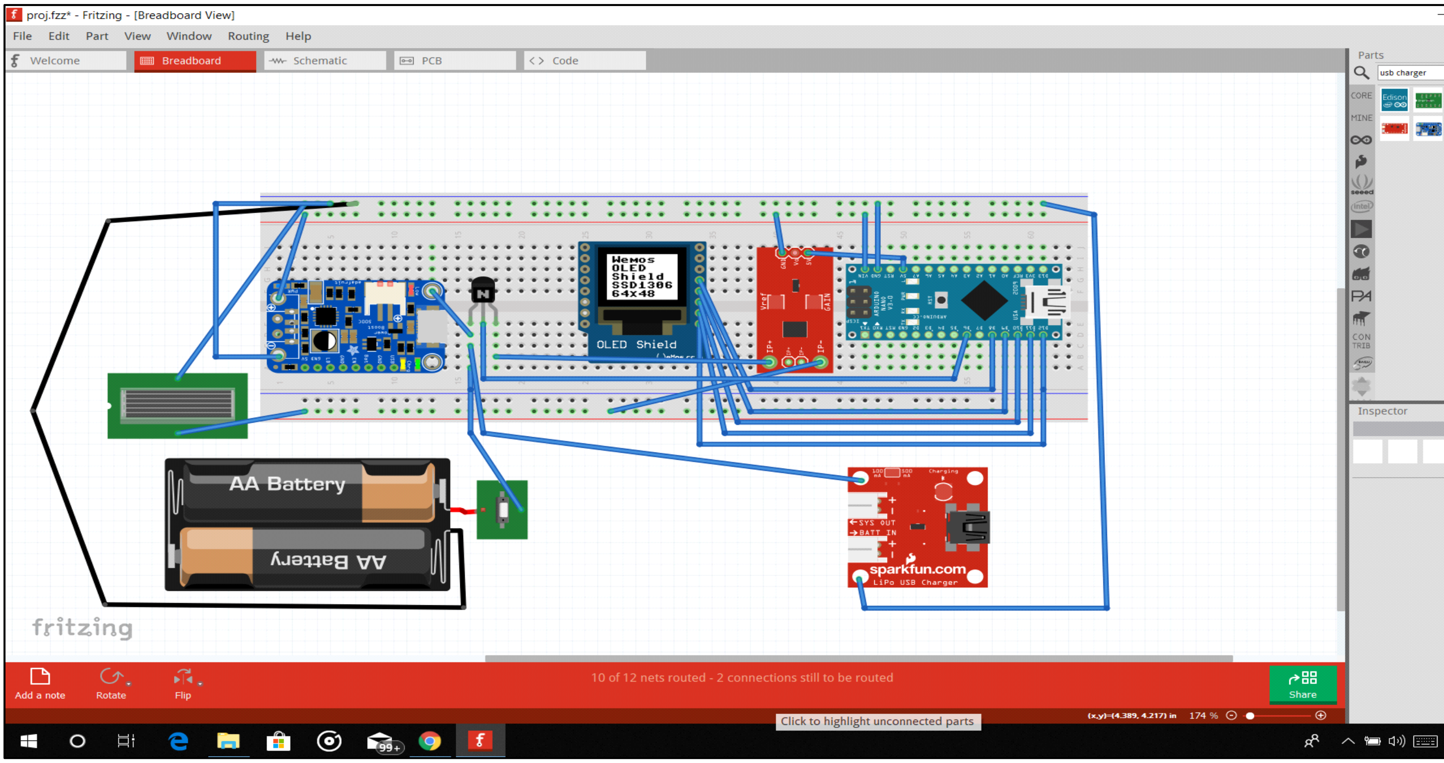
Baterie externa cu incarcare din sursa regenerabila

Mirea Andrei Cristian
4402A



10 of 12 nets routed - 2 connections still to be routed

Click to highlight unconnected parts

Schema hardware

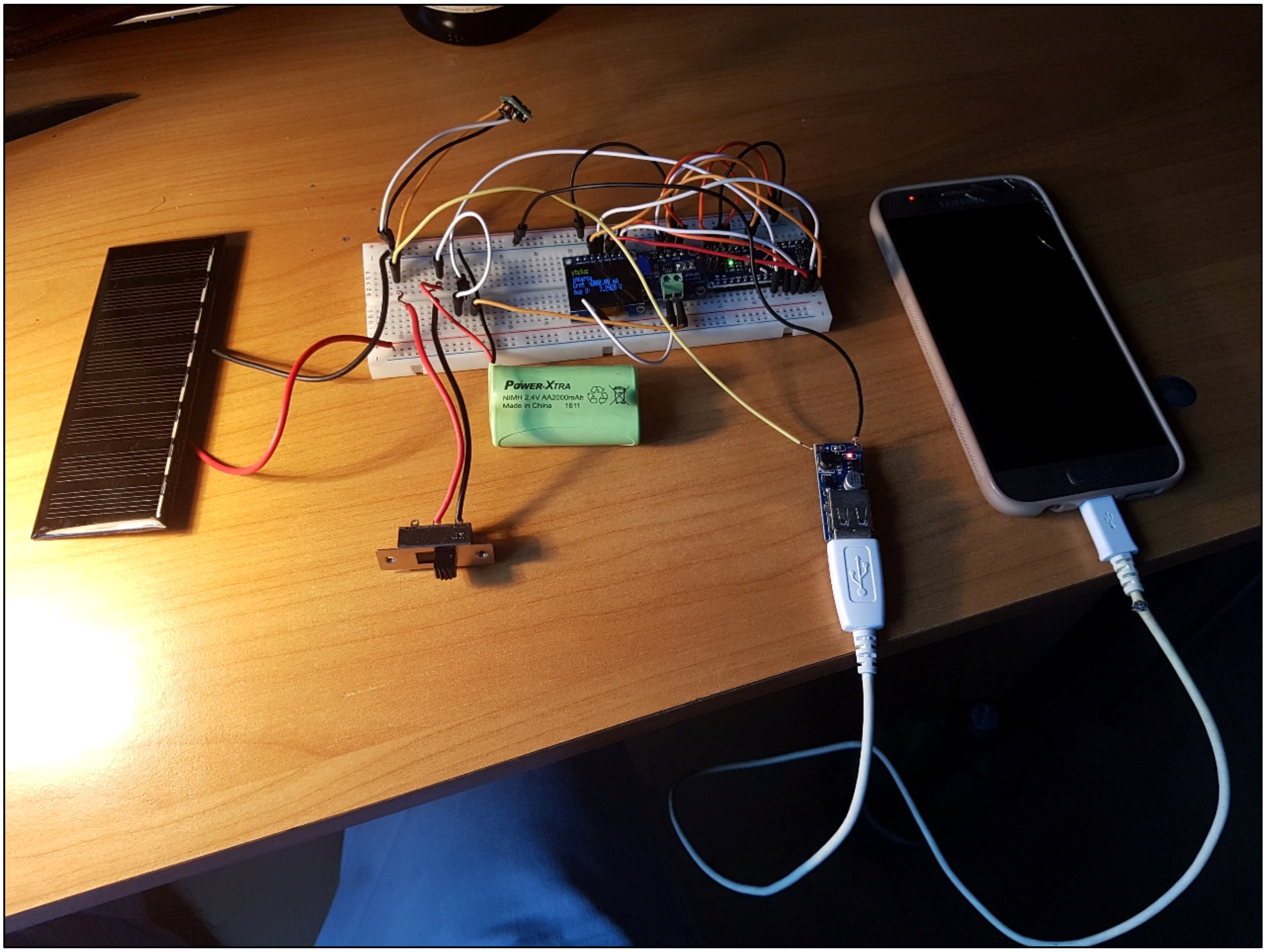
Piese folosite:

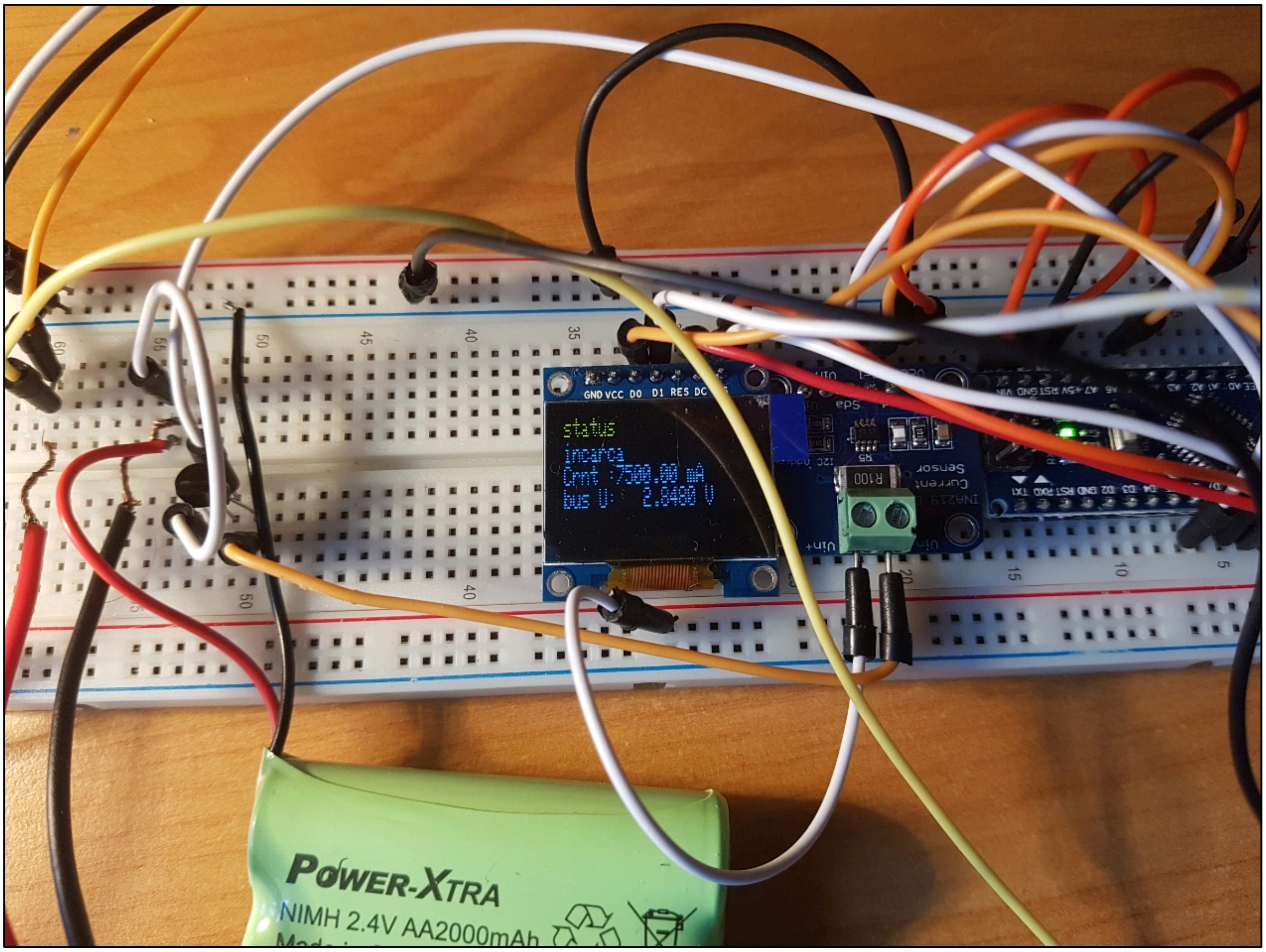
Modul DC-DC Boost cu Mufa USB
Placă de Dezvoltare compatibilă cu Arduino Nano (ATmega328p și CH340)
Tranzistor NPN 2n2222 TO-92
Breadboard HQ (830 Puncte)
Set Fire pentru Breadboard
Modul OLED SPI de 0.96"
Senzor de Curent INA219 cu Interfață I2C
Micro Sursă de Tensiune Ridicătoare (Boost) de 5 V (cu Intrare 0.9 - 5 V)
Intrerupator
Panou solar
Baterie NiMh 2,4V 2A

Sectiune de cod pt placuta Arduino:

```
// biblioteci---------------------------------------
#include <Adafruit_GFX.h>
#include <Adafruit_SPITFT.h>
```

```
#include <Adafruit_SPITFT_Macros.h>
#include <gfxfont.h>
#include <Wire.h>
#include <Adafruit_INA219.h>
#include <Adafruit_SSD1306.h>

// definire pini
#define OLED_MOSI  11   //D1
#define OLED_CLK   12   //D0
#define OLED_DC    9
#define OLED_CS    8
#define OLED_RESET 10
#define pwmPin     6

// Variabile--------------------------------------
float maxCurrent = 500;
float nowCurrent = 0;
float lastCurrent =0;
float maxVoltage = 1.8;
float nowVoltage = 0;
float mAh = 0;
int pwm = 99;
int pwmRate = 1;
bool complete = 0;

Adafruit_INA219 monitor;        //instantiere monitorizare curent,display
Adafruit_SSD1306 display(OLED_MOSI, OLED_CLK, OLED_DC, OLED_RESET, OLED_CS);

void setup()   {
 Serial.begin(9600);
monitor.begin();                          //pornire senzor
  display.begin(SSD1306_SWITCHCAPVCC);      //pornire display
  display.display();                      //arata buffer
  delay(1000);
  pinMode(pwmPin,OUTPUT);                  //setam pwmPin pt iesire
  display.clearDisplay();                  //curatam buffer ecran
  display.setTextSize(1);
  display.setTextColor(WHITE);
}

void loop() {
nowCurrent = (monitor.getCurrent_mA() * 1000 );      //curentul citit de la senzor
if ( nowCurrent < 0 ) {
  nowCurrent = 0;
}
  else {
  lastCurrent = nowCurrent;
}
 if( complete!=0 ) {                              //daca nu e incarcat complet
  analogWrite(pwmPin, pwmRate);
  if(pwmRate<255 && nowCurrent<maxCurrent) {      //marim rata pwm
    pwmRate++;
    }
  }
  else{
    pwmRate = 0;
    digitalWrite(pwmPin,LOW);                     //oprire tranzistor cand se incarca complet
  }

  analogWrite(pwmPin, pwm);
  display.setTextSize(1);
  display.setTextColor(WHITE);
  display.setCursor(0,0);            //afisaj
  display.println("status");

  if(nowCurrent==0) {
    display.println("asteapta/full");
  }
  else{
    display.println("incarca");
  }

  display.print("Crnt :");
  display.print(nowCurrent);
  display.println(" mA");
  display.print("bus U:   ");
  display.print(monitor.getBusVoltage_V(), 4);
  display.println(" V");
  delay(200);
  display.display();
  display.clearDisplay();
}
```


status
POWER-XTRA
NIMH 2.4V AA2000mAh
Made in China 1611



```
status
incarca
Crnt :7500.00 mA
bus U:   2.8480 V
```