference documents like the datasheet of all electronic component are  
in the doc folder on github.