

Système d'alarme à base d'Arduino

Code arduino

```
sketch_oct02bfonctionne
#include <LiquidCrystal_I2C.h>
#include <Wire.h>

#include <Keypad.h>
#define buzzer 8
#define trigPin 9
#define echoPin 10
long duration;
int distance, initialDistance, currentDistance, i;
int screenOffMsg =0;
String password="1234";
String tempPassword;
boolean activated = false; // State of the alarm
boolean isActivated;
boolean activateAlarm = false;
boolean alarmActivated = false;
boolean enteredPassword; // State of the entered password to stop the alarm
boolean passChangeMode = false;
boolean passChanged = false;
const byte ROWS = 4; //four rows
const byte COLS = 4; //four columns
char keypressed;
//define the cymbols on the buttons of the keypads
char keyMap[ROWS][COLS] = {
  {'1','2','3','A'},
  {'4','5','6','B'},
  {'7','8','9','C'},
  {'*','0','#','D'}
};
byte rowPins[ROWS] = {7, 6, 5, 4}; //Row pinouts of the keypad
byte colPins[COLS] = {3, 2, 1, 0}; //Column pinouts of the keypad
Keypad myKeypad = Keypad( makeKeymap(keyMap), rowPins, colPins, ROWS, COLS);
LiquidCrystal_I2C lcd(0x27,20,4);
void setup() {
```

```
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void setup() {
  lcd.init();
  lcd.init();
  lcd.backlight();
  pinMode(buzzer, OUTPUT); // Set buzzer as an output
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
}
void loop() {
  if (activateAlarm) {
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Alarm will be");
    lcd.setCursor(0,1);
    lcd.print("activated in");

    int countdown = 9; // 9 seconds count down before activating the alarm
    while (countdown != 0) {
      lcd.setCursor(13,1);
      lcd.print(countdown);
      countdown--;
      tone(buzzer, 700, 100);
      delay(1000);
    }
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Alarme Active!");
    initialDistance = getDistance();
    activateAlarm = false;
    alarmActivated = true;
  }
  if (alarmActivated == true){
    currentDistance = getDistance() + 10;
    if ( currentDistance < initialDistance) {
```

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```
    if ( currentDistance < initialDistance) {
        tone(buzzer, 1000); // Send 1KHz sound signal
        lcd.clear();
        enterPassword();
    }
}
if (!alarmActivated) {
    if (screenOffMsg == 0 ){
        lcd.clear();
        lcd.setCursor(0,0);
        lcd.print("A - Active");
        lcd.setCursor(0,1);
        lcd.print("B - Changer Pass");
        screenOffMsg = 1;
    }
    keypressed = myKeypad.getKey();
    if (keypressed == 'A'){ //If A is pressed, activate the alarm
        tone(buzzer, 1000, 200);
        activateAlarm = true;
    }
    else if (keypressed == 'B') {
        lcd.clear();
        int i=1;
        tone(buzzer, 2000, 100);
        tempPassword = "";
        lcd.setCursor(0,0);
        lcd.print("Password Actuel");
        lcd.setCursor(0,1);
        lcd.print(">");
        passChangeMode = true;
        passChanged = true;
        while (passChanged) {
            keypressed = myKeypad.getKey();
            if (keypressed != NO_KEY) {
```

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```
            if (keypressed != NO_KEY){
                if (keypressed == '0' || keypressed == '1' || keypressed == '2' || keypressed == '3' || keypressed == '4' ||
                    keypressed == '5' || keypressed == '6' || keypressed == '7' || keypressed == '8' || keypressed == '9' ) {
                    tempPassword += keypressed;
                    lcd.setCursor(i,1);
                    lcd.print("*");
                    i++;
                    tone(buzzer, 2000, 100);
                }
            }
        }
        if (i > 5 || keypressed == '#') {
            tempPassword = "";
            i=1;
            lcd.clear();
            lcd.setCursor(0,0);
            lcd.print("Password Actuel");
            lcd.setCursor(0,1);
            lcd.print(">");
        }
    }
    if ( keypressed == '*' ) {
        i=1;
        tone(buzzer, 2000, 100);
        if (password == tempPassword) {
            tempPassword="";
            lcd.clear();
            lcd.setCursor(0,0);
            lcd.print("Entrer Nouveau Password");
            lcd.setCursor(0,1);
            lcd.print(">");
            while (passChangeMode) {
                keypressed = myKeypad.getKey();
                if (keypressed != NO_KEY) {
                    if (keypressed == '1' || keypressed == '2' || keypressed == '3' || keypressed == '4' ||
                        keypressed == '5' || keypressed == '6' || keypressed == '7' || keypressed == '8' || keypressed == '9' ) {
```

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```
keypressed == '5' || keypressed == '6' || keypressed == '7' || keypressed == '8' || keypressed == '9' ) {
    tempPassword += keypressed;
    lcd.setCursor(i,1);
    lcd.print("*");
    i++;
    tone(buzzer, 2000, 100);
}
}
if (i > 5 || keypressed == '#') {
    tempPassword = "";
    i=1;
    tone(buzzer, 2000, 100);
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Entrer Nouveau Password");
    lcd.setCursor(0,1);
    lcd.print(">");
}
if ( keypressed == '*' ) {
    i=1;
    tone(buzzer, 2000, 100);
    password = tempPassword;
    passChangeMode = false;
    passChanged = false;
    screenOffMsg = 0;
}
}
}
}
}
}
}
void enterPassword() {
```

sketch_oct02bfonctionne

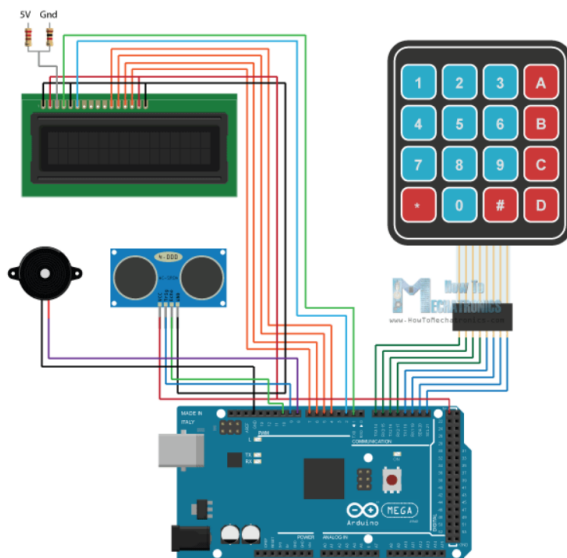
```
void enterPassword() {
    int k=5;
    tempPassword = "";
    activated = true;
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print(" *** ALARM *** ");
    lcd.setCursor(0,1);
    lcd.print("Pass>");
    while(activated) {
        keypressed = myKeypad.getKey();
        if (keypressed != NO_KEY){
            if (keypressed == '0' || keypressed == '1' || keypressed == '2' || keypressed == '3' || keypressed == '4' ||
                keypressed == '5' || keypressed == '6' || keypressed == '7' || keypressed == '8' || keypressed == '9' ) {
                tempPassword += keypressed;
                lcd.setCursor(k,1);
                lcd.print("*");
                k++;
            }
        }
    }
    if (k > 9 || keypressed == '#') {
        tempPassword = "";
        k=5;
        lcd.clear();
        lcd.setCursor(0,0);
        lcd.print(" *** ALARME *** ");
        lcd.setCursor(0,1);
        lcd.print("Pass>");
    }
    if ( keypressed == '*' ) {
        if ( tempPassword == password ) {
            activated = false;
            alarmActivated = false;
            noTone(buzzer);
        }
    }
}
```

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```
    else if (tempPassword != password) {  
      lcd.setCursor(0,1);  
      lcd.print("Wrong! Try Again");  
      delay(2000);  
      lcd.clear();  
      lcd.setCursor(0,0);  
      lcd.print(" *** ALARME *** ");  
      lcd.setCursor(0,1);  
      lcd.print("Pass>");  
    }  
  }  
}  
// Custom function for the Ultrasonic sensor  
long getDistance(){  
  //int i=10;  
  
  //while( i<=10 ) {  
  // Clears the trigPin  
  digitalWrite(trigPin, LOW);  
  delayMicroseconds(2);  
  // Sets the trigPin on HIGH state for 10 micro seconds  
  digitalWrite(trigPin, HIGH);  
  delayMicroseconds(10);  
  digitalWrite(trigPin, LOW);  
  // Reads the echoPin, returns the sound wave travel time in microseconds  
  duration = pulseIn(echoPin, HIGH);  
  // Calculating the distance  
  distance = duration*0.034/2;  
  //sumDistance += distance;  
  //}  
  //int averageDistance= sumDistance/10;  
  return distance;  
}
```

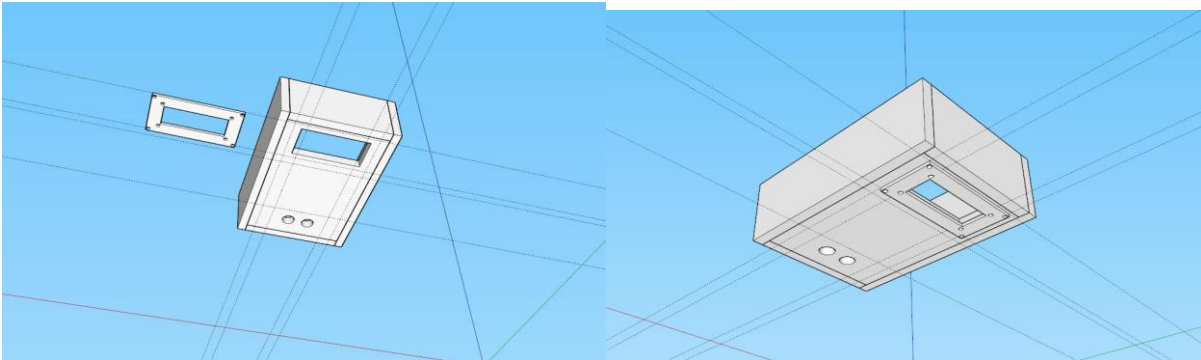
Câblage

J'ai câblé l'alarme avec une bred bord pour tester le fonctionnement du système

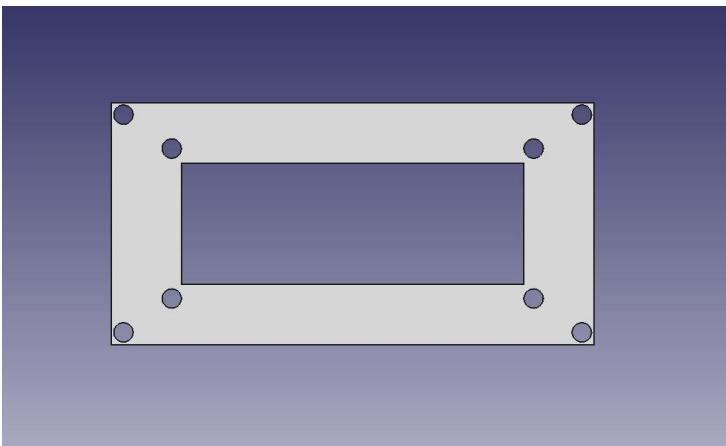


Conception 3D

La conception 3D m'a permis de visualiser et préparer le travail du bois.



J'ai aussi créé une pièce sur FreeCAD que j'ai imprimée grâce à une imprimante 3D, me permettant de fixer l'écran LCD sur la face avant du boîtier.



Projet fini

