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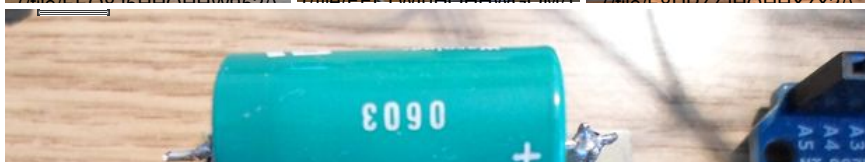
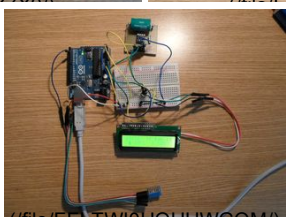
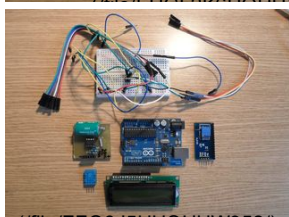
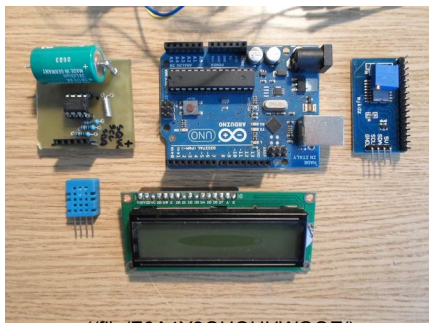
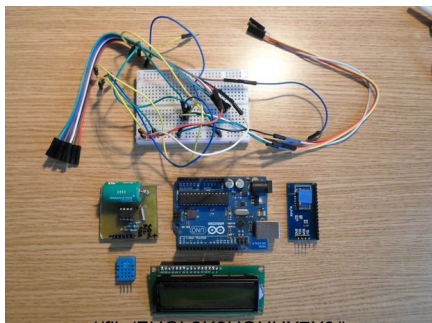
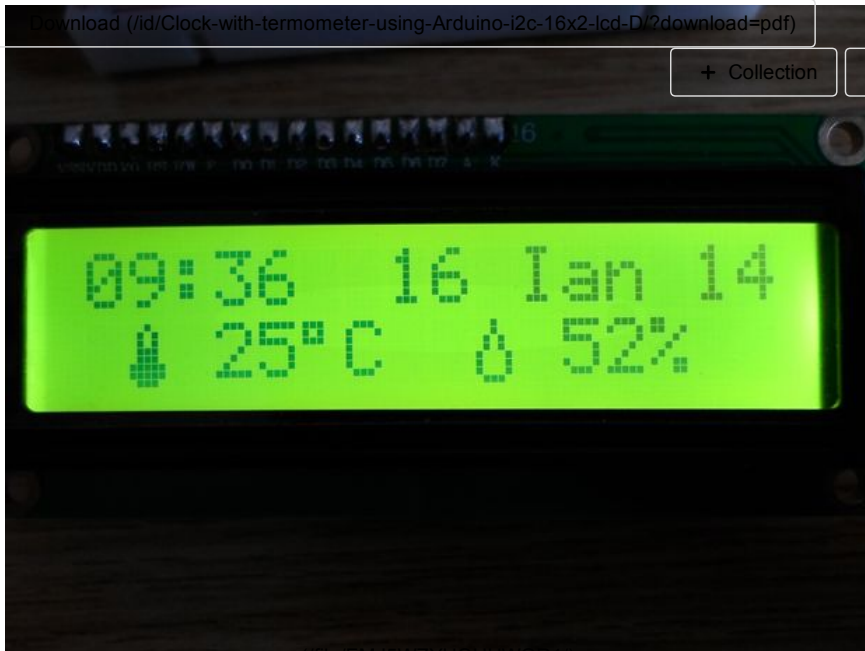
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## Clock with thermometer using Arduino, i2c 16x2 lcd, DS1307 RTC and DHT11 sensor. by Timofte Andrei (/member/Timofte+Andrei/)



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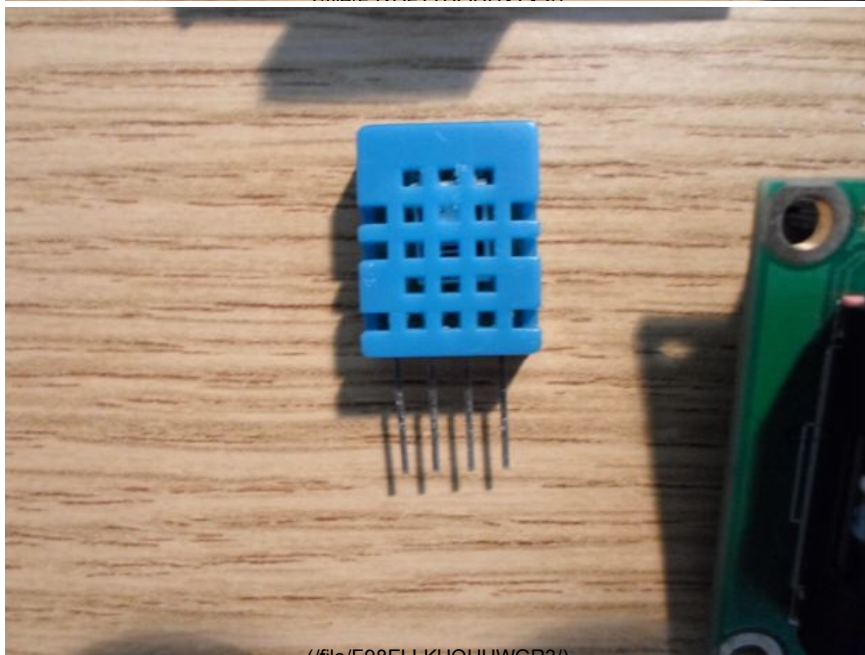
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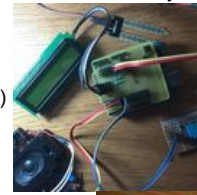
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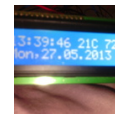
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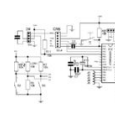
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**I2C LCD Controller Part II**  
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by verdelj (/member/verdelj/)

Hello! It's been a while I've didn't posted anything on Instructables, but now I made a simple project that I've seen on internet in various forms. I managed to build a code using other codes I've found on internet and I got to say it's working good.

For this project you need:

- Arduino Uno
- 16x2 LCD with i2c module
- DS1307 RTC
- DHT11 temperature and humidity sensor
- a bread board
- some wires for connections.

As you can see the RTC is homemade because I had a DS1307 chip and a battery extracted from an old german electronic cash registering device.

So the connections are very simple:

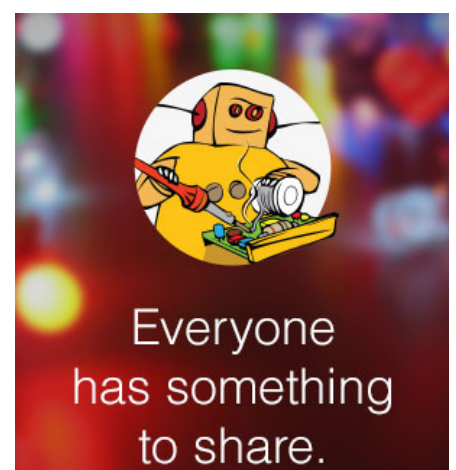
The RTC and the i2c LCD are connected to A4 pin (SDA) and A5(SCL) and DHT11 sensor is connected to D2 pin. DHT11 has 4 pins, but only 3 are actually used. First pin is Vcc, the second is for data and the forth pin is for ground. As I said, connect data pin of the sensor to D2 on Arduino.

Now, the hardest part: the code. !!!**DOWNLOAD THE ORIGINAL SKETCH FROM HERE!!!**

([https://www.dropbox.com/s/ycgh1sa88tqq8r8/termometru\\_dht11\\_cu\\_ceas.ino](https://www.dropbox.com/s/ycgh1sa88tqq8r8/termometru_dht11_cu_ceas.ino))

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I've tried some sketches I've found on internet, but there were alot of errors caused by incompatible libraries and so on. I managed to build a code made from parts of other codes and it's working like a charm now. There is a single problem though. You can find in the sketch a bit of code for displaying first 2



problem though. You can find in the sketch a bit of code for displaying first 3 letters of the week day, but for some reason it doesn't work. Instead of those letters it shows some unknown characters and it's pretty ugly. I suspect that is a problem caused by i2c communication because in standard connection (4bits) it works without problems.

My inspiration came from this page <http://arduino-info.wikispaces.com/PROJECT-Temp-Humidity-Display> (<http://arduino-info.wikispaces.com/PROJECT-Temp-Humidity-Display>), and this page <http://www.ucontrolit.tv/184/> (<http://www.ucontrolit.tv/184/>)

This is the library used for this project <http://arduino-info.wikispaces.com/file/view/DHT11.zip/390039522/DHT11.zip> (<http://arduino-info.wikispaces.com/file/view/DHT11.zip/390039522/DHT11.zip>) and don't forget to use the new LCD library that can be found right here <https://bitbucket.org/fmalpartida/new-liquidcrystal/downloads> (<https://bitbucket.org/fmalpartida/new-liquidcrystal/downloads>) (when you add this new library in the folder, delete the old LiquidCrystal folder!)

And this is a **PREVIEW** of the code:

---

```
/* YourDuino.com Example Software Sketch
   DHT11 Humidity and Temperature Sensor test
   Displayed on I2C LCD Display
   Credits: Rob Tillaart
   http://arduino-info.wikispaces.com/PROJECT-Temp-Humidity-Display
   terry@yourduino.com
   Combined with:
   Mark Johnson's code
   http://uControlIt.tv
   December 2012
   License: GNU General Public License

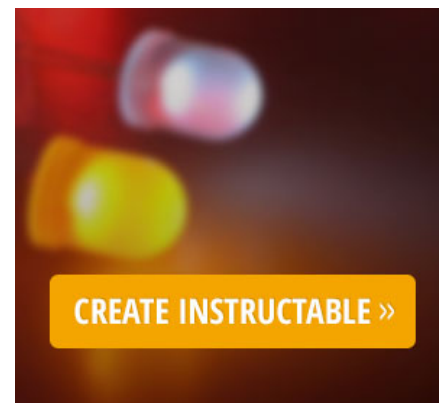
   Modified by Timofte Andrei ( http://timofteandreidiy.wordpress.com )
   January 2014
   */

/*-----( Import needed libraries )-----*/
#include
#include
#include
#include
#include

//const char* zile[] =
// { "Lun", "Mar", "Mie", "Joi", "Vin", "Sam", "Dum" }; //days of the week in
//romanian (not used)
const char* luni[] =
{ "Dec", "Ian", "Feb", "Mar", "Apr", "Mai", "Iun", "Iul", "Aug", "Sep", "Oct", "Noi" };
//months of the week also in romanian

byte termometru[8] = //icon for thermometer
{
  B00100,
  B01010,
  B01010,
  B01110,
  B01110,
  B11111,
  B11111,
  B01110
};

byte picatura[8] = //icon for water droplet
{
```



```

    B00100,
    B00100,
    B01010,
    B01010,
    B10001,
    B10001,
    B10001,
    B01110,
};

/*-----( Declare objects )-----*/

// Set the pins on the I2C chip used for LCD connections:
//          addr, en,rw,rs,d4,d5,d6,d7,bl,blpol
LiquidCrystal_I2C lcd(0x20, 4, 5, 6, 0, 1, 2, 3, 7, NEGATIVE); // Set the LCD
I2C address
dht11 DHT11;

/*-----( Declare Constants, Pin Numbers )-----*/
#define DHT11PIN 2 //dht11 signal pin connected to D2

void setup() /*-----( SETUP: RUNS ONCE )-----*/
{
    Wire.begin();
    lcd.begin(16,2);    // initialize the lcd for 16 chars 2 lines, turn on backlight
    lcd.backlight();
    lcd.clear();
    lcd.createChar(1,termometru);
    lcd.createChar(2,picatura);

    // part code from http://tronixstuff.wordpress.com/
    Wire.beginTransmission(0x68);
    Wire.write(0x07); // move pointer to SQW address
    Wire.write(0x10); // sends 0x10 (hex) 00010000 (binary) to control register -
    turns on square wave
    Wire.endTransmission();
    // end part code from http://tronixstuff.wordpress.com/

    setSyncProvider(RTC.get);

}/*--(end setup )--*/

void loop() /*-----( LOOP: RUNS CONSTANTLY )-----*/
{
    afisare_temperatura(); //displaying temperature
    data_si_ora(); //displaying date and time
}
void afisare_temperatura()
{
    int chk = DHT11.read(DHT11PIN);
    lcd.setCursor(1, 1);
    lcd.write(1);
    lcd.setCursor(3, 1);
    lcd.print((float)DHT11.temperature, 0);
    lcd.setCursor(5, 1);
    lcd.print((char)223); //degree sign
    lcd.print("C");

    lcd.setCursor(9, 1);
    lcd.write(2);
    lcd.setCursor(11, 1);
    lcd.print((float)DHT11.humidity, 0);
    lcd.print("%");
    delay(2000);
}

```

```

void data_si_ora()
{

tmElements_t tm;
(RTC.read(tm));

lcd.setCursor(0, 0);
afisare2cifre(tm.Hour);
lcd.print(":");
afisare2cifre(tm.Minute);
lcd.setCursor(7,0);
afisare2cifre(tm.Day);
lcd.print(" ");
lcd.print(tm.Month[luni]);
lcd.print(" ");
lcd.print(tmYearToCalendar(tm.Year)-2000);
// lcd.setCursor(12,1); // this code is used for displaying day of the week
// lcd.print(tm.Wday[zile-2]); //it's disabled because for some reason it doesn't
work on i2c display
}
void afisare2cifre(int numar) { //this adds a 0 before single digit numbers
if (numar >= 0 && numar < 10) {
    lcd.write('0');
}
    lcd.print(numar);
}

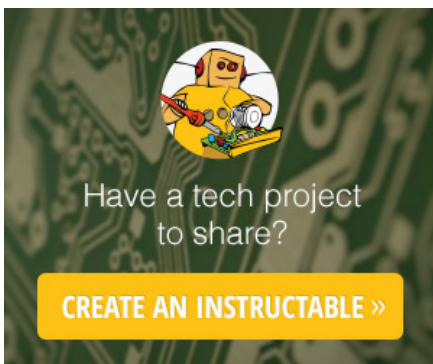
/* ( THE END ) */


```


---




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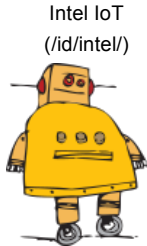
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