

```

//teclat-----
#include <Keypad.h>
const byte ROWS = 4; //four rows
const byte COLS = 4; //three columns
char keys[ROWS][COLS] = {
  {'1','2','3','A'},
  {'4','5','6','B'},
  {'7','8','9','C'},
  {'*','0','#','D'}
};
/* per arduino mega
//pins d' esquerra a dreta
//46,48,50,52,47,49,51,53
//C4,C3,C2,C1,R4,R3,R2,R1
byte rowPins[ROWS] = {53,51,49,47}; //connect to the row pinouts of the keypad
byte colPins[COLS] = {52,50,48,46}; //connect to the column pinouts of the keypad
Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS );*/
//per arduino uno
//vermell a l' esquerra
//2.3.4.5.6.7.8.9
byte rowPins[ROWS] = {6, 7, 8, 9}; //connect to the row pinouts of the keypad
byte colPins[COLS] = {2, 3, 4, 5}; //connect to the column pinouts of the keypad
Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS );
//-----
//clima
#include<dht.h>
dht DHT;
#define DHT11_PIN 13
//-----
//pantalla
#include <Wire.h>
#include<LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 2, 1, 0, 4, 5, 6, 7, 3, POSITIVE);
//SDA analog4 A4
//SLC analog5 A5

//VARIABLES GLOBSALS-----
int var=0;
volatile int codi,code;
char key;
inttemp[50],hum[50],count=0,tempe=0,humi=0;
intusuaris[]={1234,5678,6666,7777,9999,8888,5555,0000};
bool entry=false;
//-----
void Led_Verd() {
  analogWrite(A0,0);
  digitalWrite(12,LOW);
  digitalWrite(11,HIGH);
}

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void Led_Vermell() {
    analogWrite(A0,0);
    digitalWrite(11,LOW);
    digitalWrite(12,HIGH);
}

void apagar_Leds() {
    analogWrite(A0,255);
    digitalWrite(11,LOW);
    digitalWrite(12,LOW);
}

//-----

void pantalla()
{
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("  Lab-Control");
    lcd.setCursor(0,1);
    lcd.print("USER:");
}

//-----
--

void setup()
{
    Serial.begin(9600);
    pinMode(10,OUTPUT); //blau
    pinMode(11,OUTPUT); //verd
    pinMode(12,OUTPUT); //vermell
    lcd.begin(16,2);
    //iniciem la pantalla amb el lab-control
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("  Lab-Control");
    lcd.setCursor(0,1);
    lcd.print("USER:");
    lcd.setCursor(6,1);
    lcd.print("(*)");
    apagar_Leds();
}

//funcio per agafar les dades del clima i guardar les 50darreres
void clima() {
    int chk = DHT.read11(DHT11_PIN);
    temp[count]=DHT.temperature;
    hum[count]=DHT.humidity;
    count++;
    if(count==50){count=0;}
}

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void avg_clima()
{
    for(int i=0;i<50;i++){
        tempe=(tempe+temp[i]);
        humi=(humi+hum[i]);
    }
    tempe=tempe/50;
    humi=humi/50;
}

//funcio per el teclat
int teclat()
{
    int c=0;
    int ta,tb,tc,td;
    char key1,key2,key3,key4;
    if((key != NO_KEY)){
        pantalla();
        lcd.setCursor(6,1);
        lcd.blink();
        while(c<4){
            key1=keypad.getKey();
            if((key1 != NO_KEY)&&(c==0)){
                c++;
                lcd.print(key1);
                lcd.setCursor(7,1);
                while(c==1){
                    key2 = keypad.getKey();
                    if((key2 != NO_KEY)&&(c==1)){
                        c++;
                        lcd.print(key2);
                        lcd.setCursor(8,1);
                        while(c==2){
                            key3 = keypad.getKey();
                            if((key3 != NO_KEY)&&(c==2)){
                                c++;
                                lcd.print(key3);
                                lcd.setCursor(9,1);
                                while(c==3){
                                    key4 = keypad.getKey();
                                    if((key4 != NO_KEY)&&(c==3)){
                                        c++;
                                        lcd.print(key4);
                                        lcd.noBlink();
                                        ta=key1-'0';tb=key2-'0';tc=key3-'0';td=key4-'0';
                                        codi=ta*1000+tb*100+tc*10+td;
                                    }
                                }
                            }
                        }
                    }
                }
            }
        }
    }
}

```

```

    }
    }
    }
    }
    }
    return codi;
}

//-----
--

void loop() {
    //entrem sempre al clima a cada cicle per tenir mes dades i poder fer millor la
    mitjana
    clima();
    //Led_Blau();
    //lleguim tot el rato si la raspberry ens envia un codi x enviarli la
    temperatura
    if (Serial.available() > 0) {
        char rebut=Serial.read();
        if(rebut=='T'){
            avg_clima();
            String TEMPE = String(tempe, DEC);
            Serial.print(TEMPE);
        }
        else if(rebut=='H'){
            avg_clima();
            String HUMI = String(humi, DEC);
            Serial.print(HUMI);
        }
    }
    delay(10);
    //Estem lleguint tot el rato el teclat per si algu vol entrar
    key=keypad.getKey();
    if(key=='*'){
        code=teclat();
        pantalla();
        for (int i = 0; i < sizeof(usuaris) - 1; i++){
            if(code==usuaris[i]){
                entry=true;
                pantalla();
                lcd.setCursor(6,1);
                lcd.print("VALID");
                Led_Verd();
                String codi = String(code, DEC);
                Serial.print(codi);
            }
        }
        if(!entry){

```

```
    pantalla();  
    lcd.setCursor(6,1);  
    lcd.print("NO VALID");  
    Led_Vermell();  
    }  
    delay(2000);  
    apagar_Leds();  
    pantalla();  
    lcd.setCursor(6,1);  
    lcd.print("(*)");  
    entry=false;  
    }  
}
```