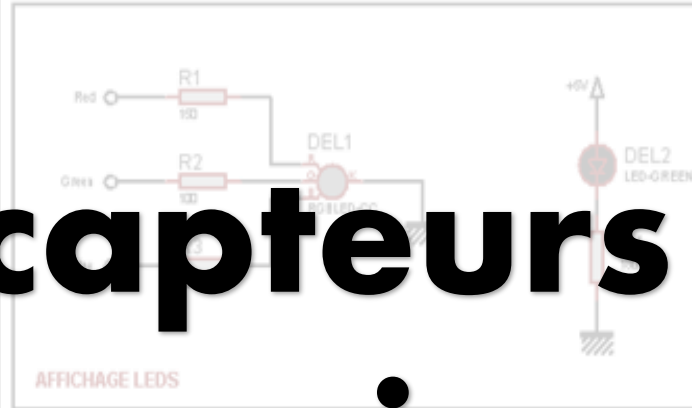


Formation capteurs Arduino

2 & 9 mai 2023



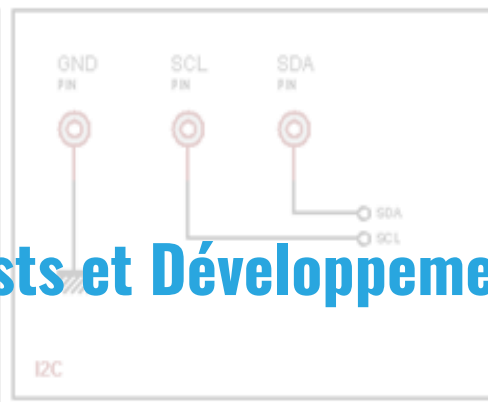
SHIELD ARDUINO



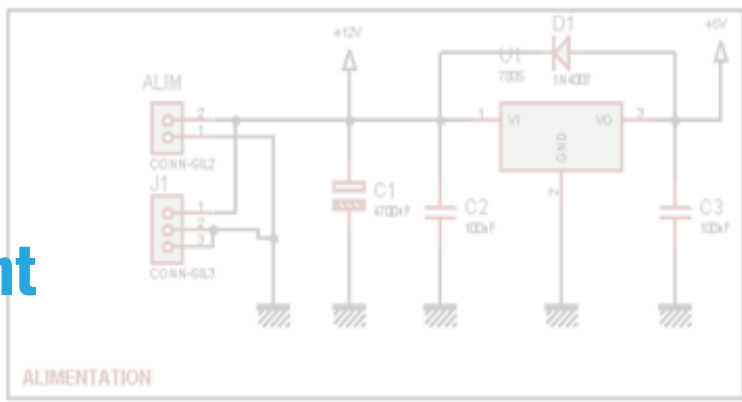
AFFICHAGE LED



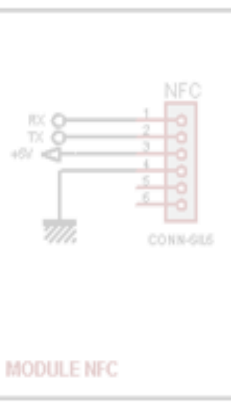
LCD OLED



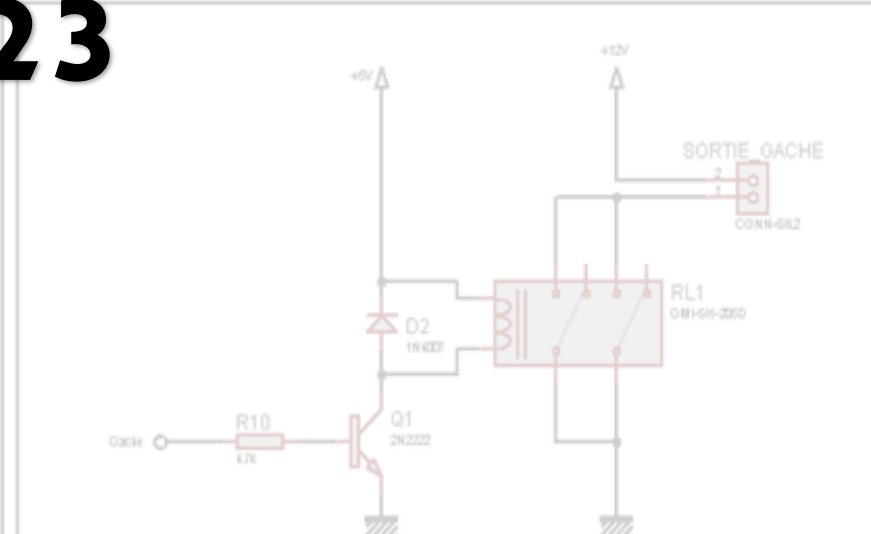
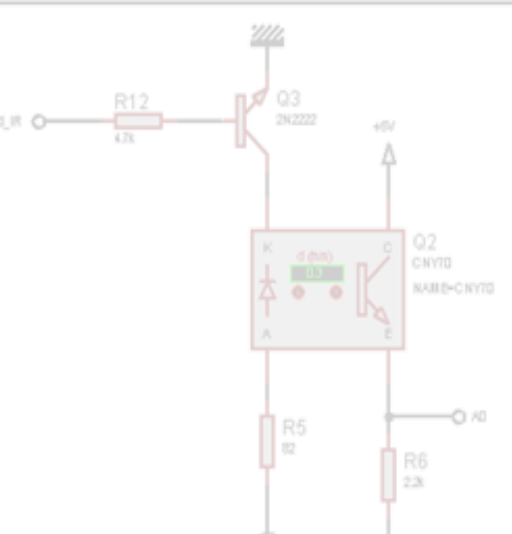
I2C



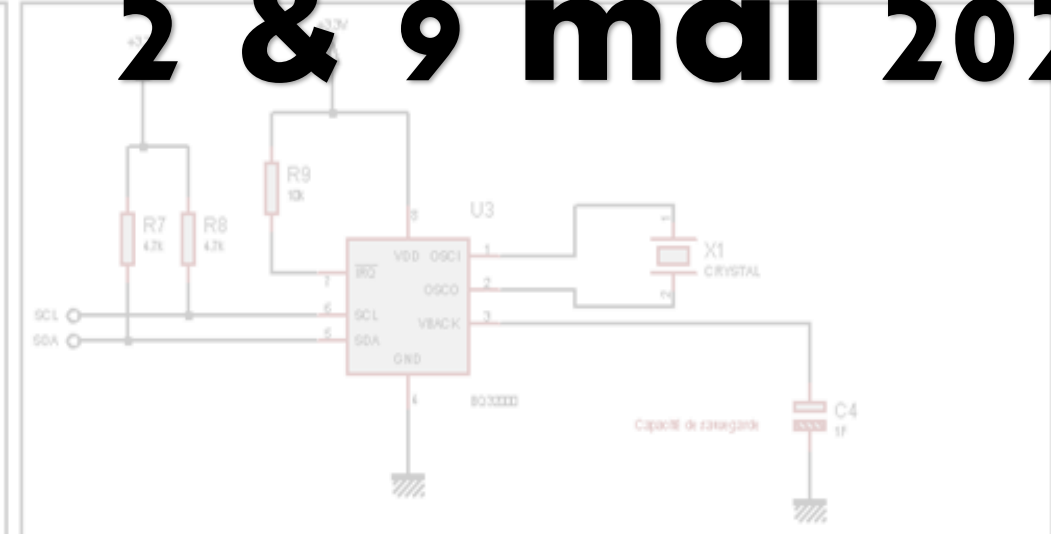
ALIMENTATION



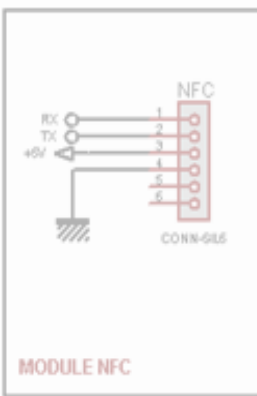
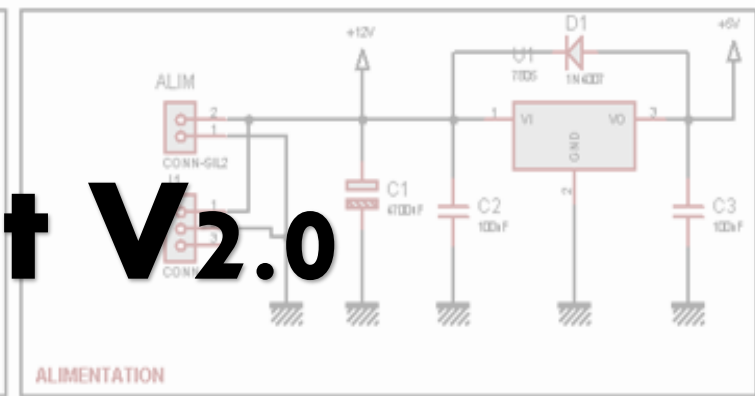
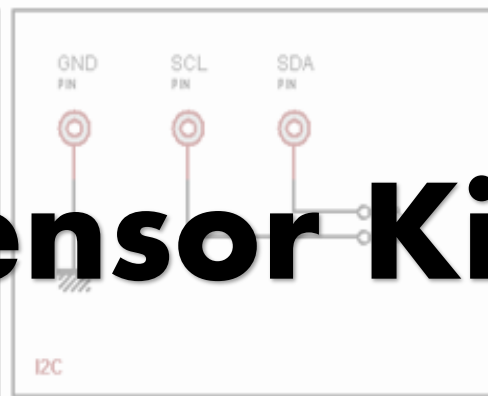
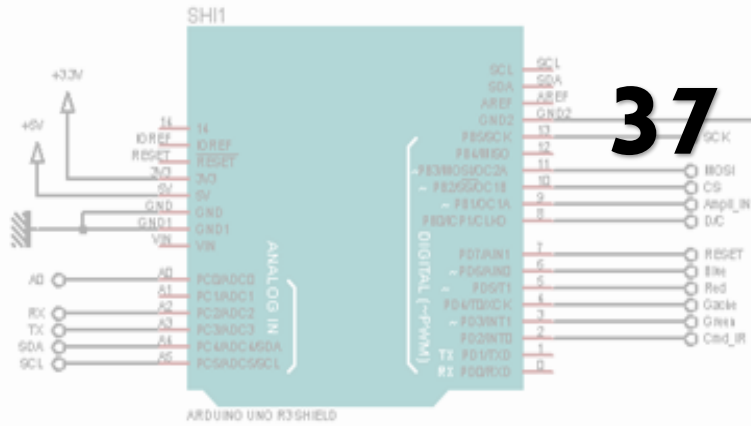
MODULE NFC



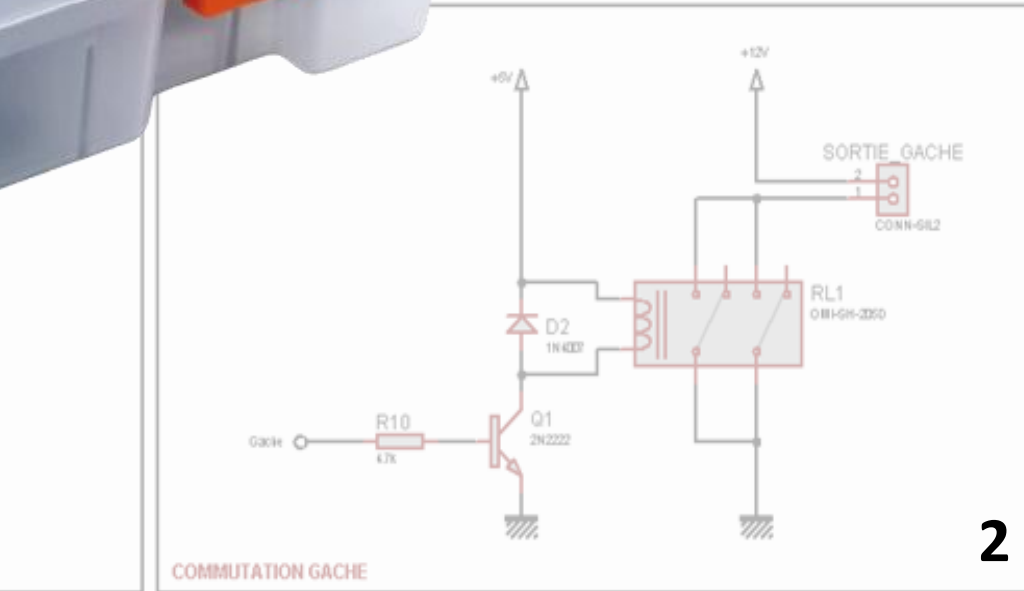
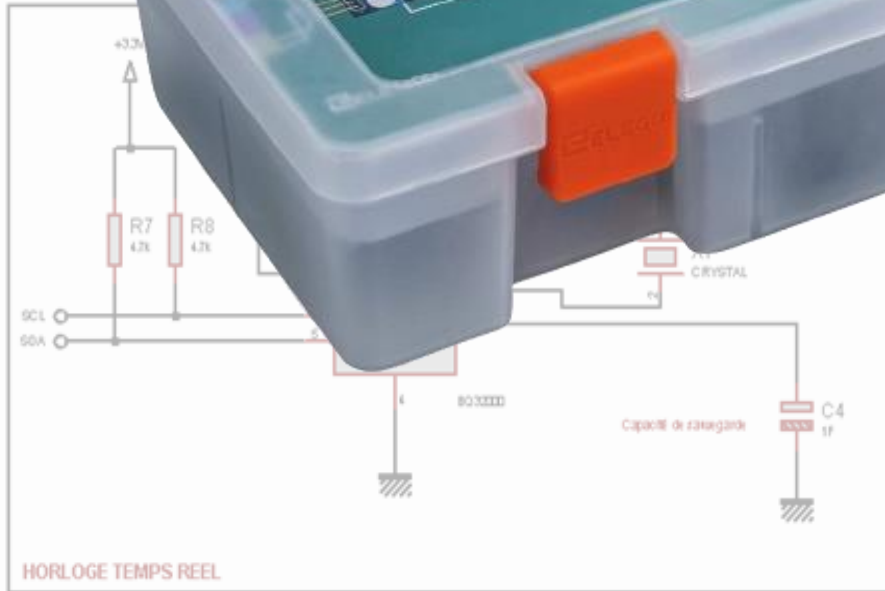
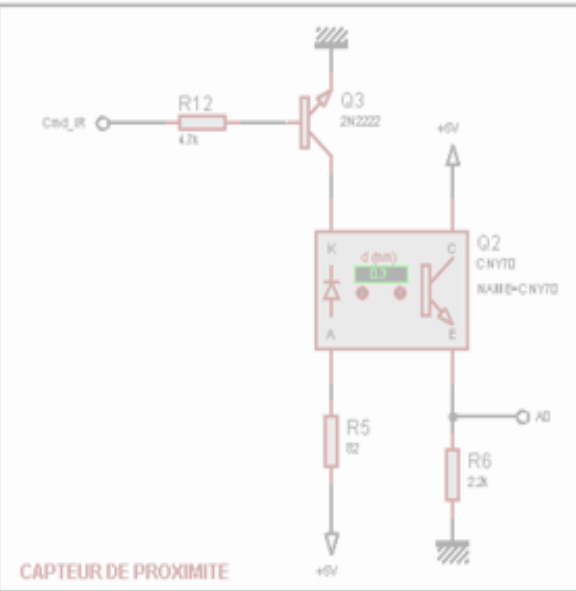
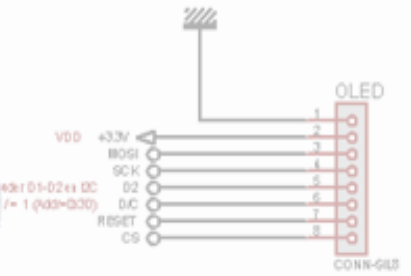
COMMUTATION GACHE



37 Sensor Kit V2.0



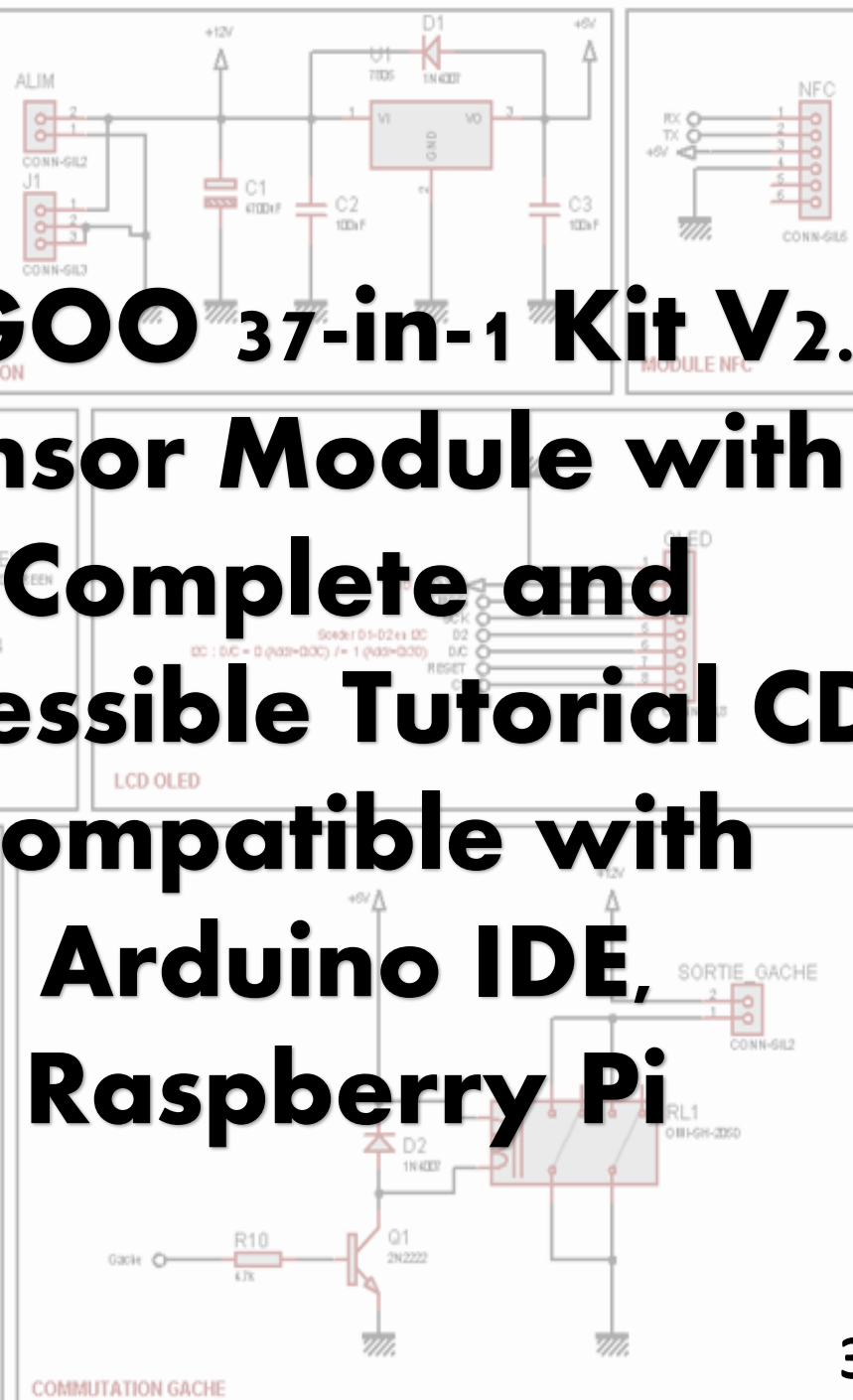
SHIELD ARDUINO





ELEGOO 37-in-1 Kit V2.0

**Sensor Module with
Complete and
Accessible Tutorial CD
Compatible with
Arduino IDE,
Raspberry Pi**



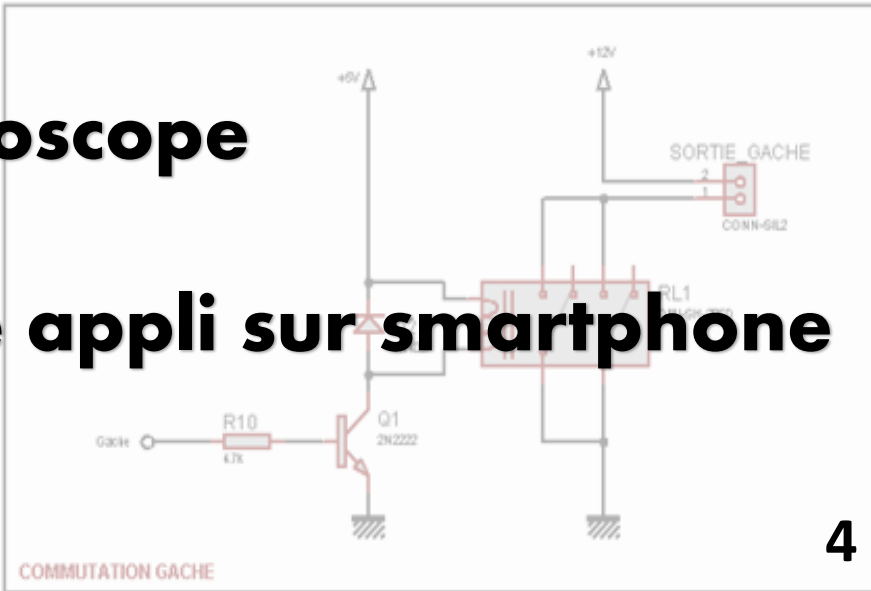
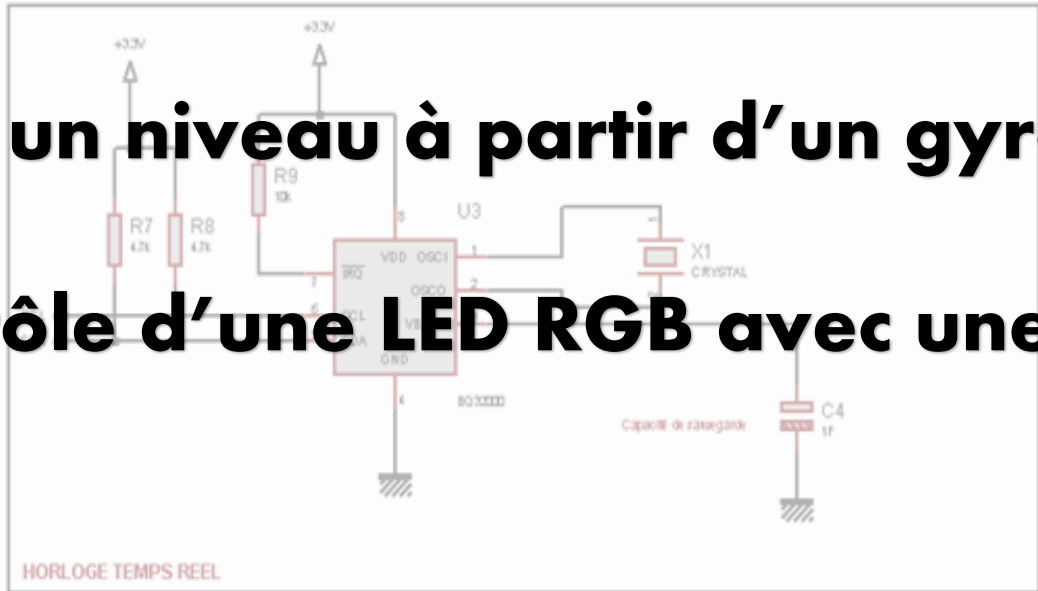
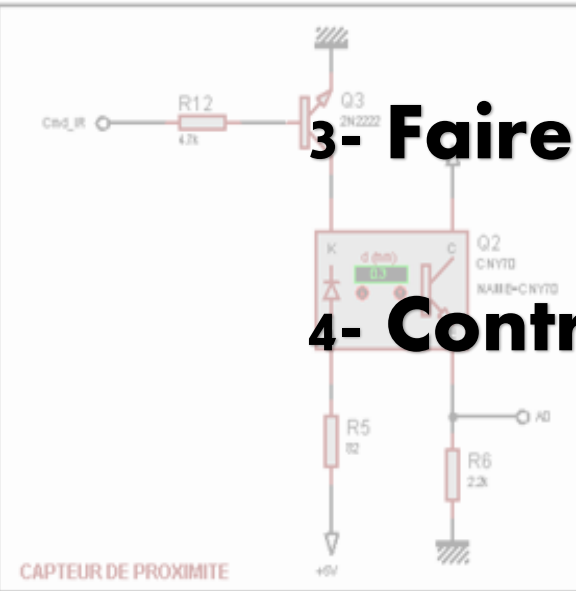
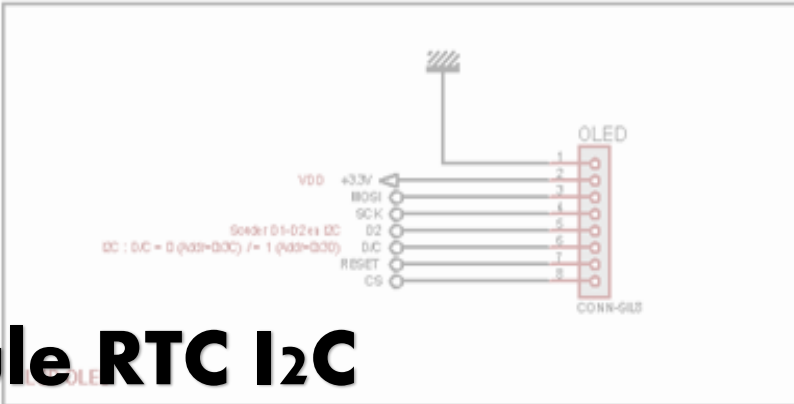
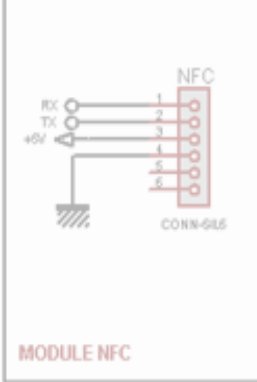
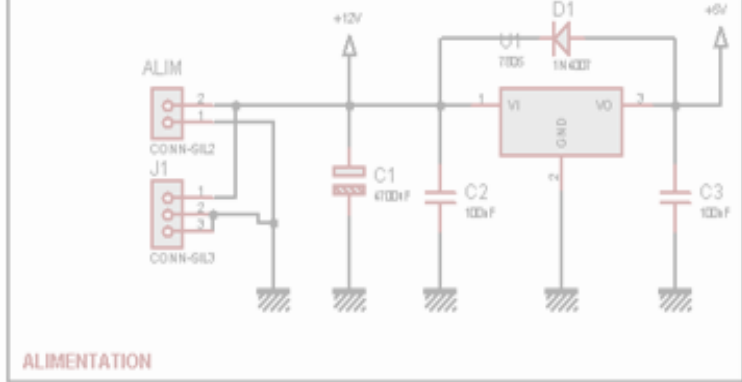
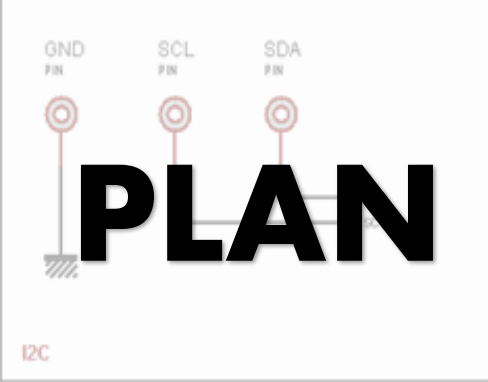
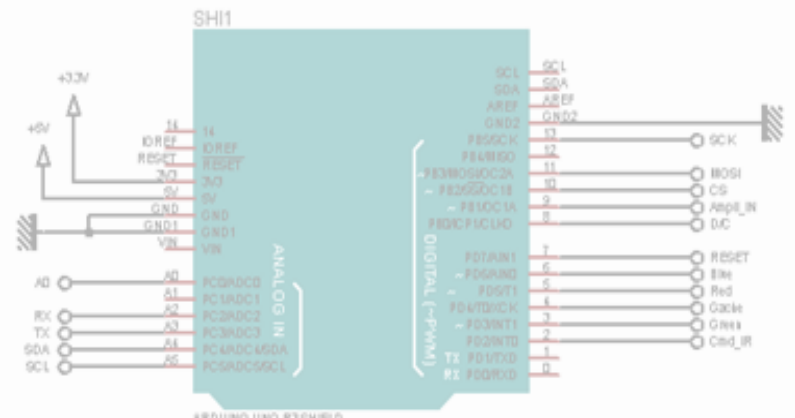
PLAN

1- Utilisation d'un écran LCD

2- Réaliser une horloge avec un module RTC I2C

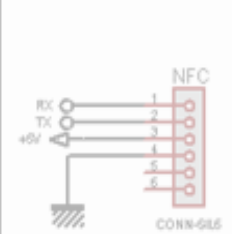
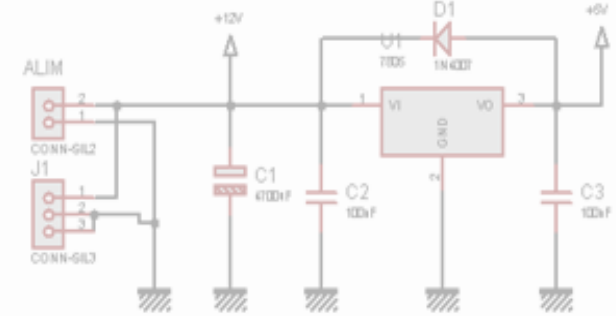
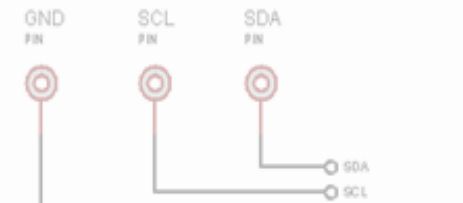
3- Faire un niveau à partir d'un gyroscope

4- Contrôle d'une LED RGB avec une appli sur smartphone

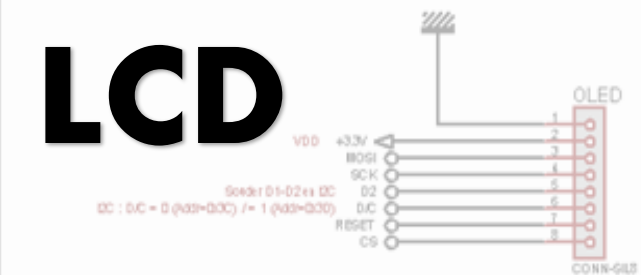
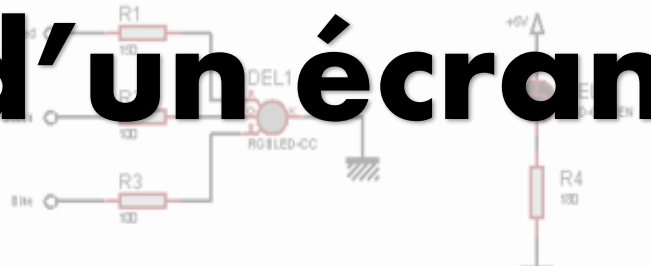




Exercice 1 : Mise en œuvre d'un écran LCD

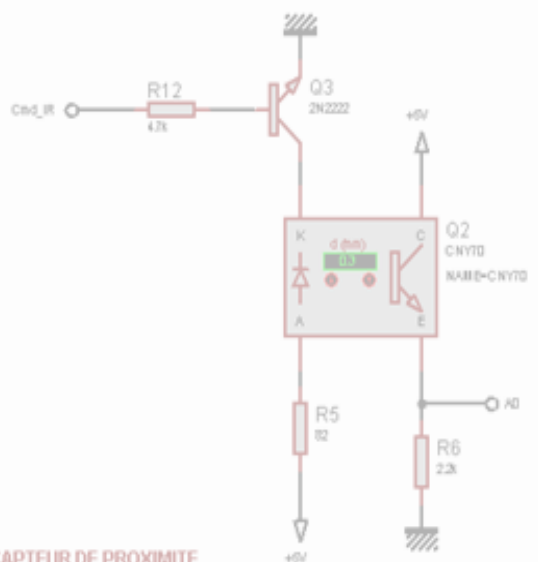


MODULE NFC



SHIELD ARDUINO

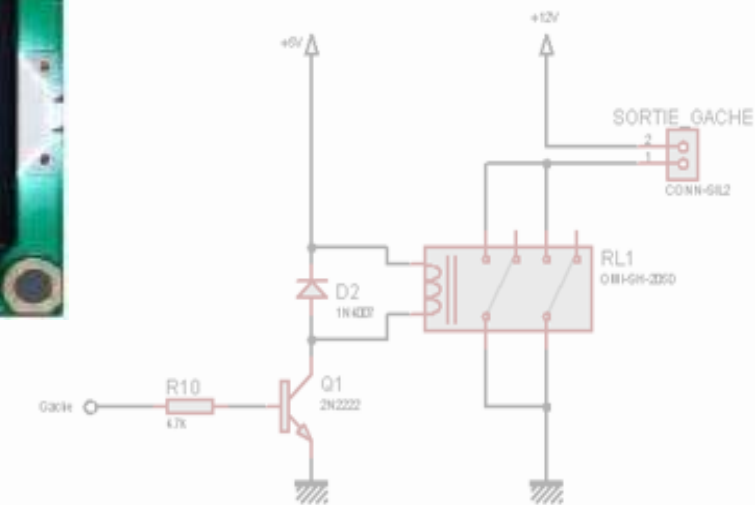
OLED



CAPTEUR DE PROXIMITE



HORLOGE TEMPS REEL



COMMUTATION GACHE

Arduino - Afficheur LCD 1602

Les afficheurs LCD existent sous toutes tailles, de couleurs différentes et pouvant afficher plusieurs lignes et plusieurs caractères par lignes.

Les afficheurs LCD utilisent deux types de controleurs:

- le controleur **HD44780**
- le controleur **ST7032**

Le **HD44780** utilise un bus de data de 8 bits, qu'il faut relier aux broches de l'Arduino.

soit en mode 4 bits, et il utilisera 7 broches de l'Arduino

soit en mode 8 bits, et il utilisera 11 broches de l'Arduino

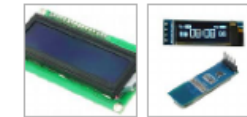
sans oublier les 3 pins pour le controle , l'alimentation et la luminosité

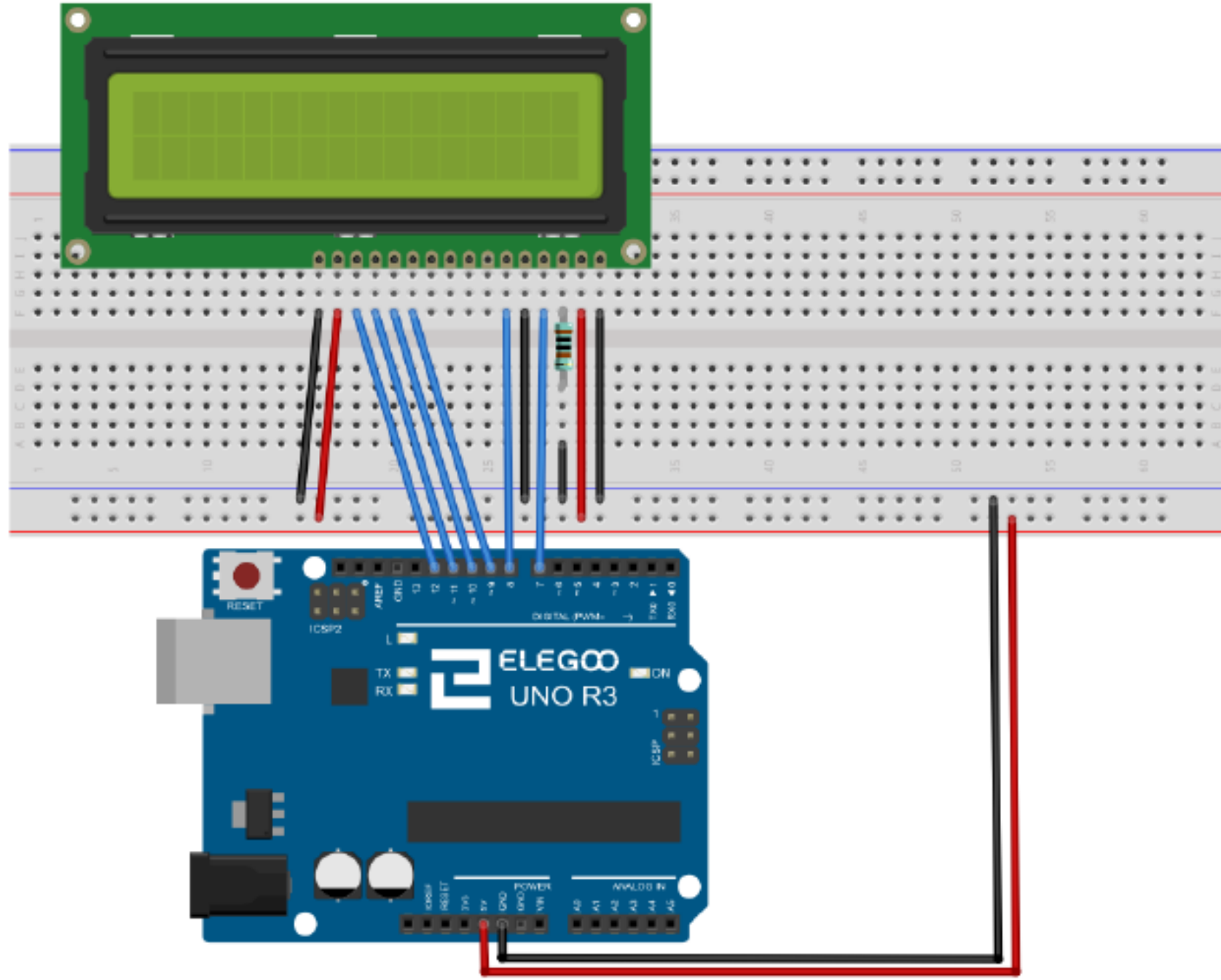
Le **ST7032** utilise l'interface I2C (*qui est présente sur l'Arduino - broche A4 - SDA et broche A5 - SCL*), il n'a besoins que de :

2 pins (**SCL** / la clock en **A5** et **SDA** / les datas en **A4**)

2 pins pour l'alimentation

Le LCD 1602 utilise le contrôleur **HD44780** et **1602** signifie que l'afficheur va pouvoir afficher **16 caractères** sur chacune des **2 lignes**.





Exercice 1 : Mise en œuvre d'un écran LCD

1- Application directe : « hello world » page 261

2- Modifier le code pour afficher successivement :

Bienvenue

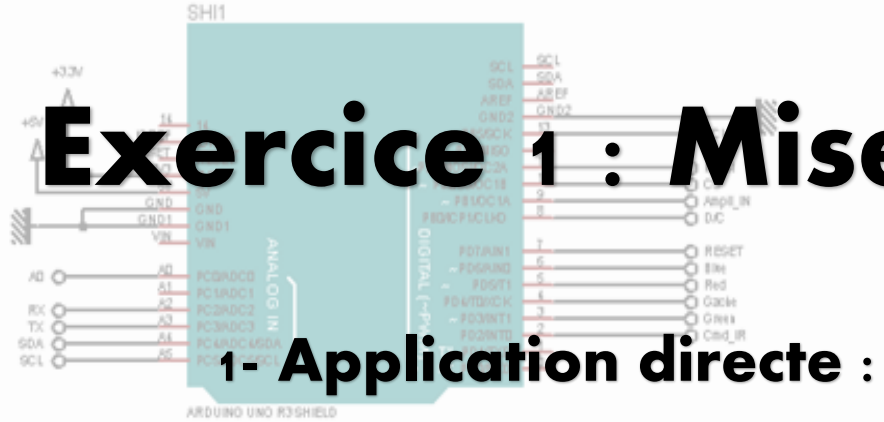
Welcome

Willkommen

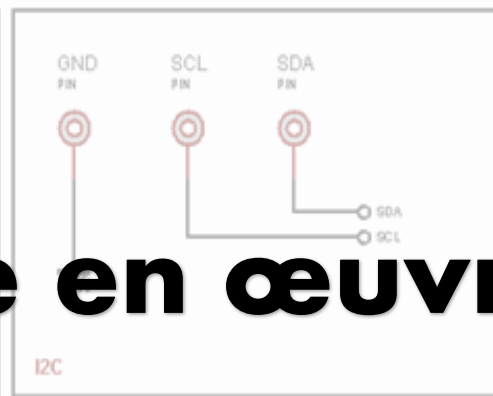
Bienvenido

Affichage centré dans un 1^{er} temps

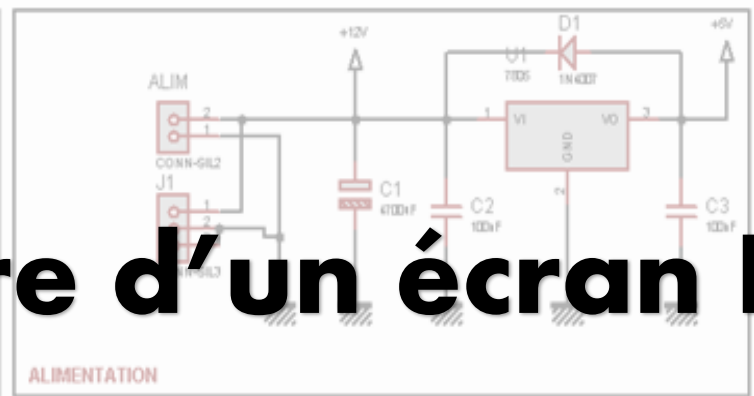
Puis défilement verticale, ou autre effet, dans un 2nd temps



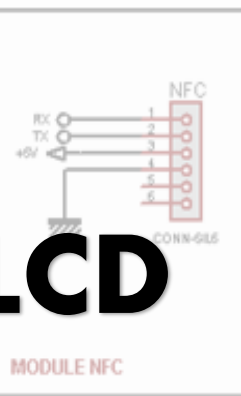
SHIELD ARDUINO



AFFICHAGE LEDS

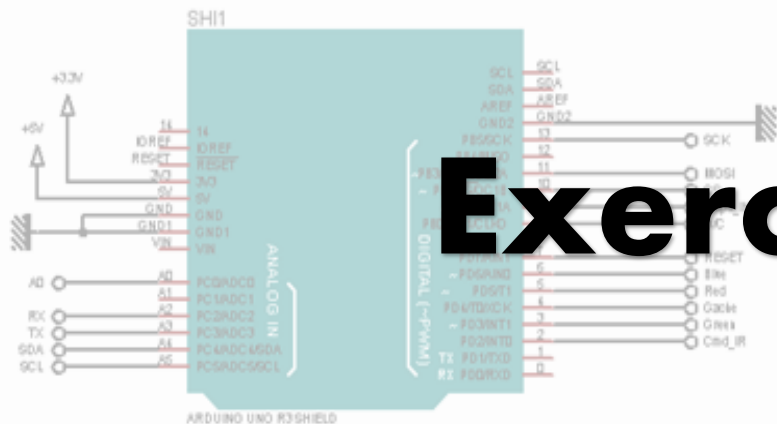


LCD OLED



COMMUTATION GACHE

Exercice 2 : Ajout d'un module RTC



Exercice 2 : Ajout d'un module RTC

1- Documentation du DS1307

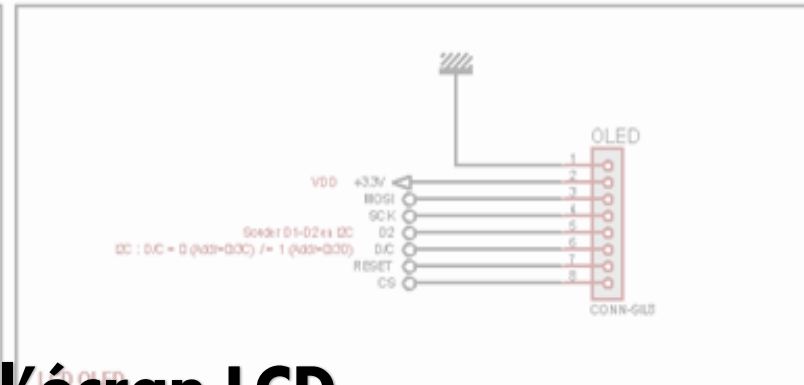
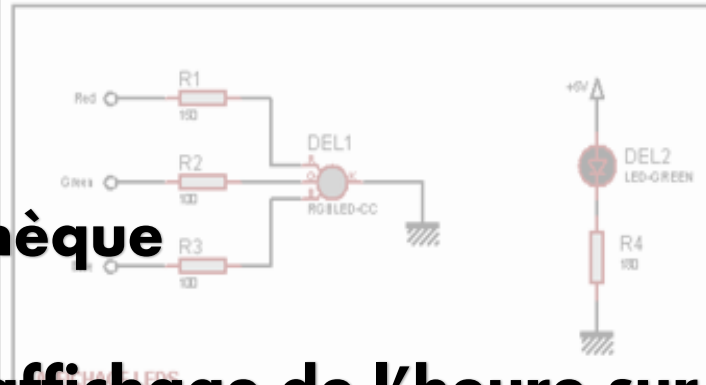
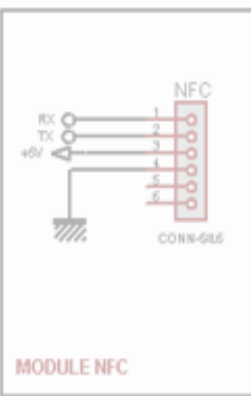
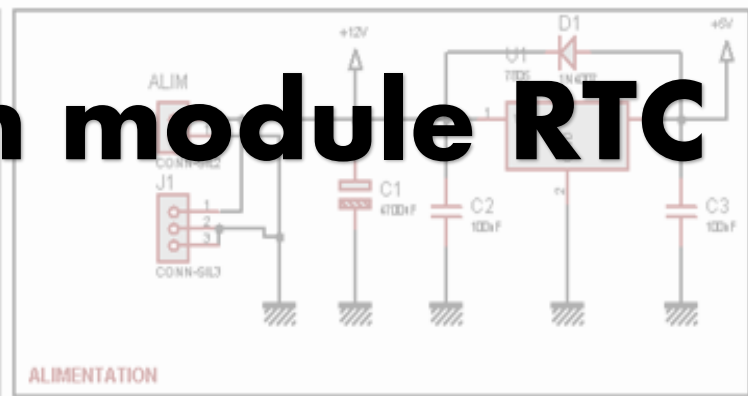
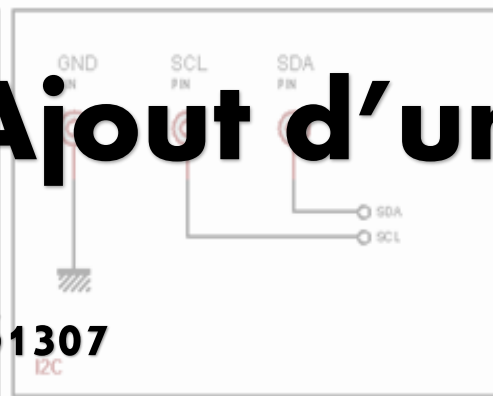
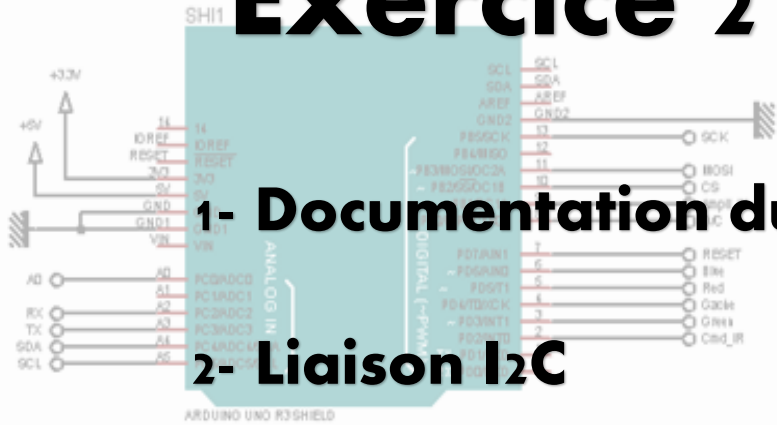
2- Liaison I2C

3- Analyse de la bibliothèque

4- Mise en œuvre avec affichage de l'heure sur l'écran LCD

5- Ajout de fonctionnalités :

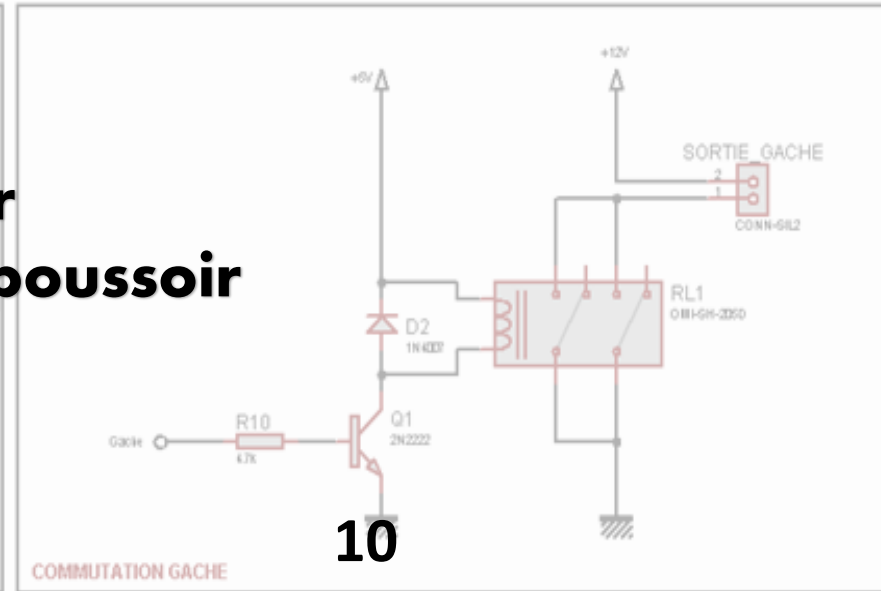
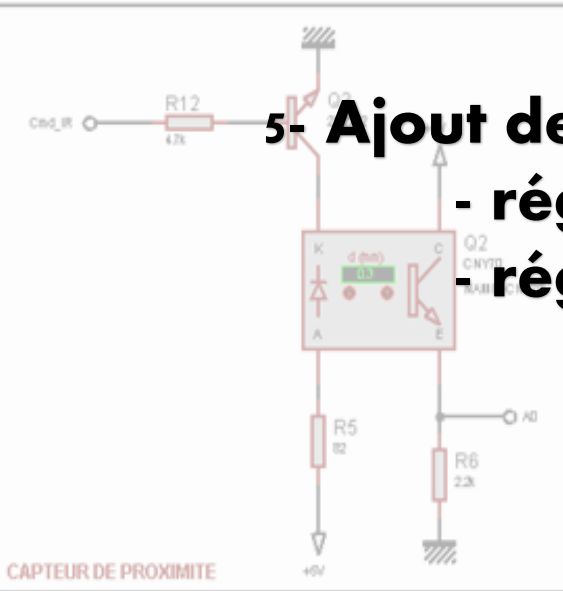
- réglage d'une alarme avec un buzzer
- réglage de l'alarme avec un bouton poussoir

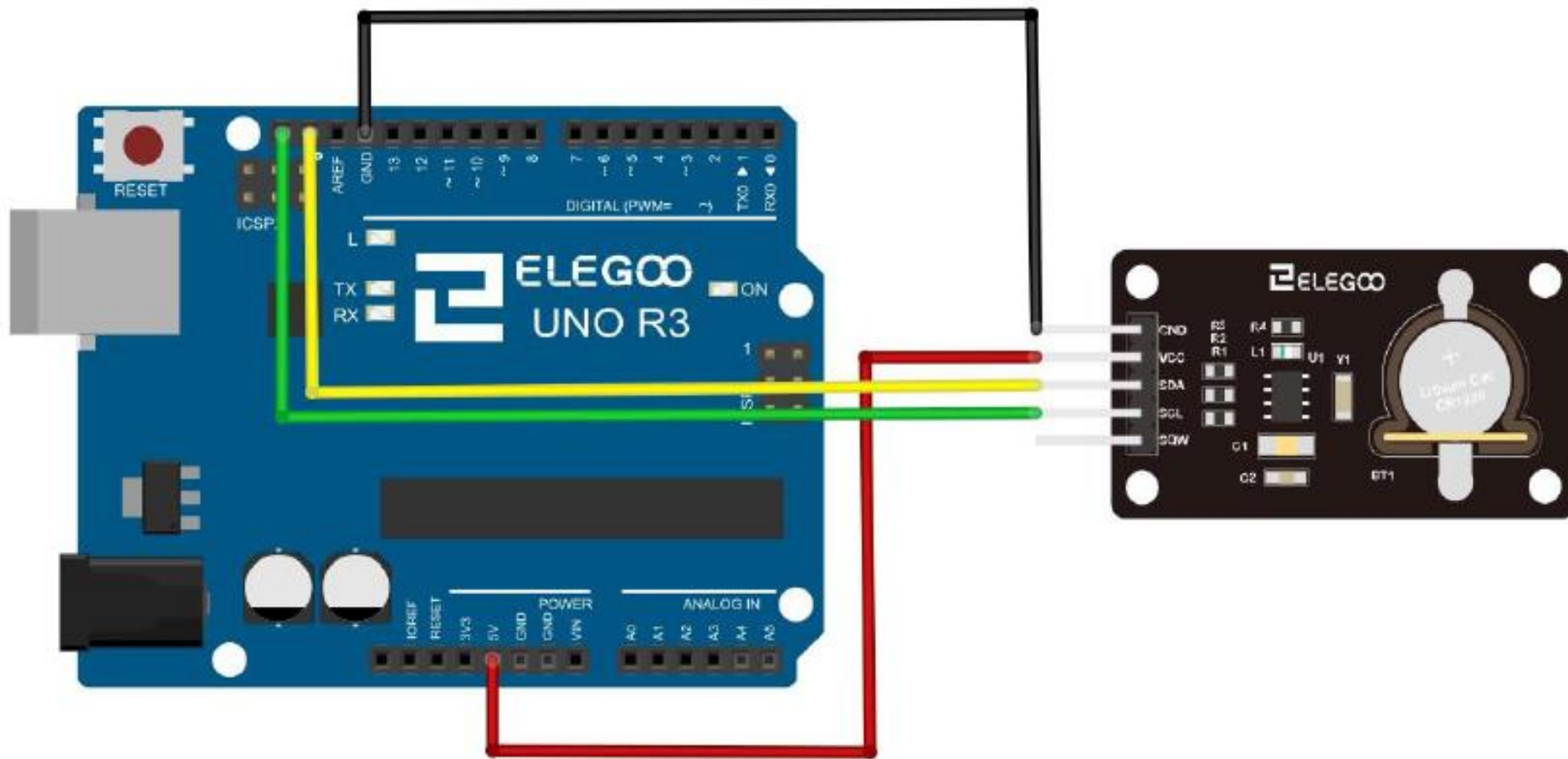


SHIELD ARDUINO

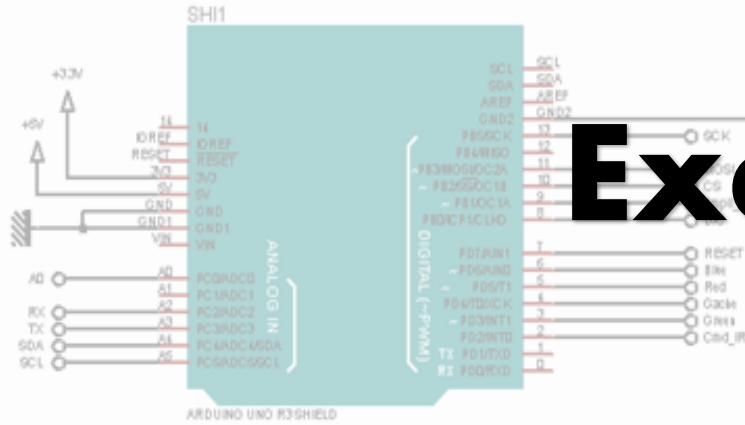
MODULE DS1307

MODULE DS1307

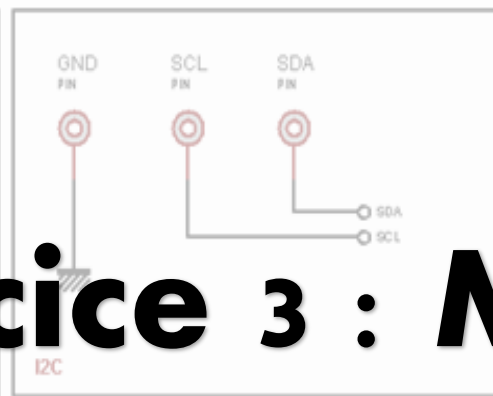




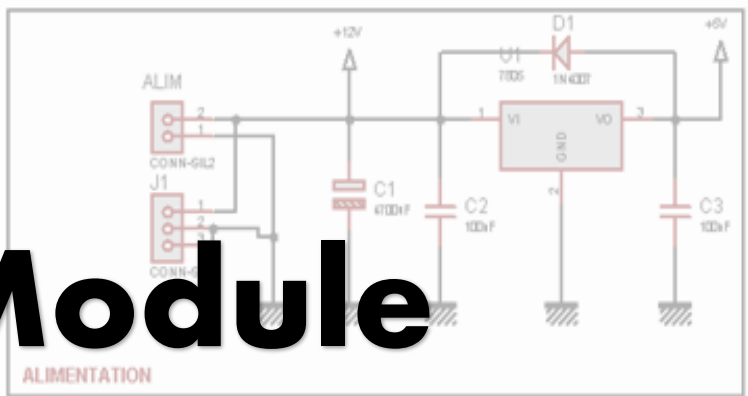
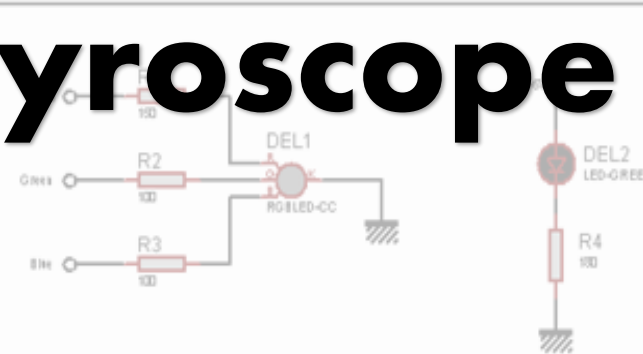
Exercice 3 : Module gyroscope



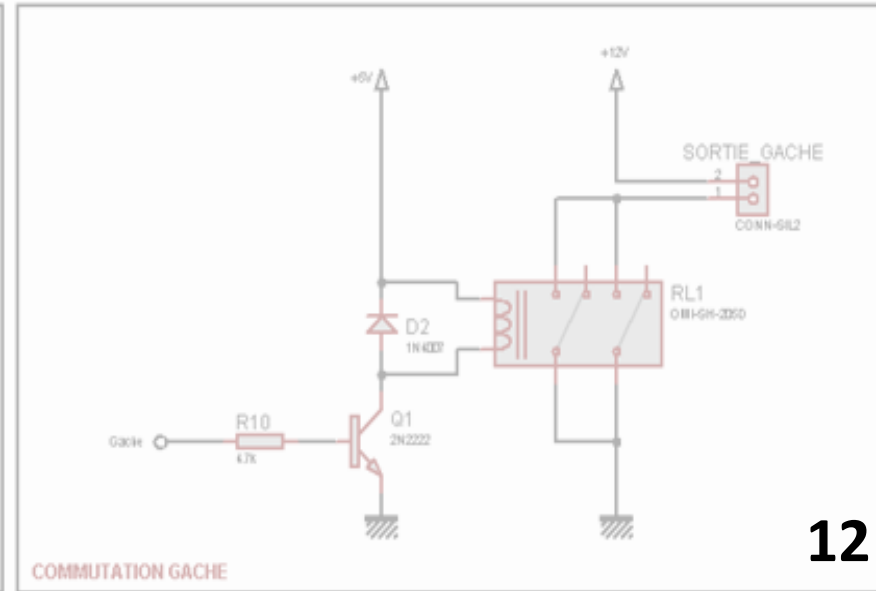
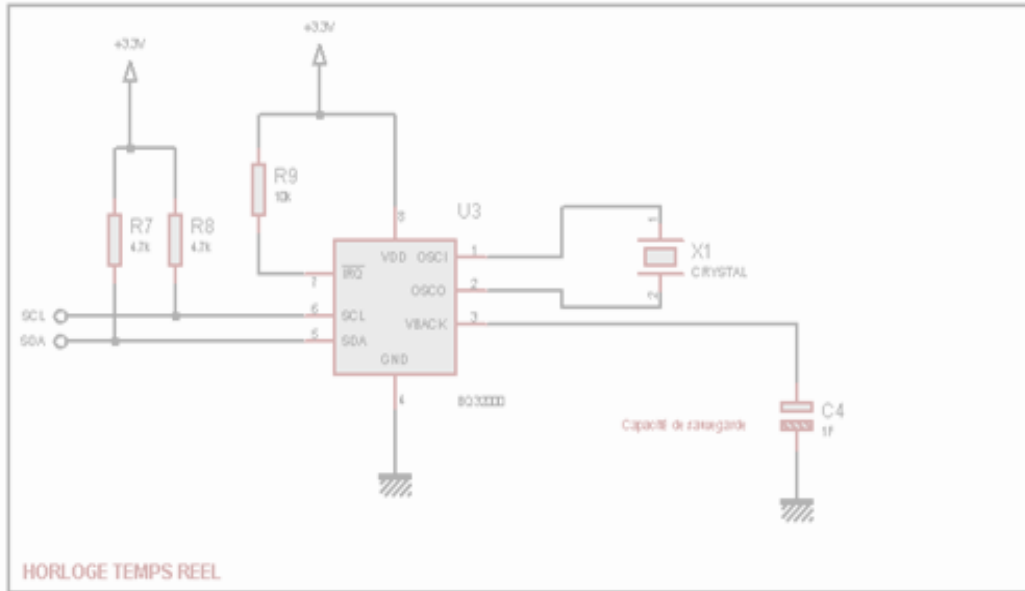
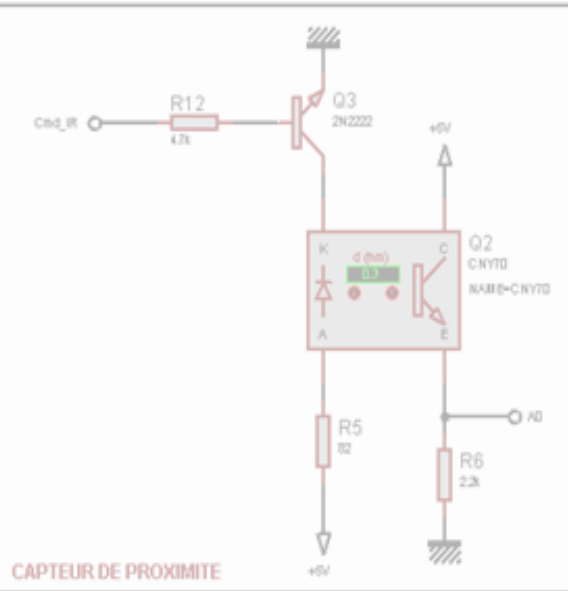
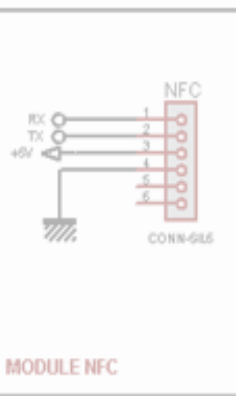
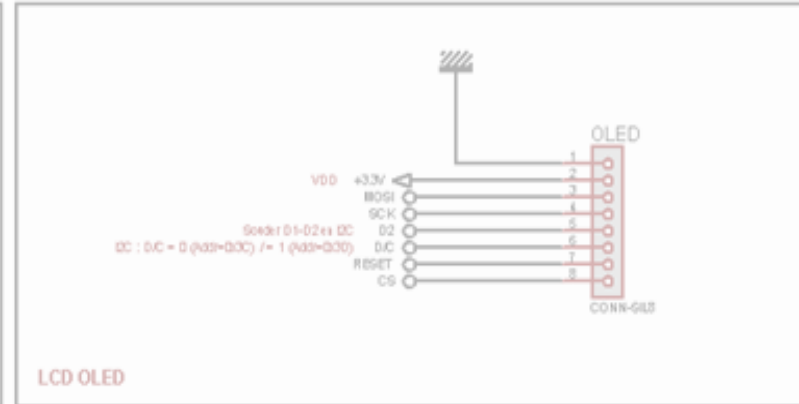
SHIELD ARDUINO



AFFICHAGE LEDS

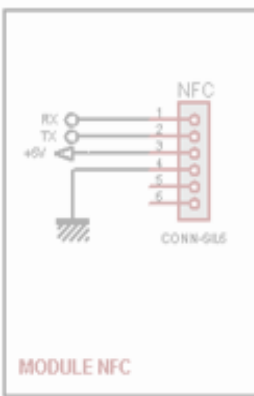
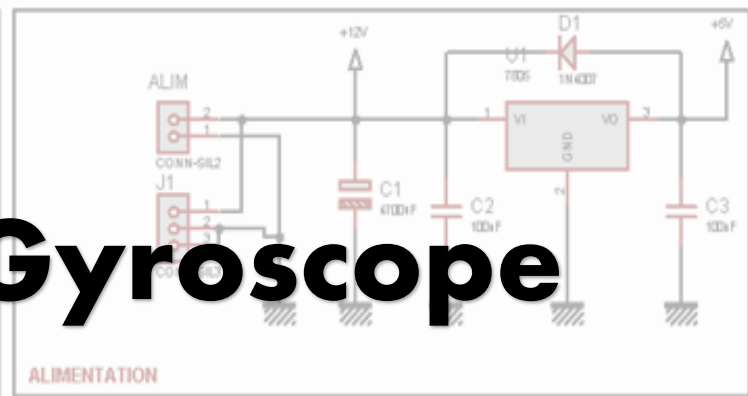


LCD OLED



Exercice

1- Documentation du



521 et du MPU6050

Red

Green

Blue

R1 100

R2 100

R3 100

DEL1

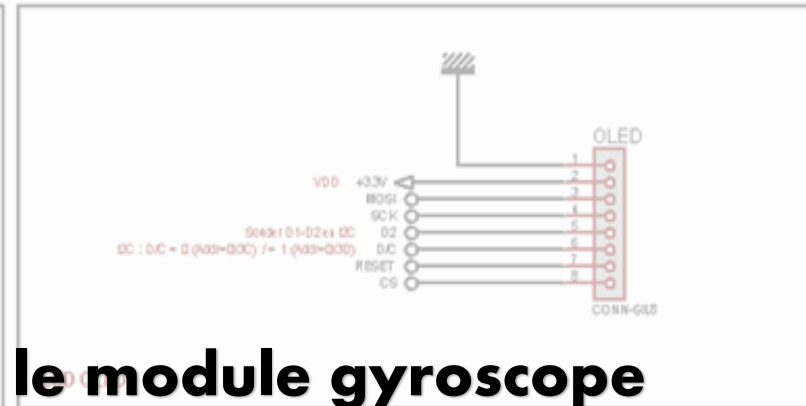
RG1 LED-CC

+5V

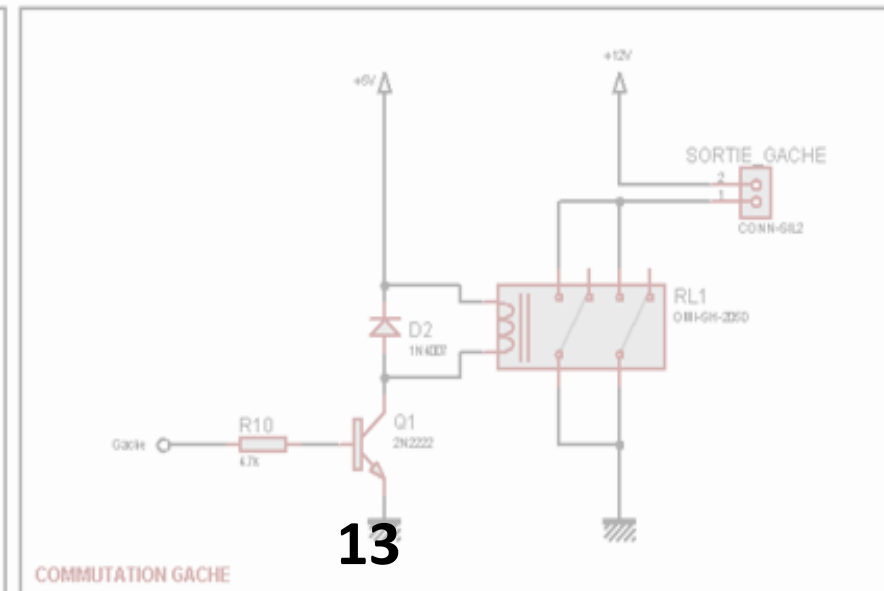
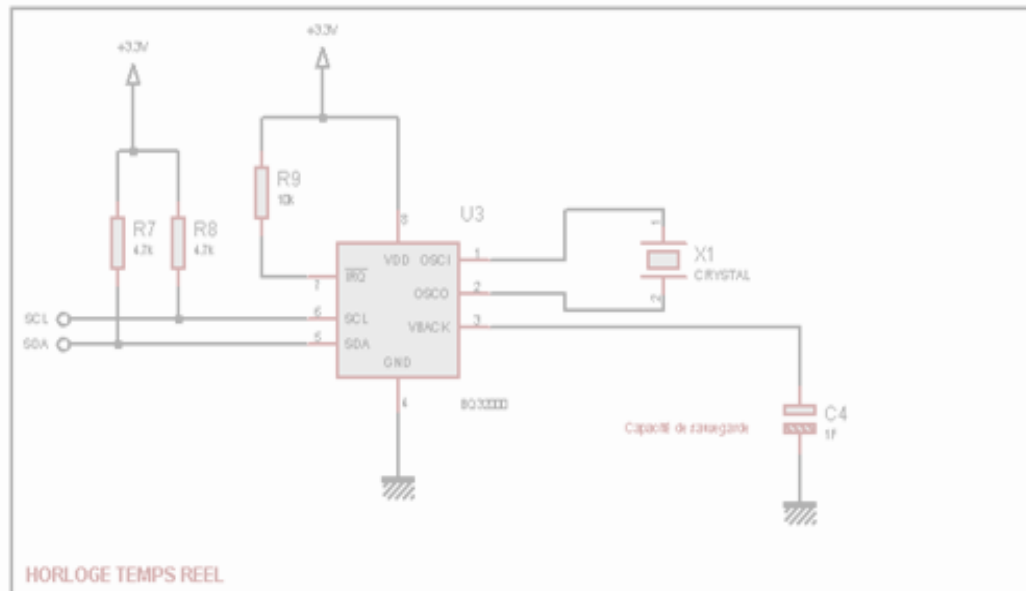
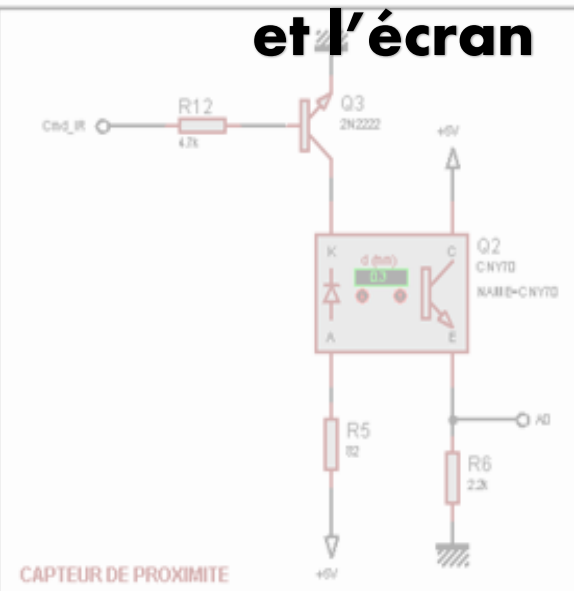
DEL2 LED-GREEN

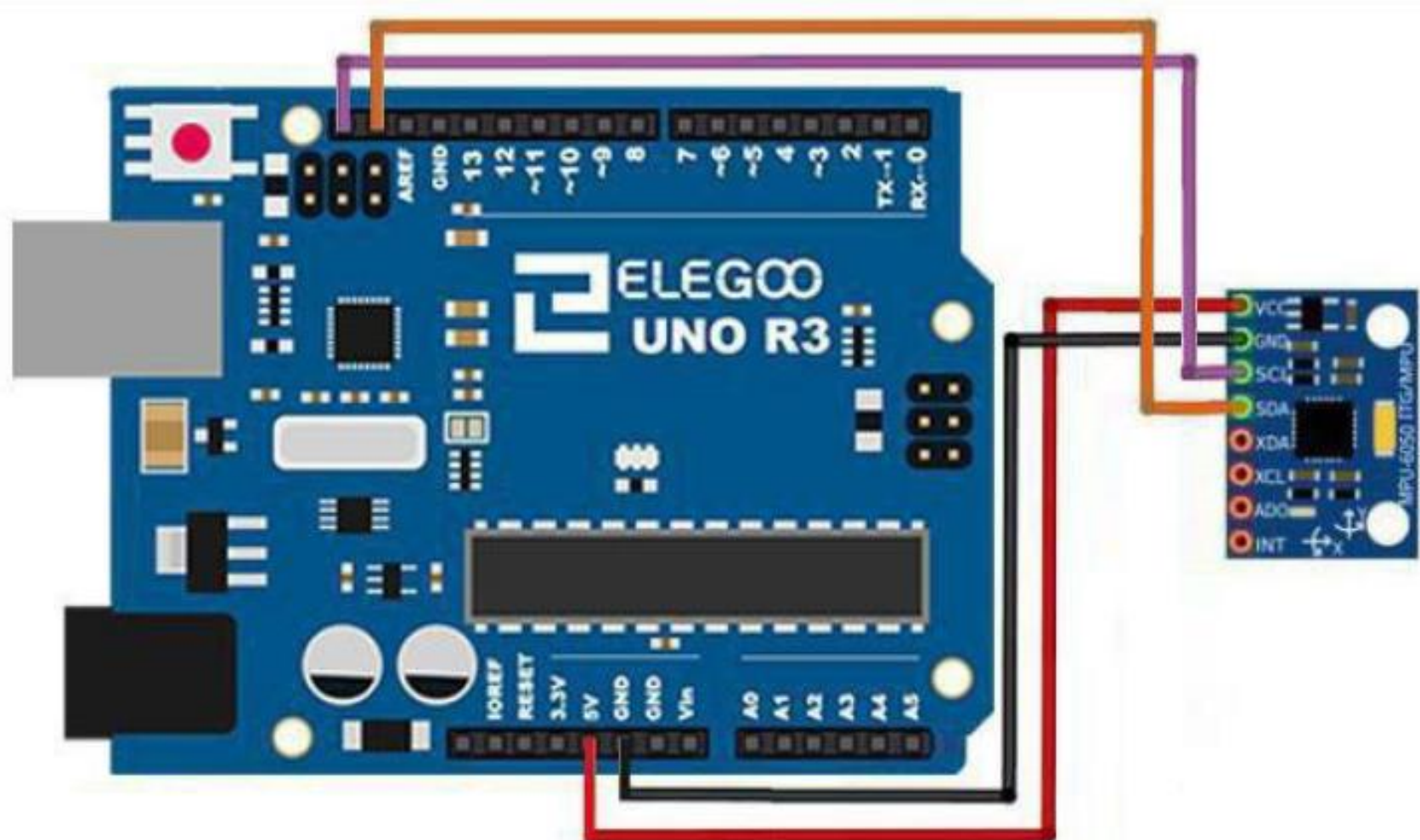
R4 100

er un niveau en utilisant



SHIELD ARDUINO





Exercice 4 : Contrôle d'une LED RGB en Bluetooth

1- Application directe (voir exemple page 134)

2- Contrôle en Bluetooth :

Mise en œuvre module HC-05

Faire une application avec Bluetooth Electronics

