

PROGRAMME DE SIMULATION

```
int pinsensor_0 = 0; //pour la cellule (eclairment)
int pinsensor_1 = 1; // pour la temperature
int pinsensor_2 = 2; //pour le cuorant
int pinsensor_3 = 3; //pour la tonsion
int pinsensor_4 = 4; //pour la tonsion de capacite
const int SW1pin = 2;
const int SW2pin = 4;

float valure_0 = 0; //
float valure_1 = 0;
float valure_2 = 0;
float valure_3 = 0;
int valure_4 = 0;
int SW1state =HIGH ;      // Store state of SW1
int SW2state = HIGH ;
float eclairement = 0;
float temperature = 0;
float courant = 0;
float tonsion = 0;
float tonsion_cap=0;
int eclairement_1 = 0;
int temperature_1= 0;
int courant_1 = 0;
int tonsion_1 = 0;
int ligne = 0.01;

int temp=0;
float sum =0;
float AMPS_SCALE =0;
float amps=0;
//double q=1.602*10abs23;
//double k=1.38*10abs23;
// k=la constant de boltzemen 1.38*10^-23
void setup() {
  pinMode(SW1pin, OUTPUT);
  pinMode(SW2pin, OUTPUT);
  Serial.begin(9600);
  Serial1.begin(9600);
  Serial.println("CLEARDATA");
  Serial.println("LABEL,Hora,eclairement,Temperatura,cuorant,tonsion,tonsion_cap");
}

void loop() {
  //delay(4000);

  //digitalWrite(2, HIGH);
  // delay(7000);
```

```
// digitalWrite(4, HIGH);
//analogReference(DEFAULT);
//pour la cellule (eclairment)
valeur_0 = analogRead(pinsensor_0);
float puissance_eclairment1= (valeur_0/1024.0) * 5 ;
float eclairement=( puissance_eclairment1*100);
    eclairement_1= eclairement;

//*****
//capteur de temperature
    valeur_1 = analogRead(pinsensor_1);
float millivolts = (valeur_1 / 1024.0) * 5000;
float kelvin = (millivolts / 10);
float temperature = kelvin - 273.15;
    temperature_1= kelvin - 273.15;
// *****
//pour le cuorant
//SW1state = HIGH;
//SW2state = HIGH;

valeur_3 = analogRead(pinsensor_3); //pour le tonsion
float tonsion = ((valeur_3*20)/1023);
    tonsion_1= tonsion;

    valeur_4 = analogRead(pinsensor_4); //pour le tonsion
float tonsion_cap = ((valeur_4*20)/1023);
//delay(1000);

if( tonsion_cap > 0.9*tonsion_1)
{
    digitalWrite(4, HIGH);

}
if(tonsion_cap == 1 )
{
    digitalWrite(4, LOW);
//delay(1);

}
ligne++;
Serial.print("DATA,TIME,");
digitalWrite(2, LOW);
for(int i = 0; i < 100; i++) // loop through reading raw adc values 100 number of times
{
    temp=analogRead(pinsensor_2); // read the input pin
    sum += temp; // store sum for averaging
    delayMicroseconds(50);
}
sum=sum/100;
```

```
digitalWrite(2, LOW);
AMPS_SCALE= 0.00488/ 0.100; //5/1024 = 0.00488 // Sensitivity = 185mV
courant = AMPS_SCALE* sum - 32; // 2.5/0.100 =
courant_1 = courant;
// courant = valure_2;
delay(10);
digitalWrite(2, HIGH);
//Serial.println( valure_2);
delay(1000);

//Serial.println( borhan);
Serial.print( eclairement);
Serial.print(",");
Serial.print( temperature);
Serial.print(",");
Serial.print( courant);
Serial.print(",");
Serial.print( tonsion);
Serial.print(",");
Serial.println( tonsion_cap);

//Serial.print( eclairement_1);
//Serial.print(",");
//Serial.print( courant);
//Serial.print(",");
//Serial.print( tonsion);
//Serial.print(",");
// Serial.println( tonsion_cap);

//Serial.print(",");
// Serial.println( ics);

//Serial.println(i);
delay(500);

if (ligne > 1000)
{
    ligne = 0;
    Serial1.println("ROW,SET,2");
}

delay(100);
}
```
