M015 Uf1 IoT

Curs: 2019-20

CFGS: DAM2

Alumne : Arnau Subirós Puigarnau

Data : 10-12-2019
versió 5- 18/12/2019

Nom i Cognoms **Data**

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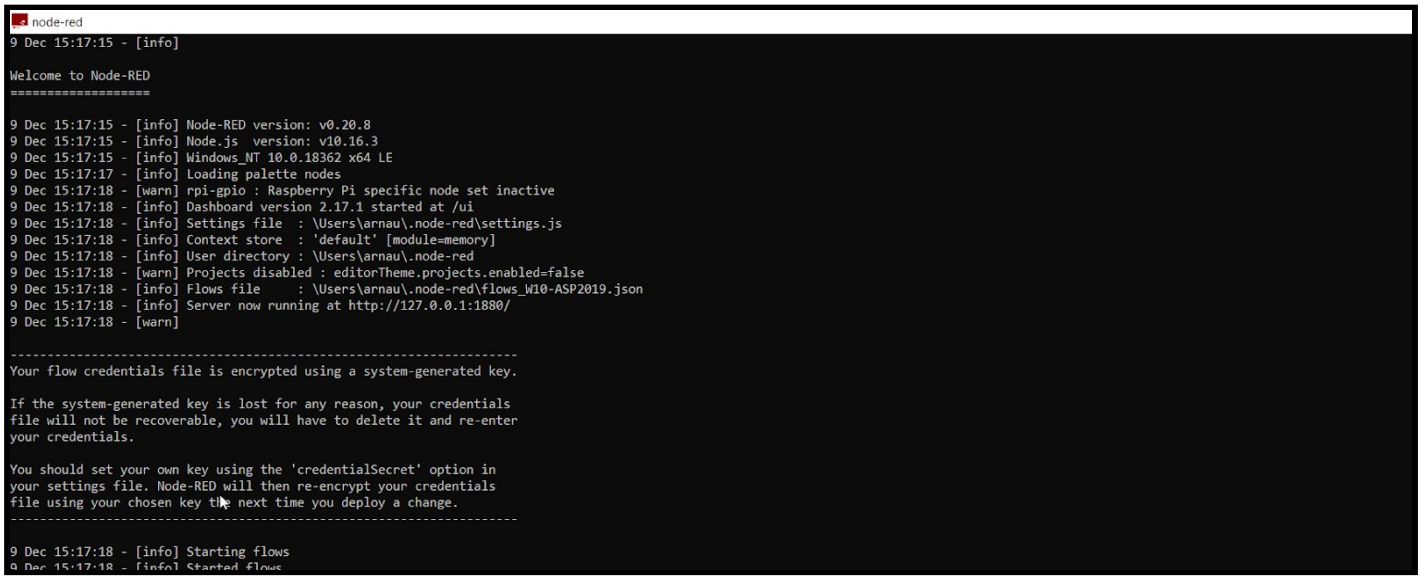
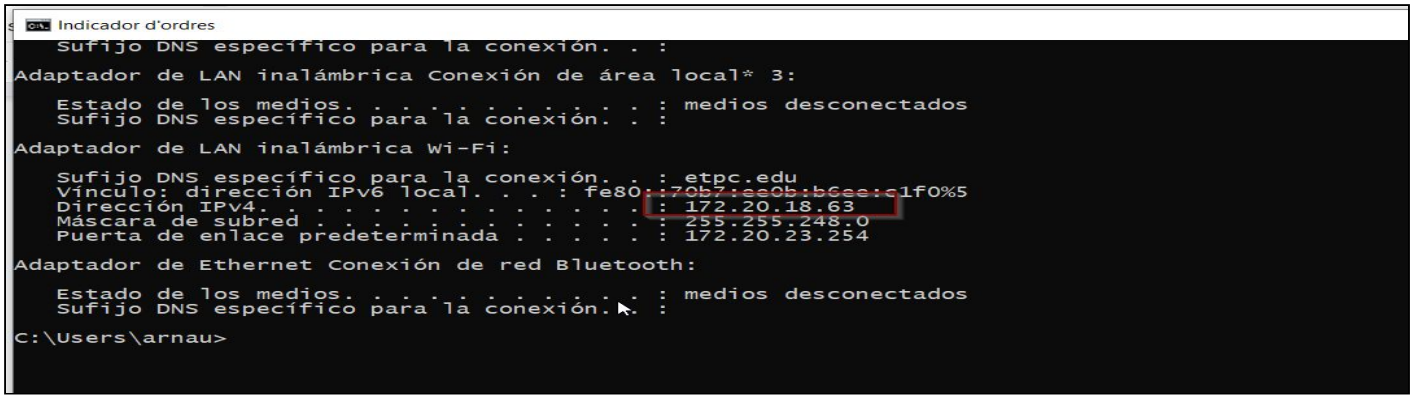
Dashboard Node-Red -Mqtt i Esp8266

- Primer accedirem al Node- Red utilitzant navegador (amb la IP del pc i el port 1880





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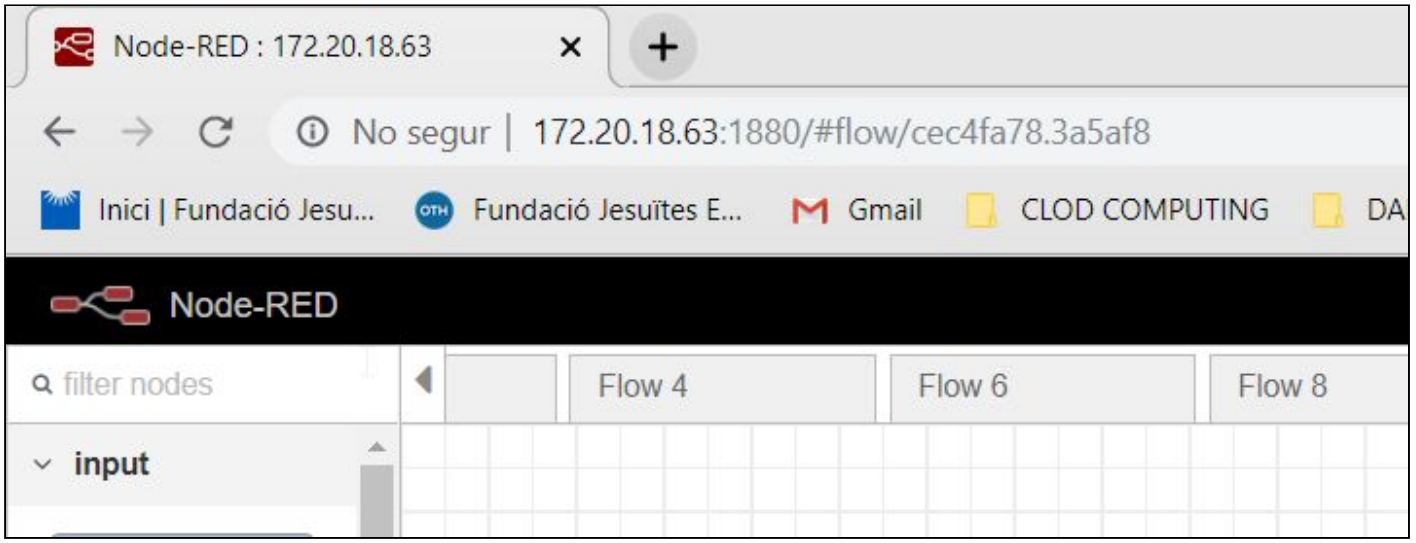

- Un cop això utilitzant un nou fluxe.
- Hem de tenir habilitat el Dashboard per Node-Red
    - https://flows.nodered.org/node/node-red-dashboard

- Hem de tenir habilitat el Dashboard per Node-Red
- Ens interessa utilitzar el protocol MQTT i poder comunicant-se amb la ESP8266.
- Abans de continuar obrim el ARDUINO IDE
    - utilitzem el codi esp_8266_MQTT_PUB_04 on haurem de modificar alguns parametres

Es volia accedir desde la Raspberry PI (rasp-asp.ddns.net) on te un servidor mosquito però tot i que he intentat accedir desde la connexio desde meu mobil (degut al NO-IP) no he aconseguit conectar-me, tot i que a casa de forma local i en la variable “Const char * mqqtt server anotava la meva ip local si que funcionaba correctament.

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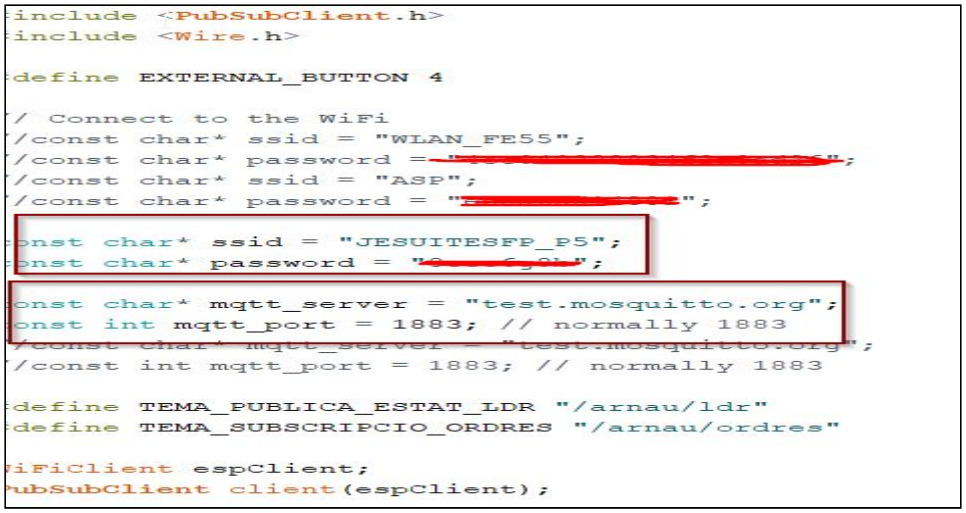
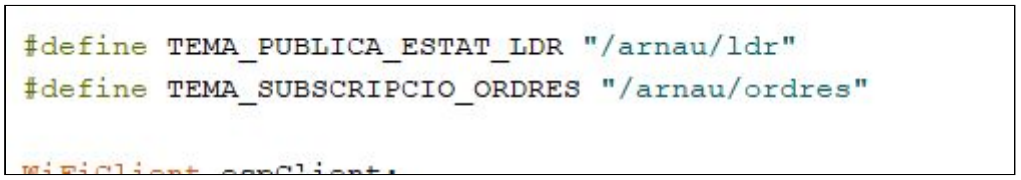


Hem establert un publicador i subscriptor. (El broker en aquest cas, serà de prova test-mosquitto.org:1883. ja que la màquina virtual l'ha tinc instal.lada però en un disc extern.



- Aquesta línia de codi ens interessa per poder subscriure'ns i podrem cambiar l'estat dels leds de la plaqueta via node.red

  #define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"

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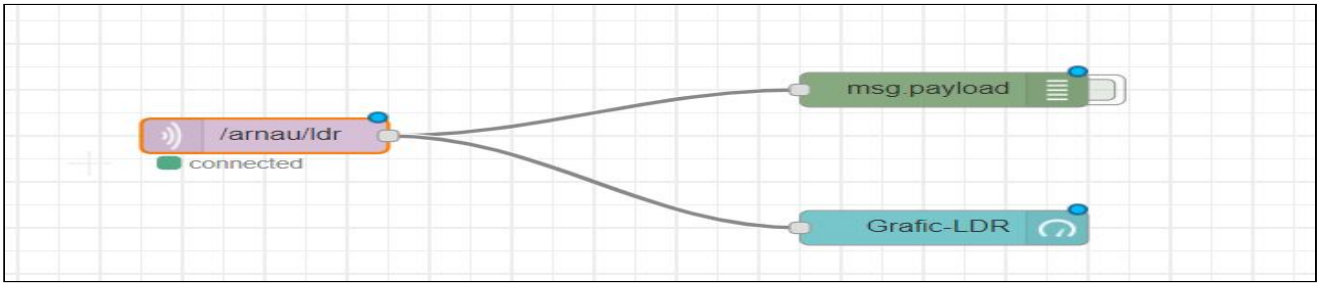
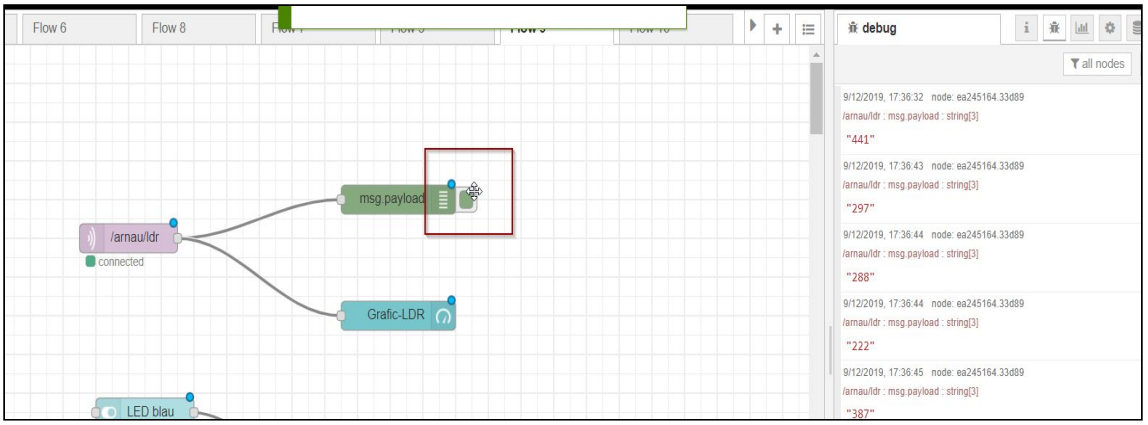
```
  Serial.println(szRx);
  if (szTema == TEMA_SUBSCRIPCIO_ORDRES) {

//-------------------------------------------------------
if (szRx == "true") digitalWrite(ledPin, LOW);
    if (szRx == "false") digitalWrite(ledPin, HIGH);
    if (szRx == "2L") digitalWrite(ledPin, LOW);
    if (szRx == "2H") digitalWrite(ledPin, HIGH);
    if (szRx == "12L") digitalWrite(ledBlue, LOW);
    if (szRx == "12H") digitalWrite(ledBlue, HIGH);
    if (szRx == "13L") digitalWrite(ledGreen, LOW);
    if (szRx == "13H") digitalWrite(ledGreen, HIGH);
    if (szRx == "15L") digitalWrite(ledRed, LOW);
    if (szRx == "15H") digitalWrite(ledRed, HIGH);
//-------------------------------------------------------

    if (szRx =="A"){
      int a = analogRead(A0);
      char sz[99];
      sprintf(sz,"%d",a);
      client.publish(TEMA_PUBLICA_ESTAT_LDR, sz);
    }
```

- Un cop això tornem al NODE-RED
  - Ens interessa el node INPUT de MQTT on farà de publicador en el Dashboard i en el Debug



Visualitzem per debg el valor LDR de la plaqueta (0-1024) on indica l'intensitat de llum



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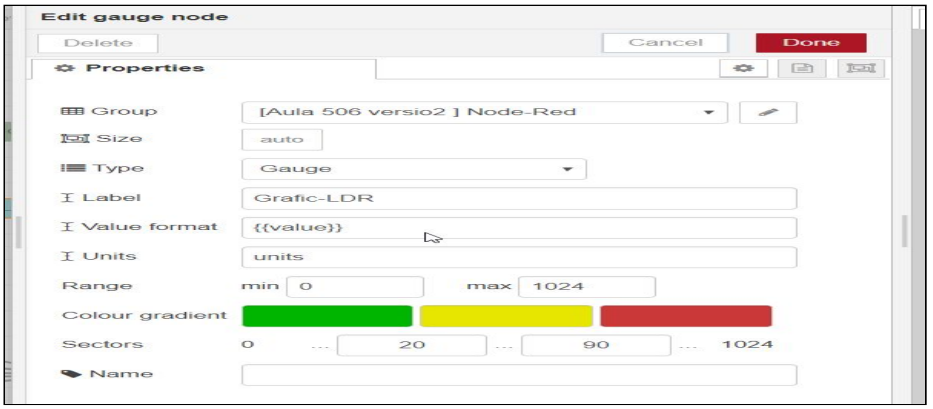
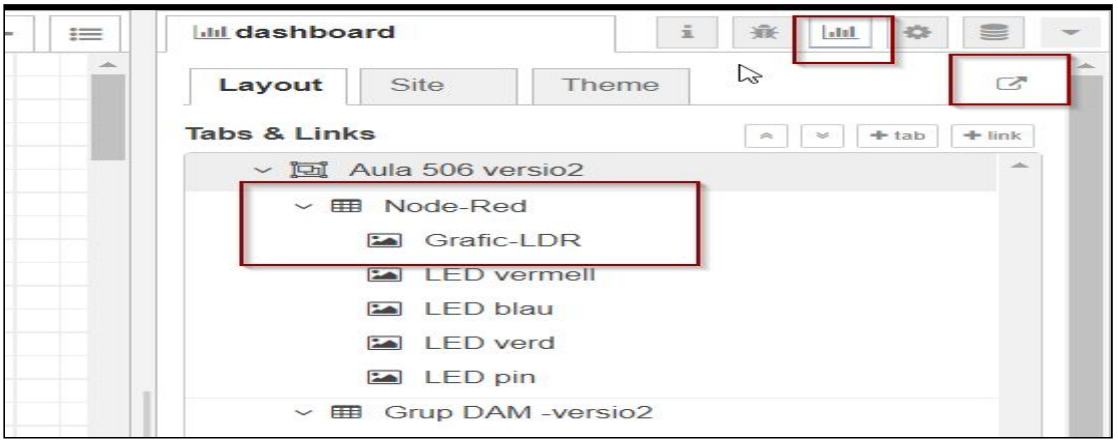
- Afegim el node de Dashboard "Button" que li direm 'etiqueta Grafic-LDR

On afegirem el grup el rang de LDR (0 a 1024)



- Seleccionem Dashboard en lloc de Debug on s'indica el Grup creat i la seva corresponent etiqueta.



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Ens interessa un OUTPUT MQTT on volem subscriptor en el Dashboard

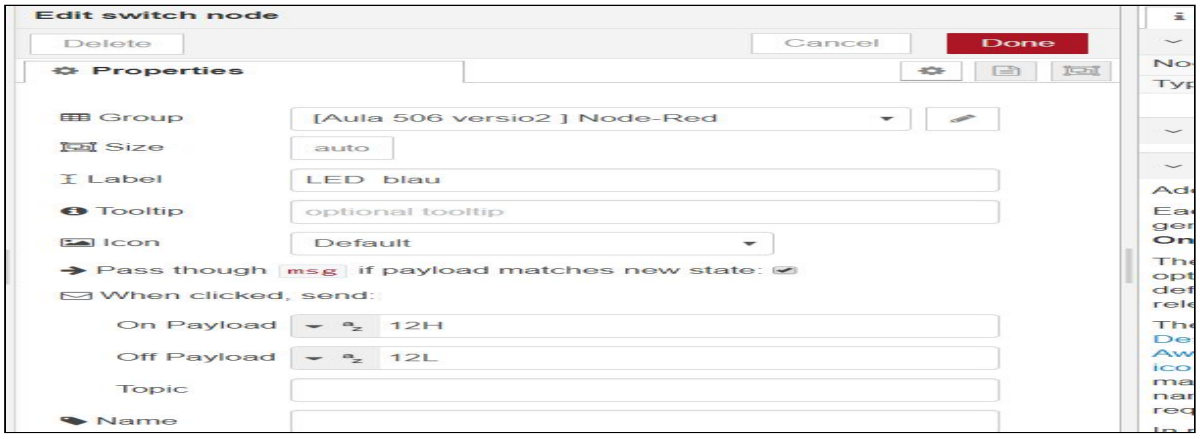
#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"

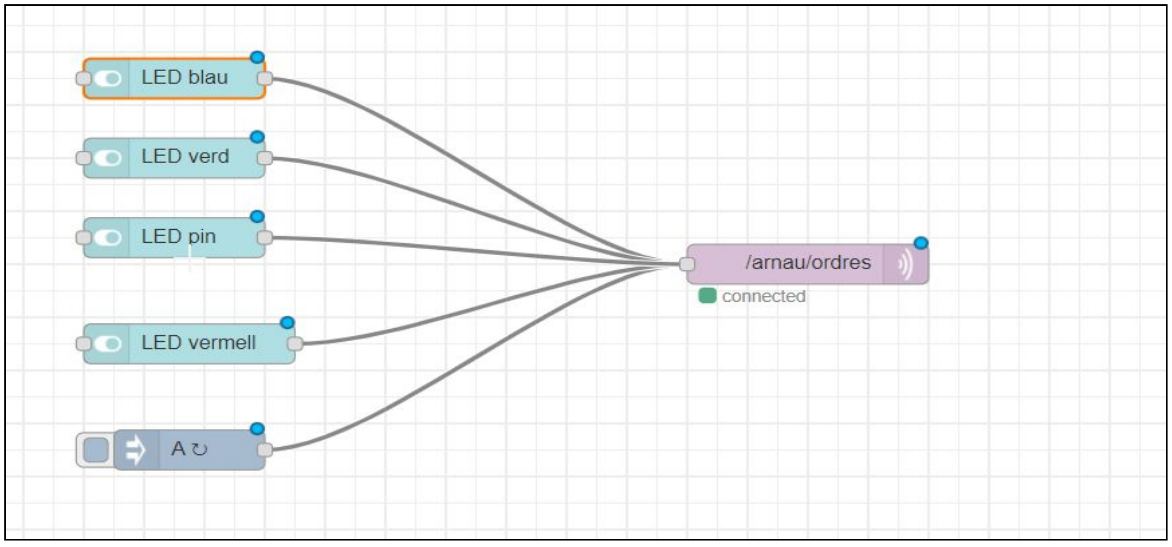
Ens interessa afegir l'etiqueta "switch (del Dashboard) on l'unic que modificarem sera el payload (mirar codi arduino)

```
WiFiClient espClient;
PubSubClient client(espClient);

const byte ledPin = 2, ledRed = 15, ledGreen = 12, ledBlue = 13;
const byte button = EXTERNAL_BUTTON;

void callback(char* topic, byte* payload, unsigned int length) {
  String szRx = "", szTema(topic);
```





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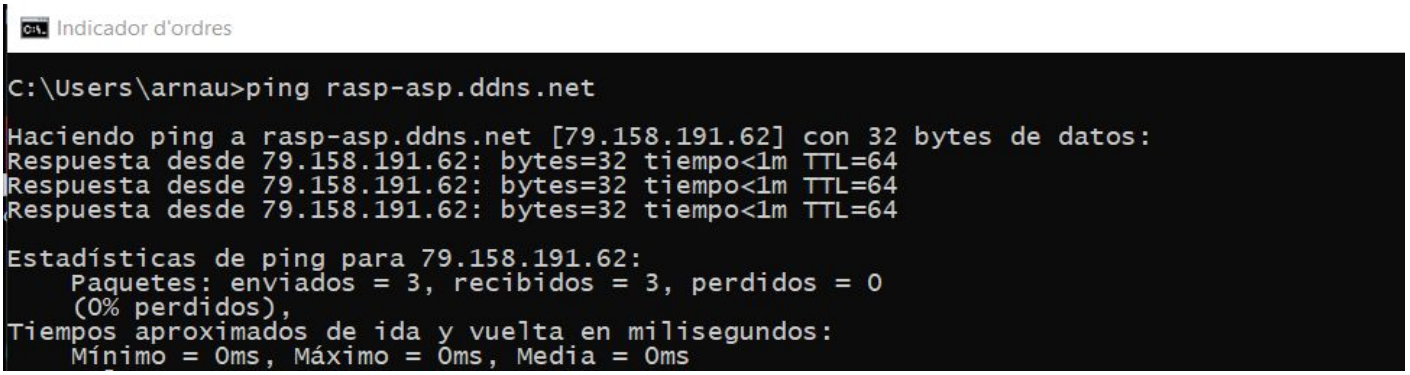
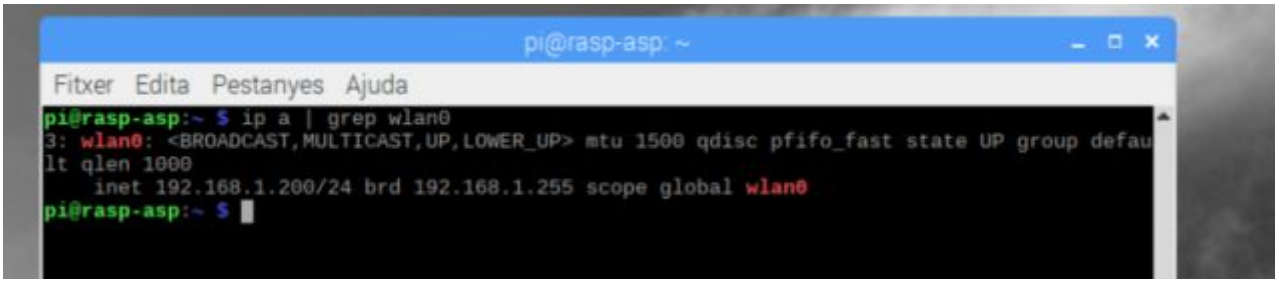
NOTA: com que vull visualitzar el Dashboard de Node- Red haurè de modificar la configuració de l'arxiu .ino referent a la connexio wifi (i de pas afegire el meu servidor mqtt

La meva idea era posa el nom complet (rasp-asp.ddns.net) que es confirma que tinc comunicacio, pero al hora de introduir-ho al codi no es connecta



Accedim remotament a la rasberry i l'hi introduim la IP estàtica en lloc del nom complet



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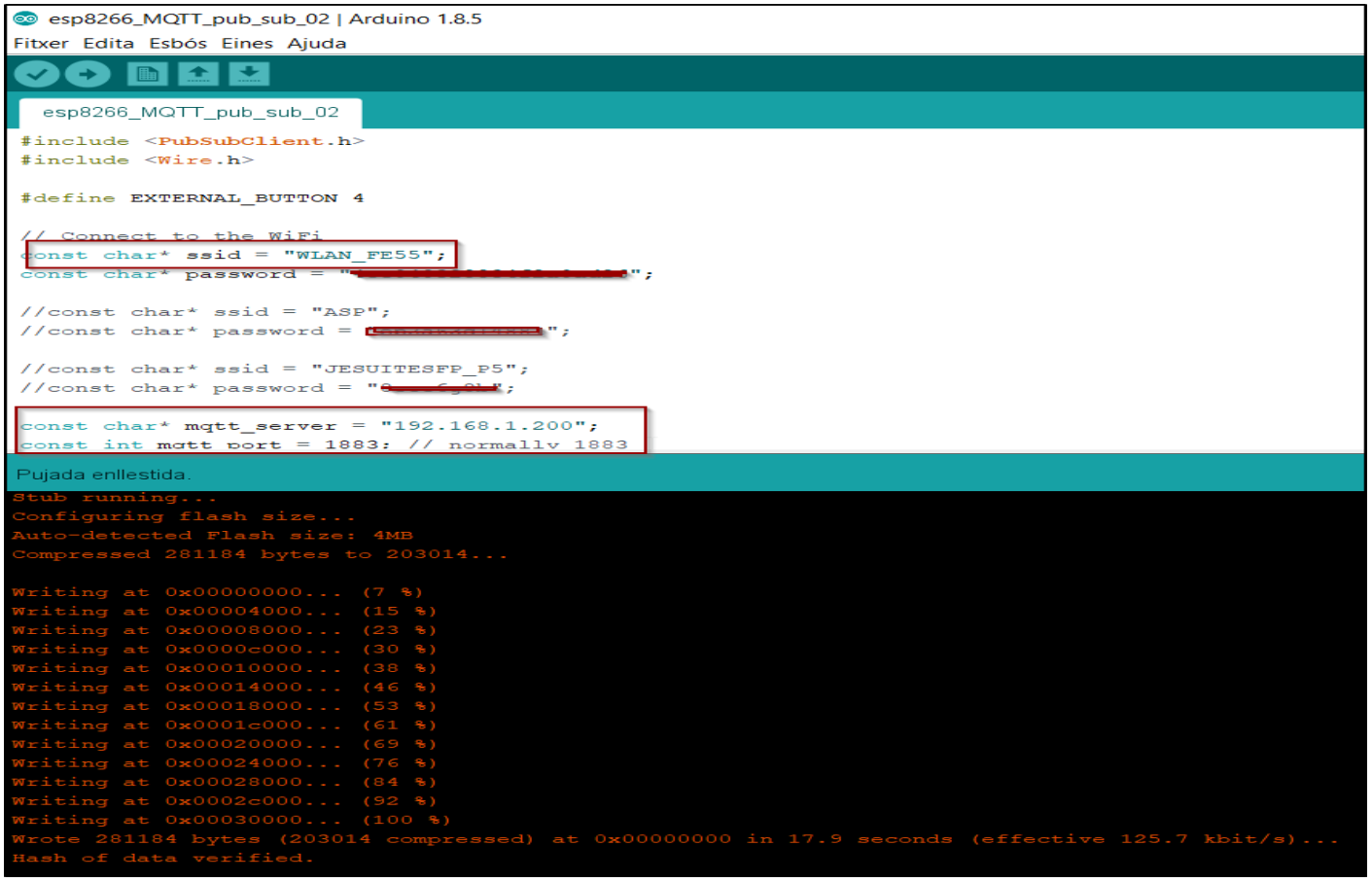
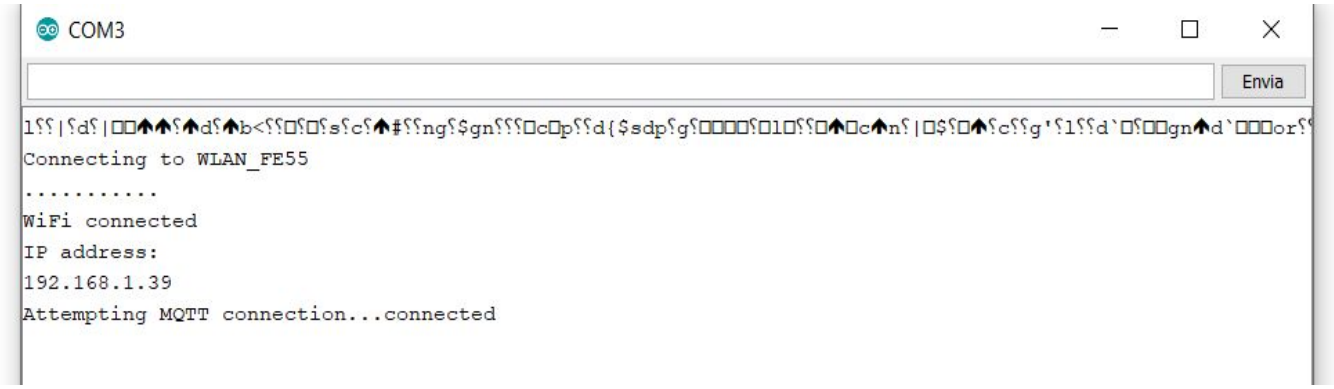
Compilem el codi en l'Arduino IDE i confirmem que la plaqueta està conectada a la WIFI i MQTT





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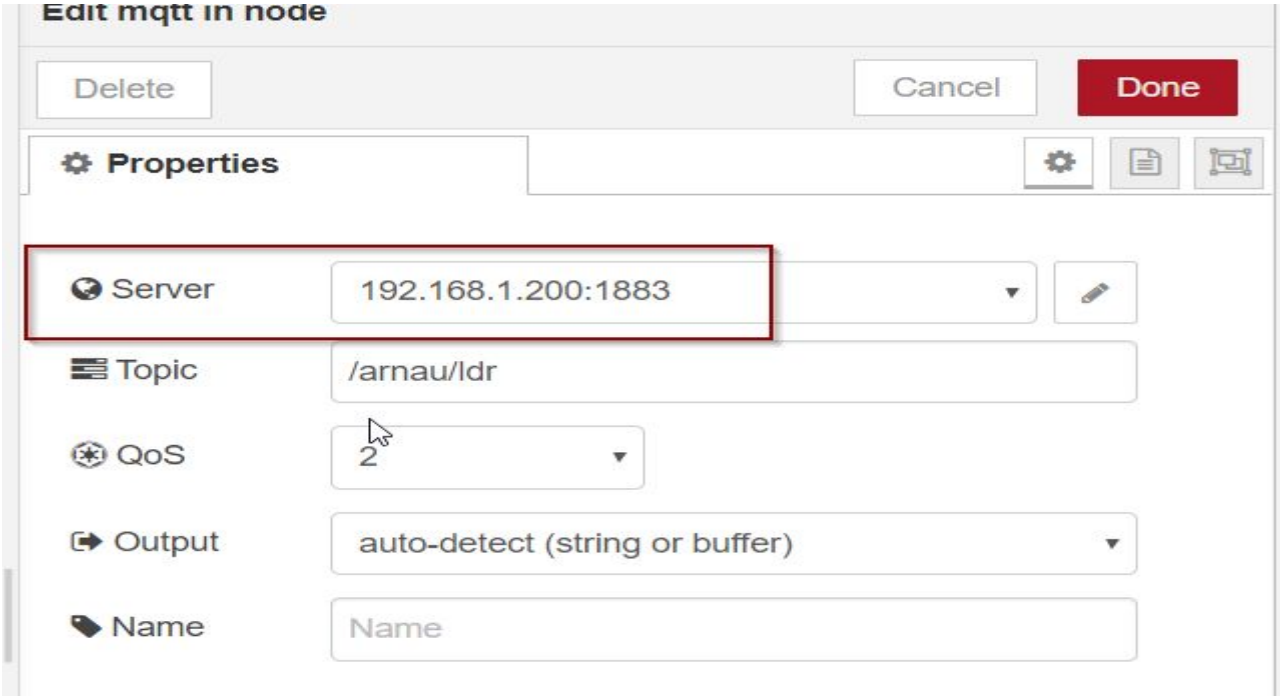
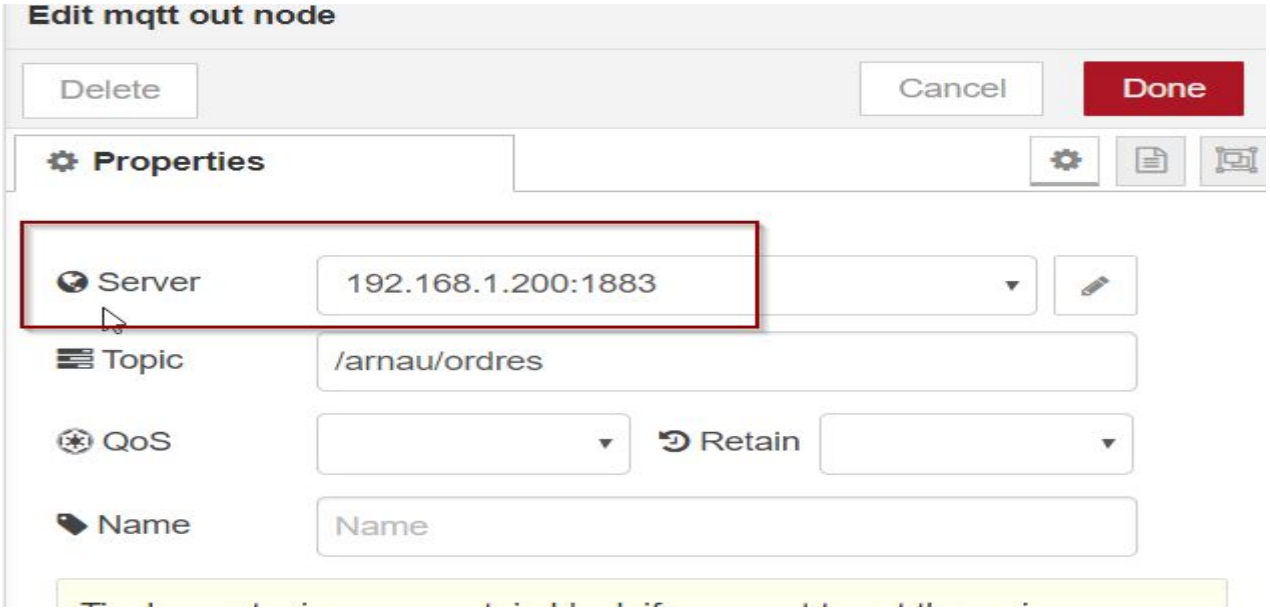
I al NODE-RED haurem d'afegir aquest broker mqtt(local) tan al publicador com el subscriptor





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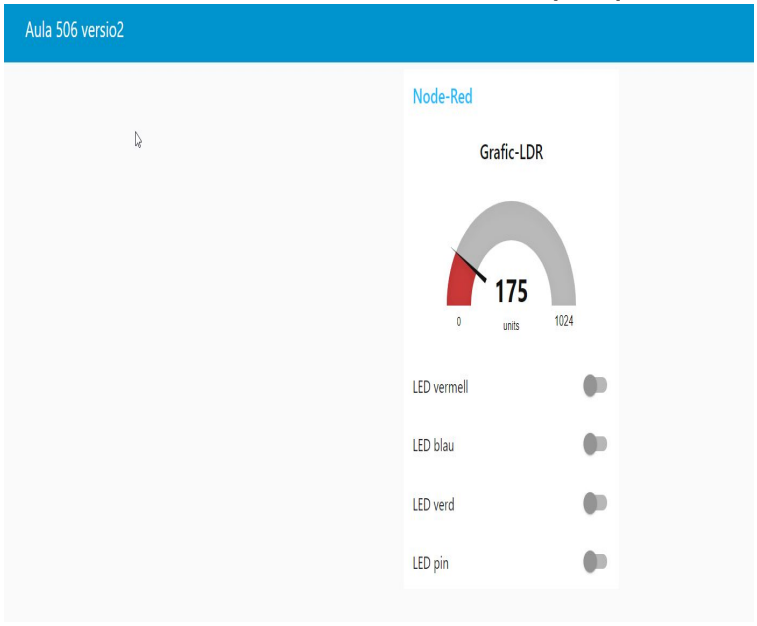
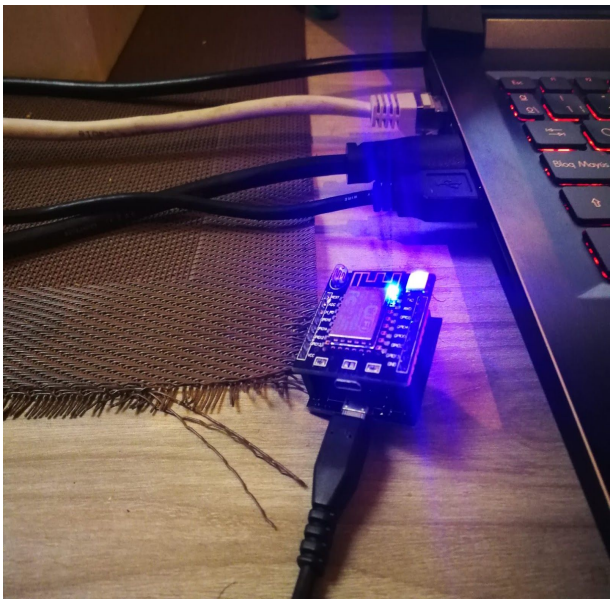
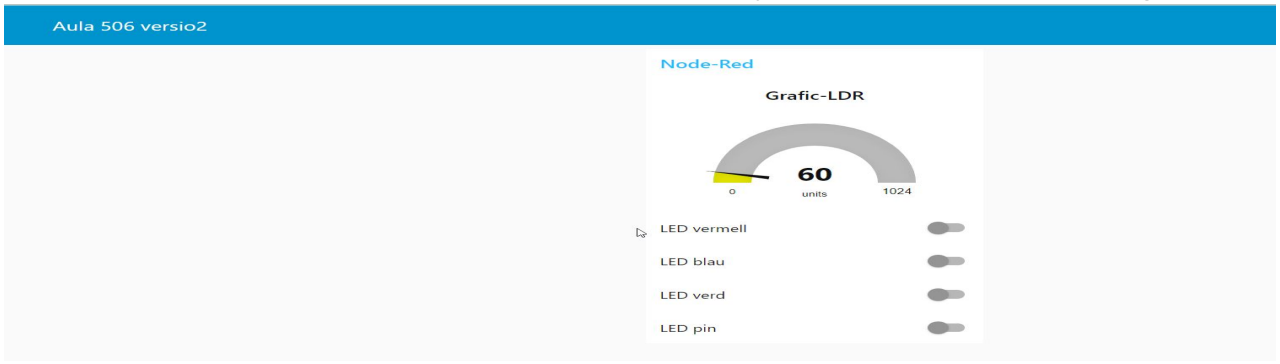
Visualització del DASHBOARD NODE-RED

M'indica l'intensitat de LDR de la plaqueta





Posteriomentposo la mà perquè detecti menys llum i m'ho indica al gràfic



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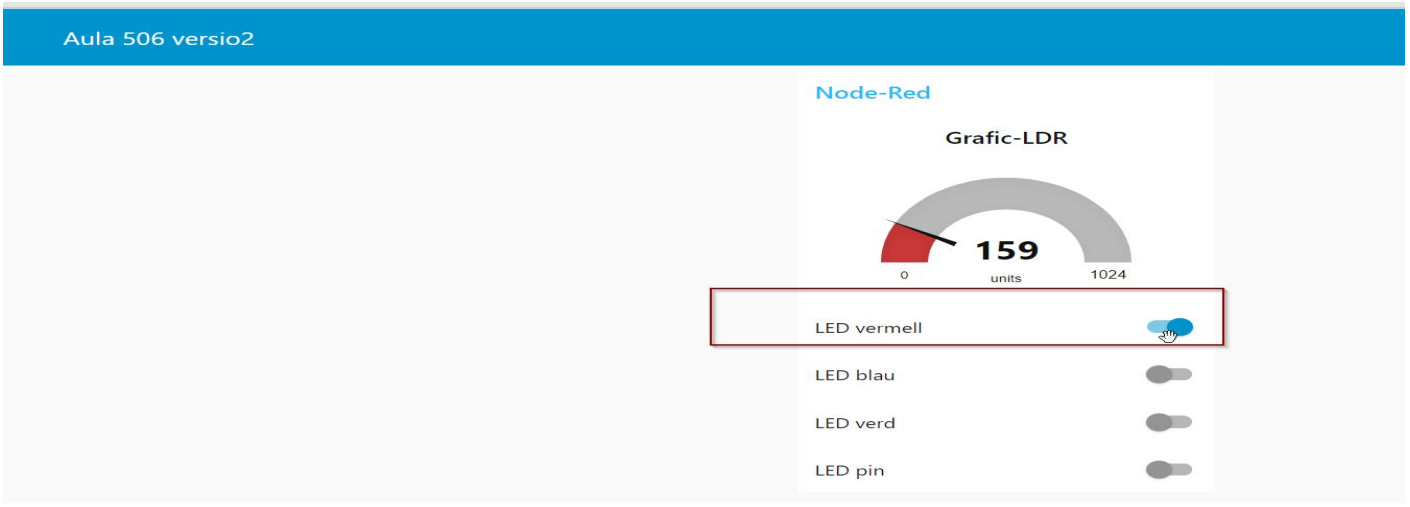
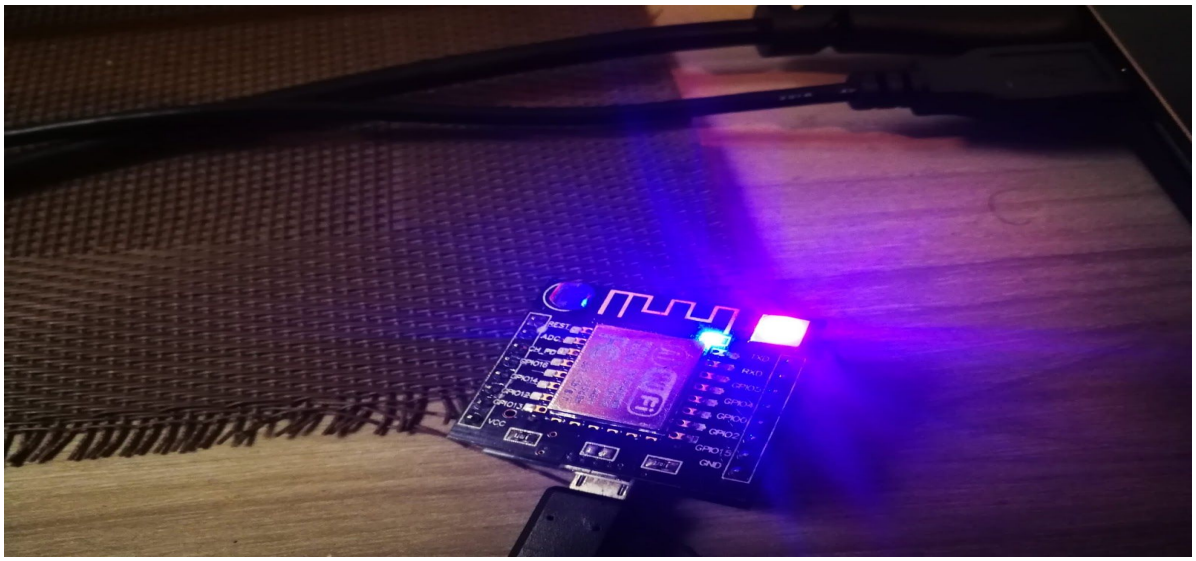
Despres seleccionem l'interruptor del LED vermell



Verifiquem la plaqueta , el LED vermell està encès



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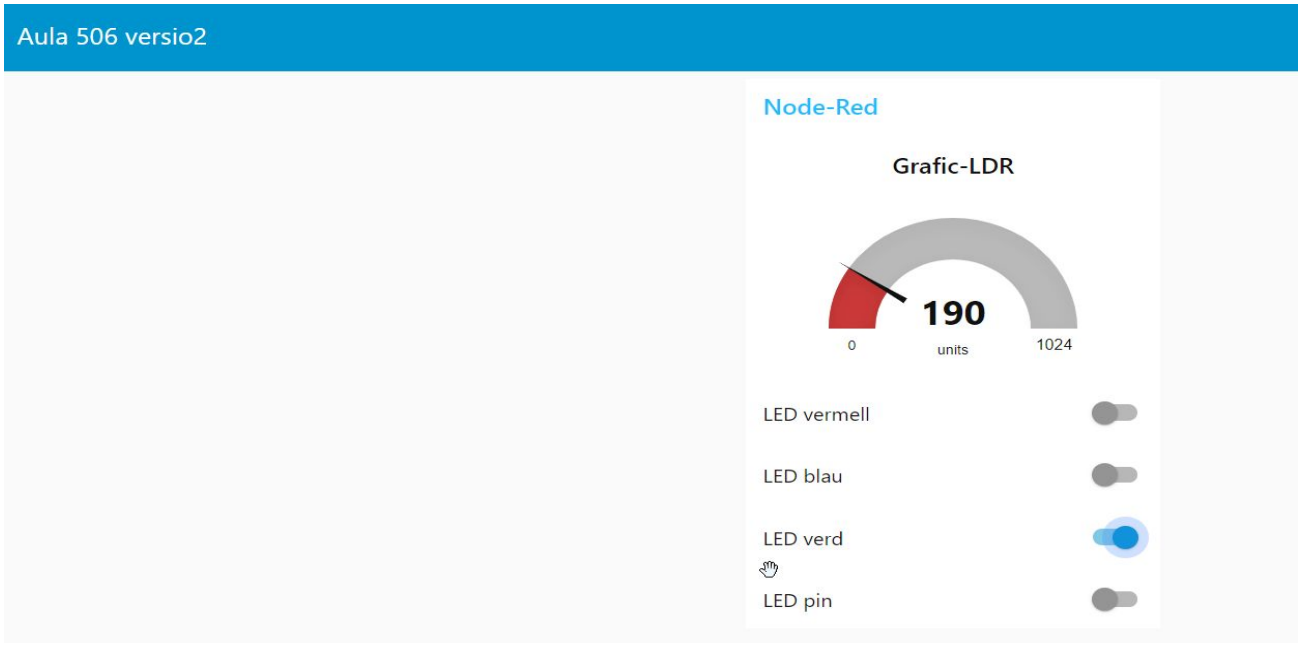
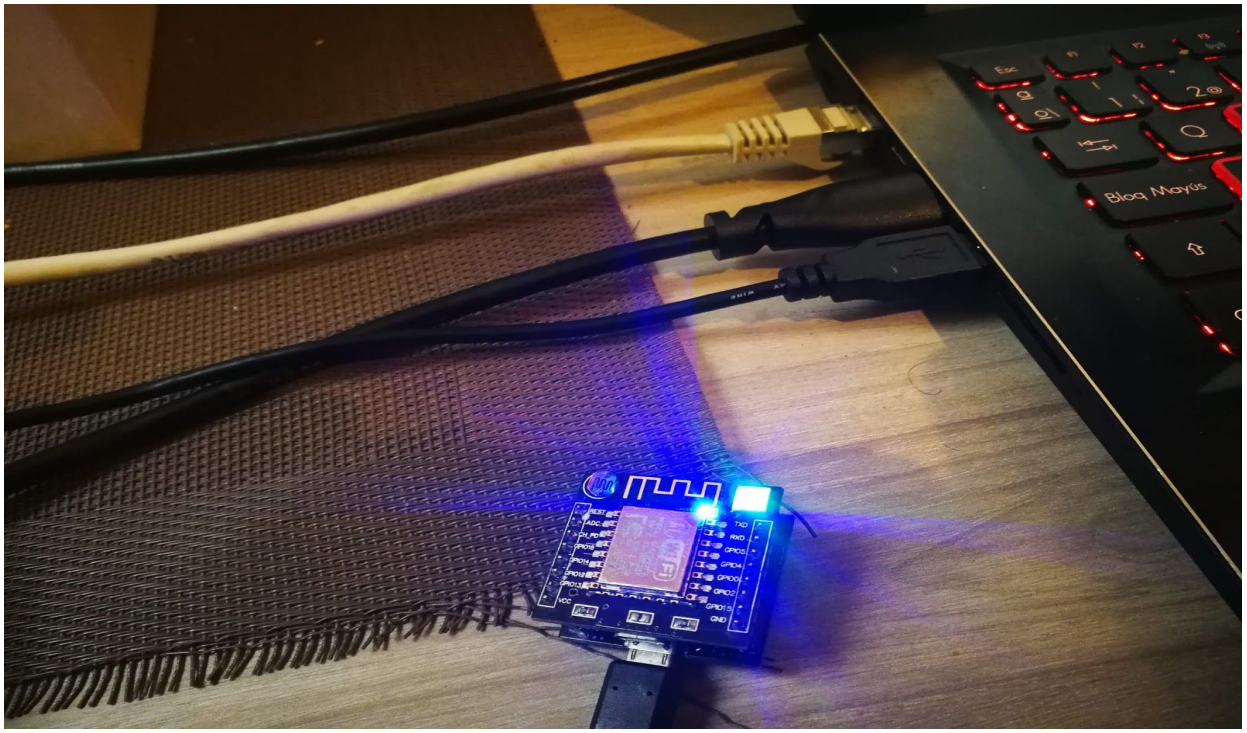
Despres seleccionem l'interruptor del LED verd





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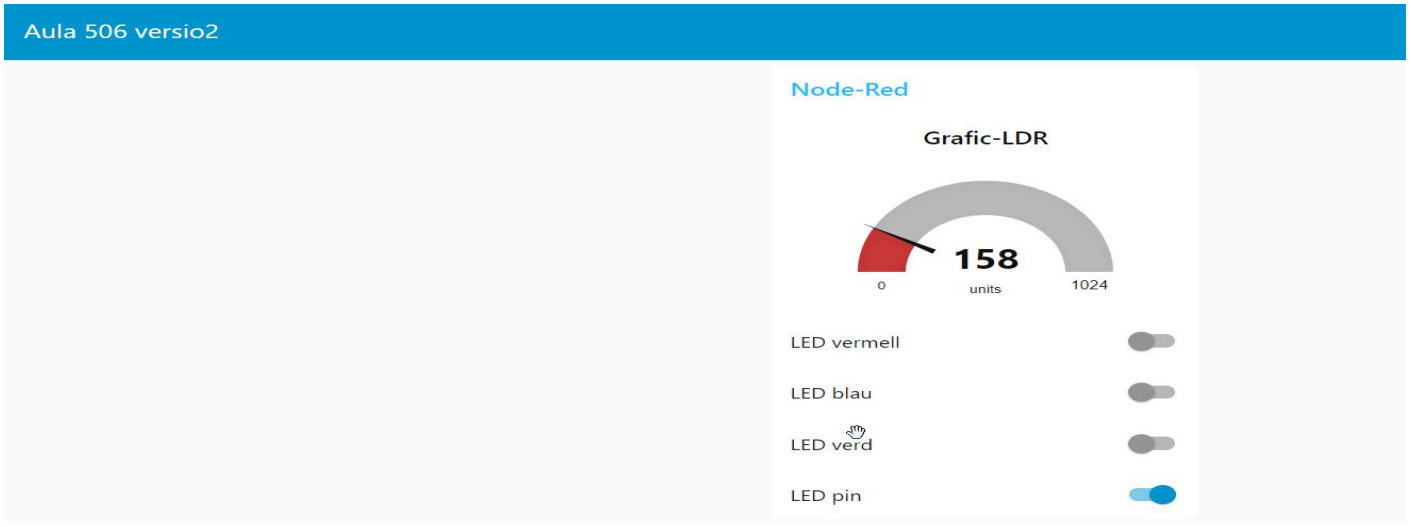
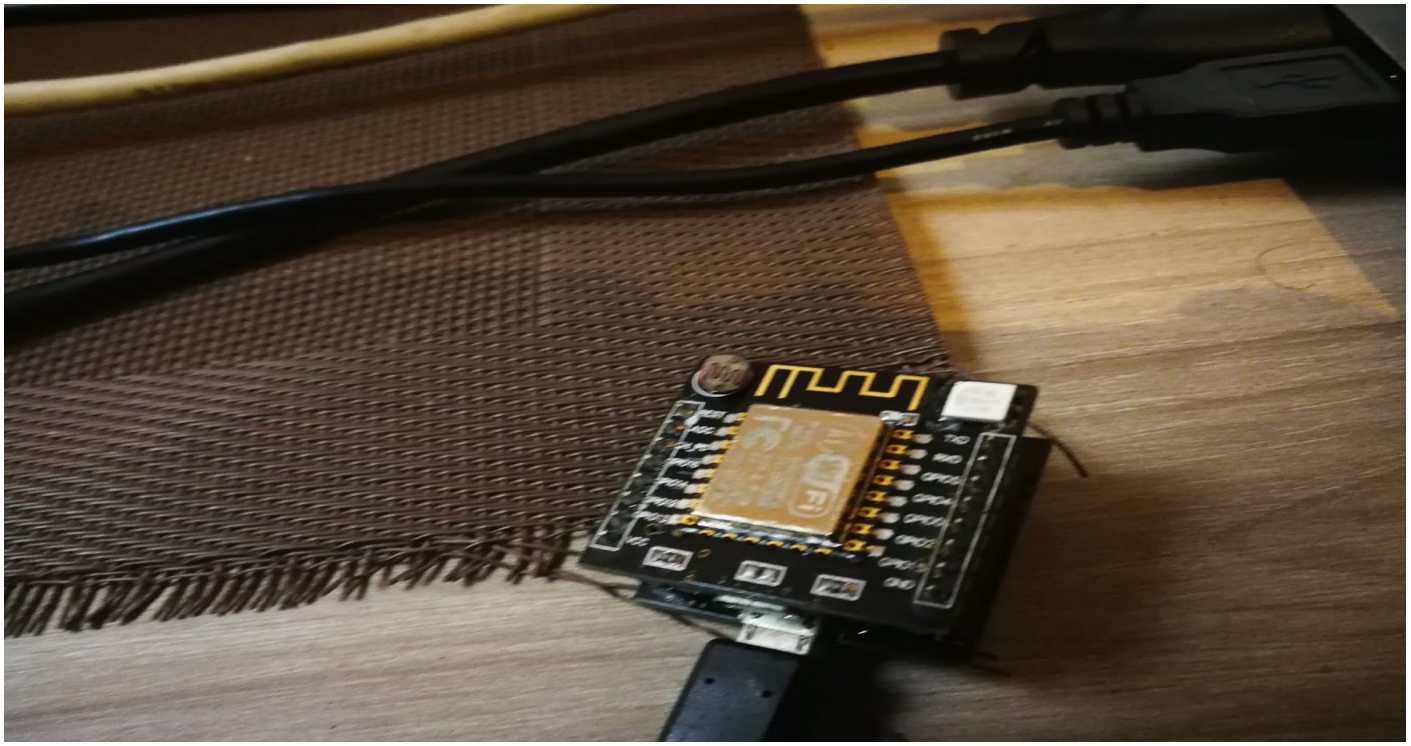
Com última prova seleccionem per apagar el LED





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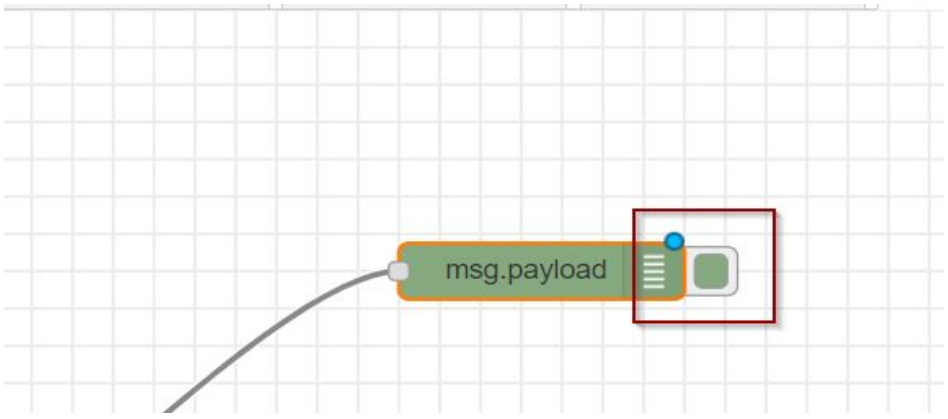
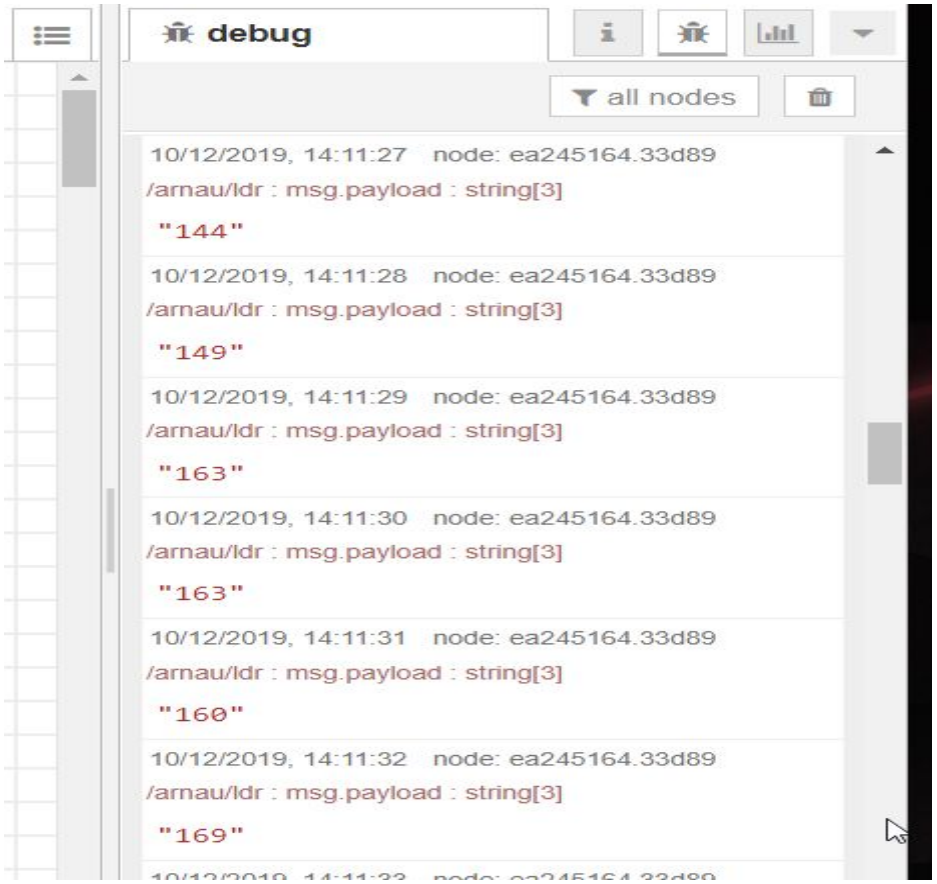
Però tenim un problema no ens apareix res a “Debug Messages” ja que no s’ha activat.





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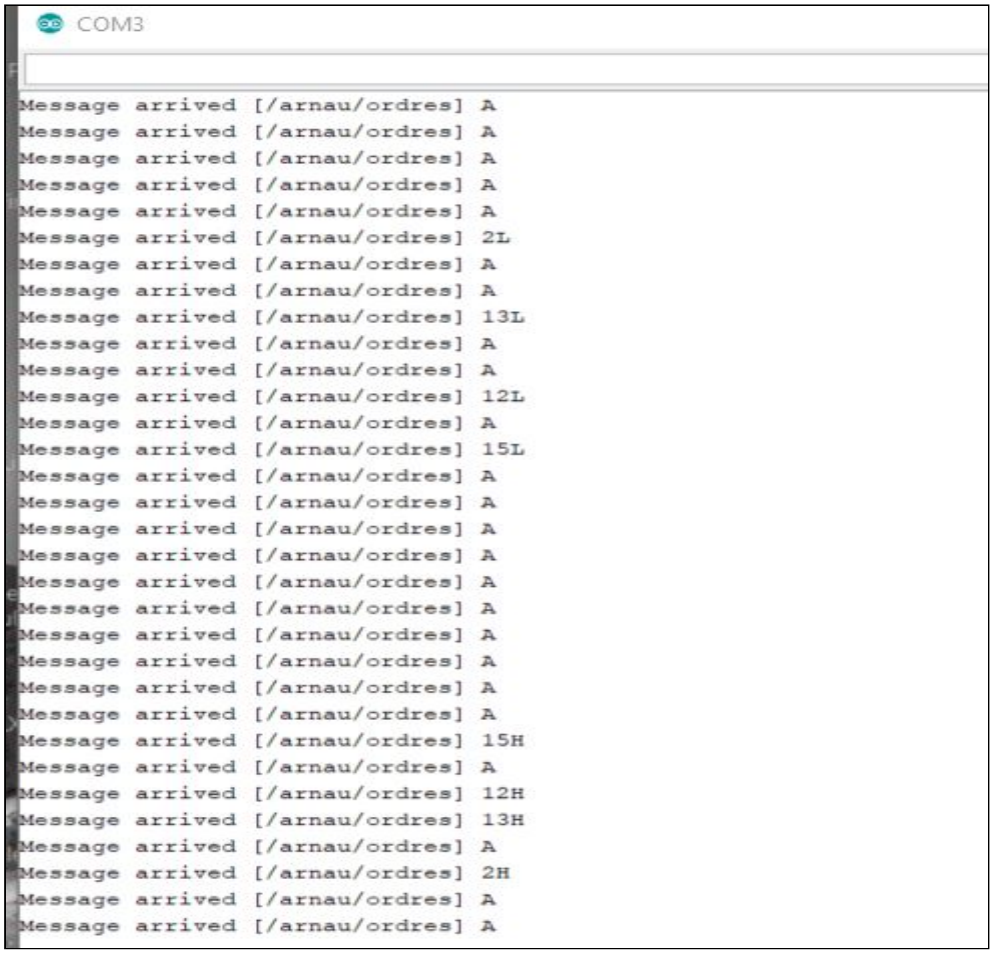
Revisem la consola del Arduino IDE per confirmar que tenim comunicació bidireccional



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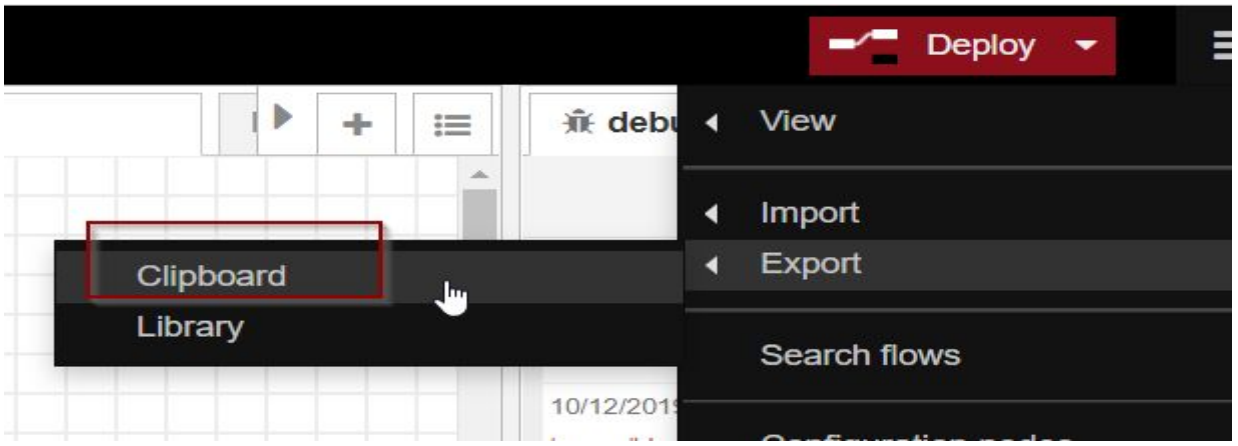
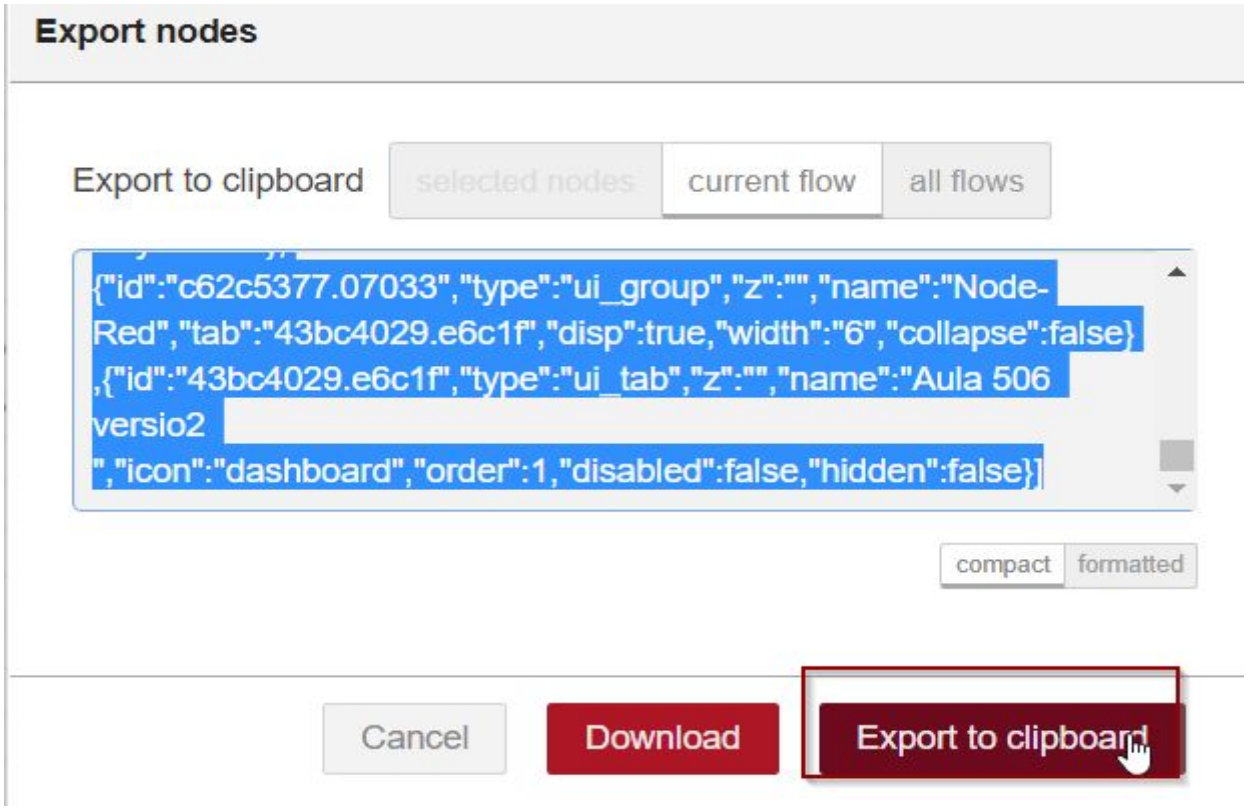
Per evitar “sustos” hauriem d’exportar el fluxe (format jason) per tenir una backup del fluxe.





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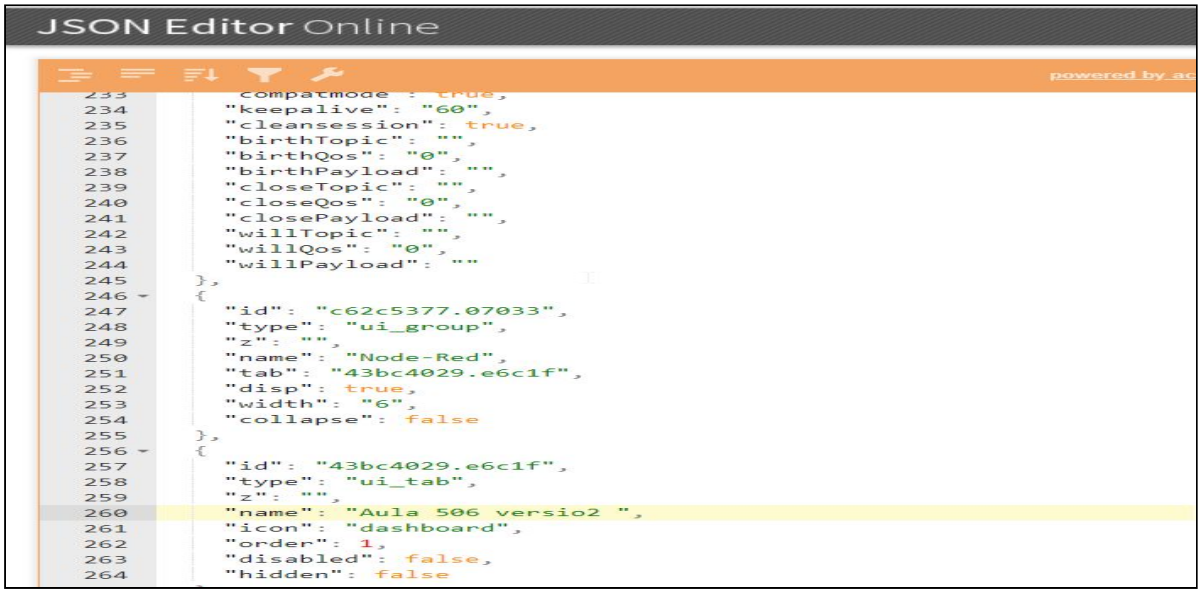
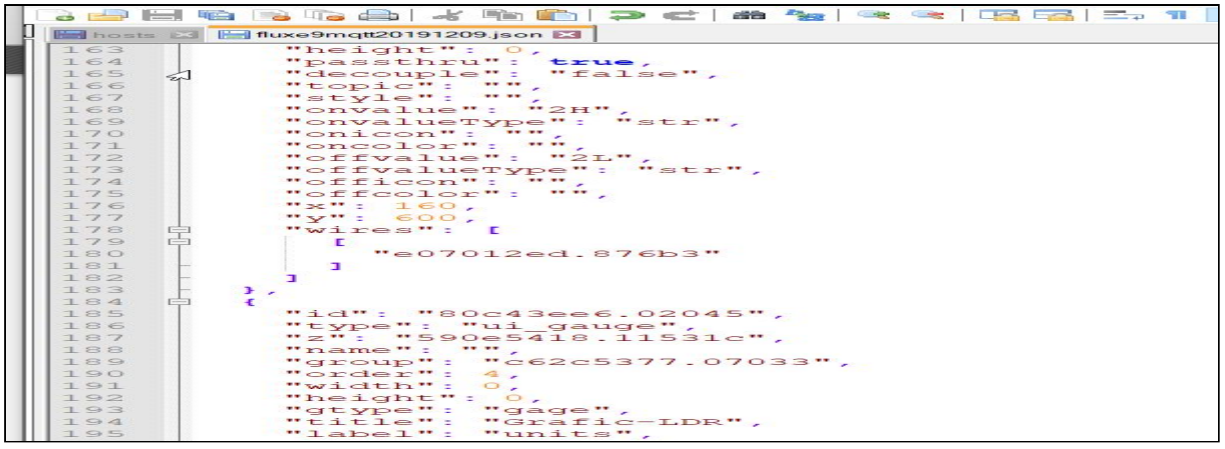
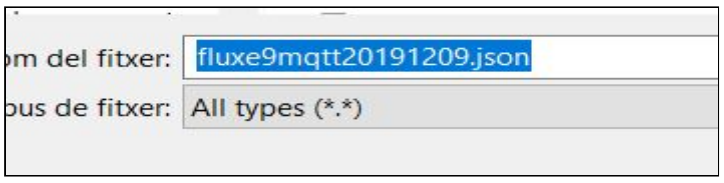
Utilitzem un compilador de Jason perquè ens cambie el format



Seguidament obrim un editor de text, on enganxem la copia del codi guardant amb extensio . json





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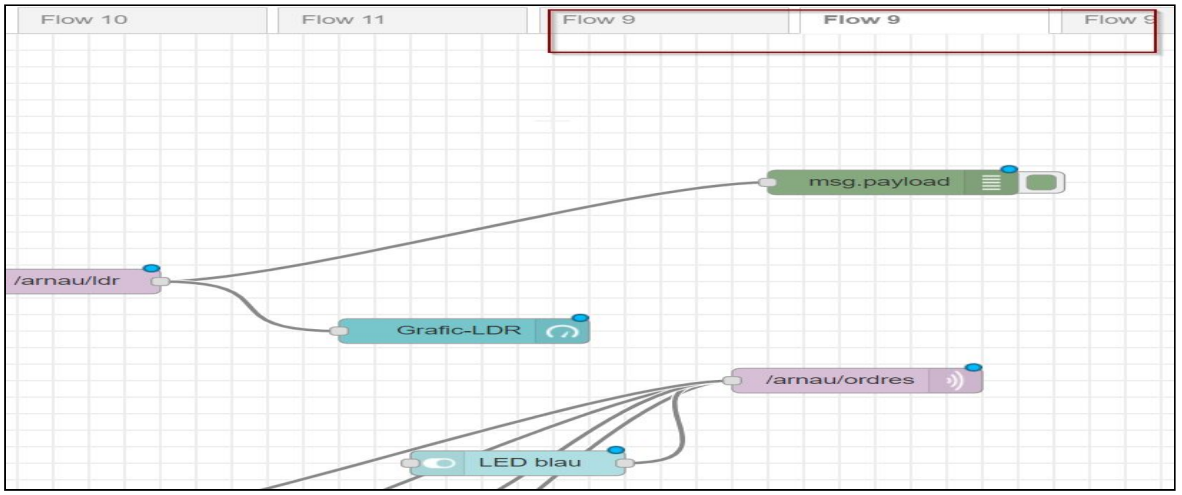
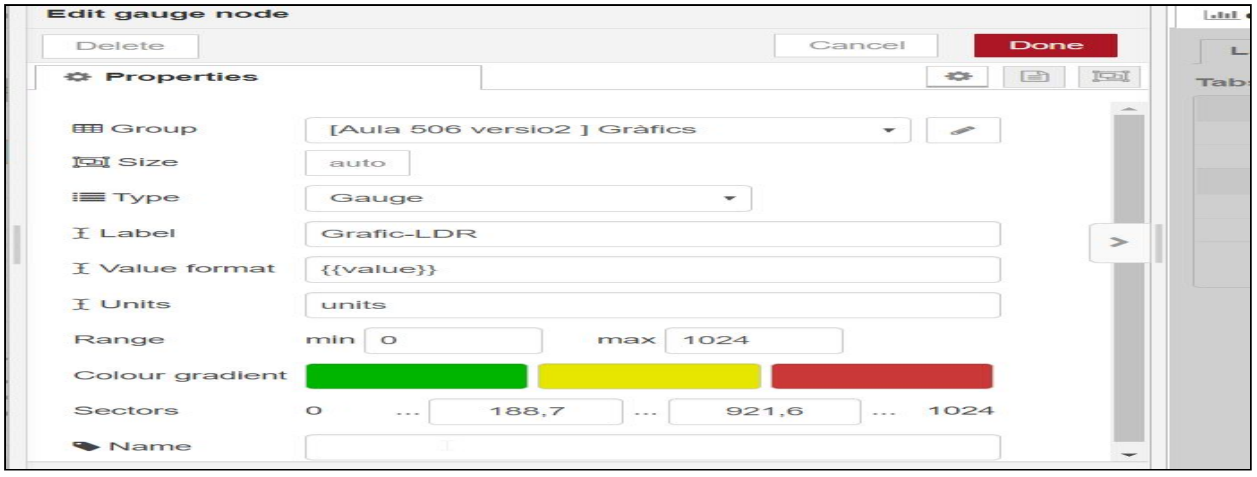
I confirmem que al exportar tenim de nou el fluxe 9



AMPLIACIÓ -VERSIÓ 3

Fem una modificacio perque si l'intensitat de llum es inferior al 20% de 1024 es vegi de color verd, superior al 90% de color vermell i entremig de color taronja



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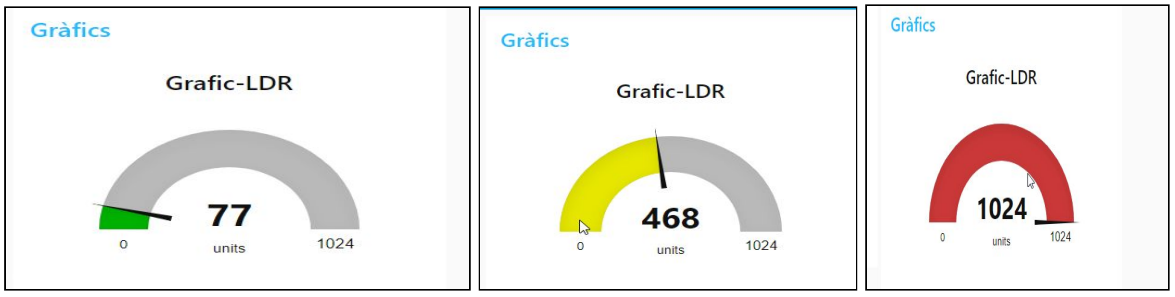
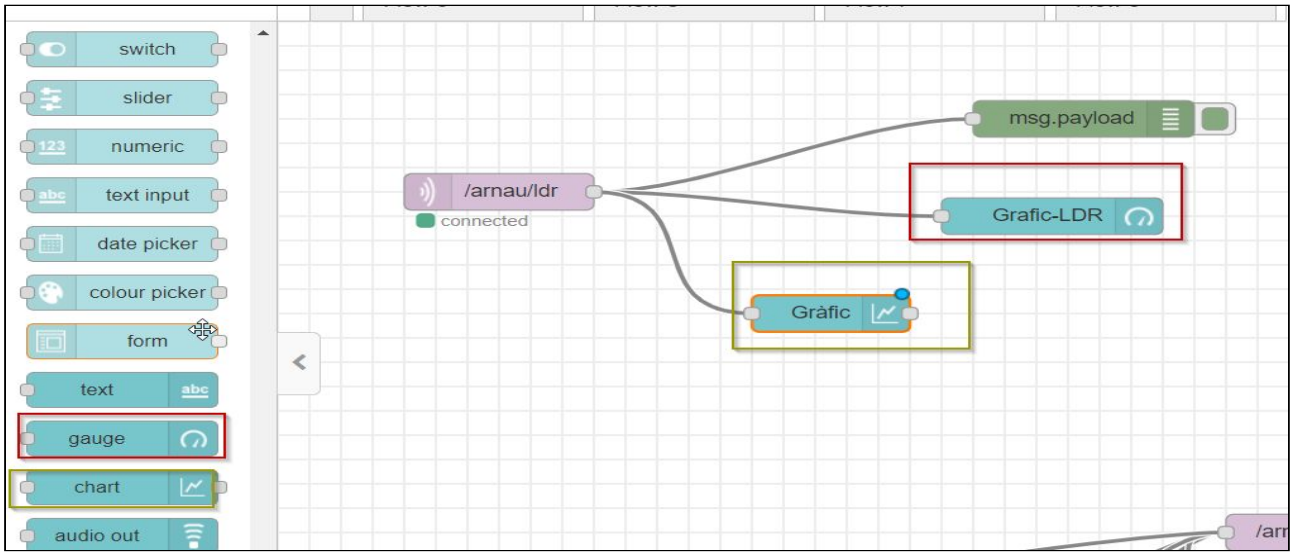
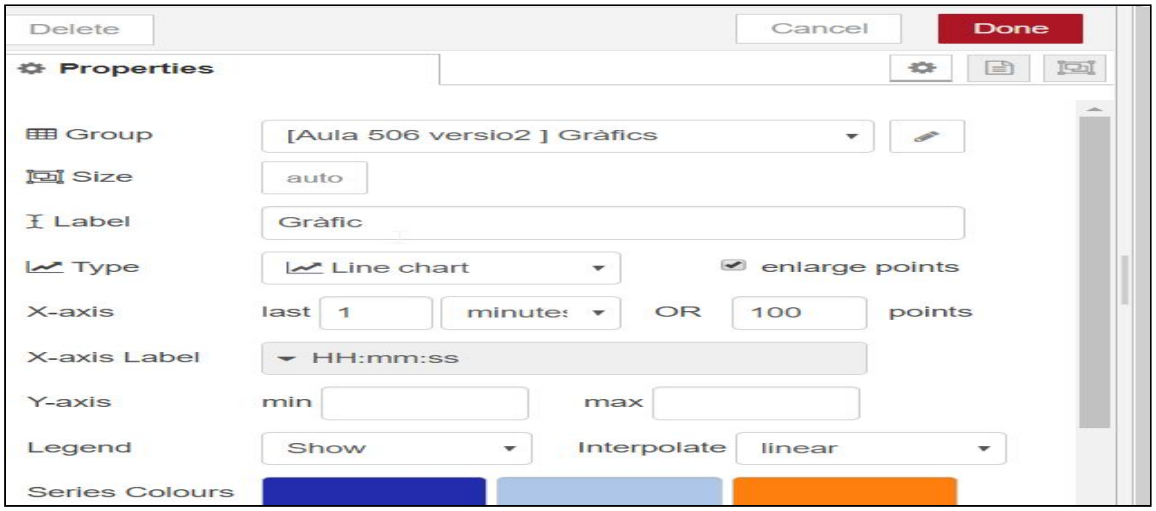
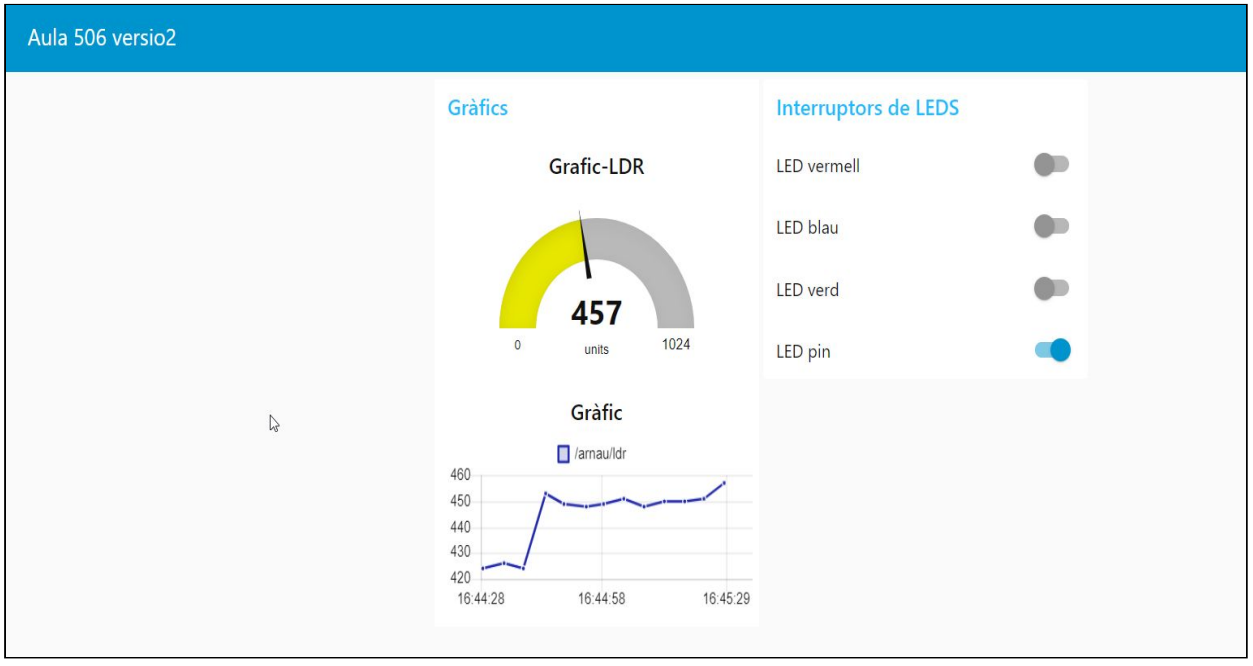


Afegim un altre node del Dashboard Node-Red anomenat “Chart”



Nom i Cognoms	Data
Arnau Subirós Puigarnau	18-12-2019





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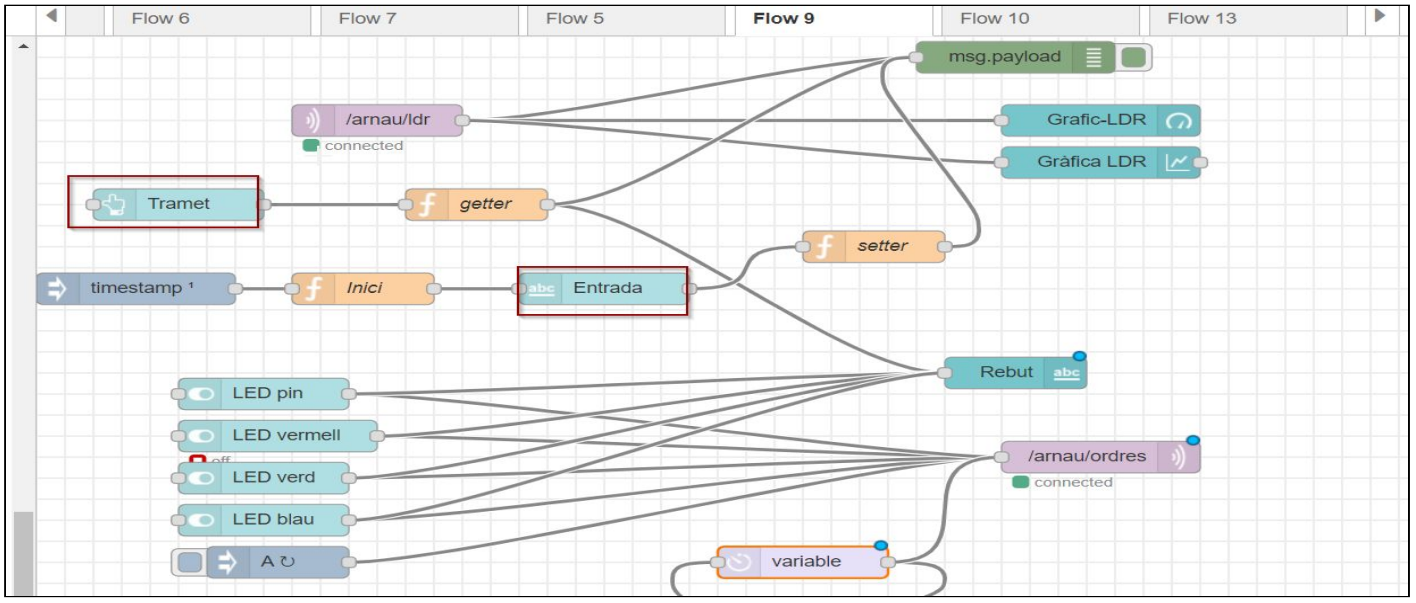
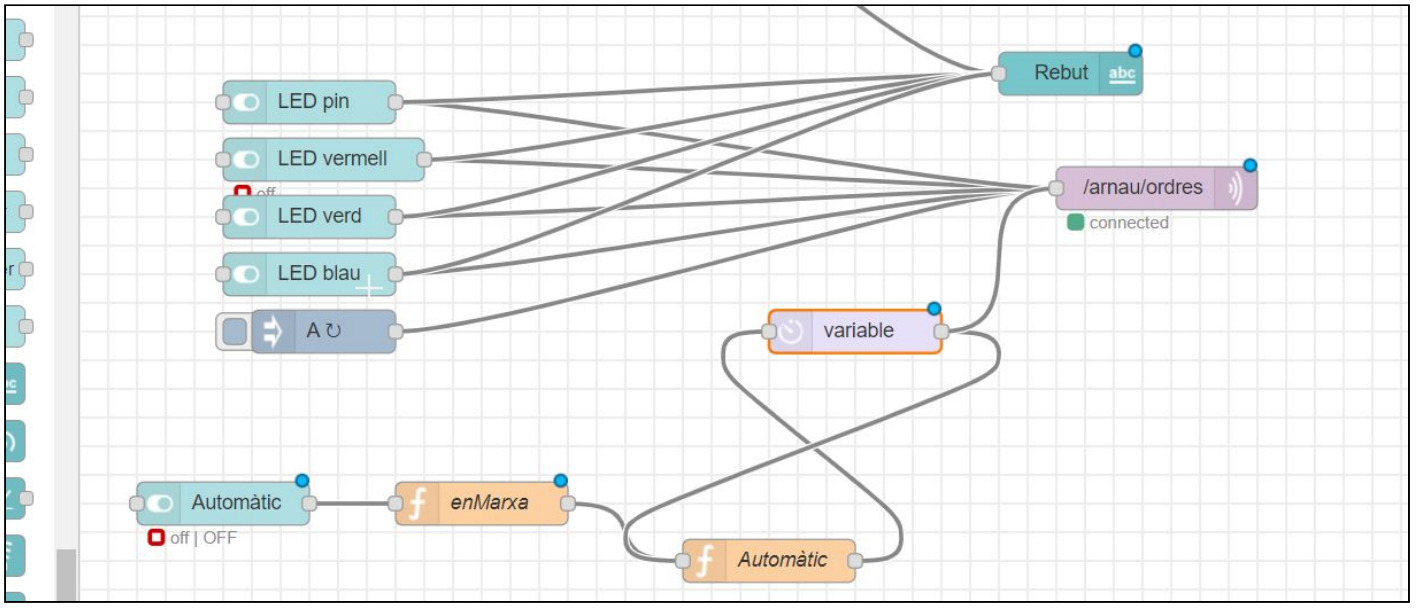
Arnau Subirós Puigarnau	18-12-2019

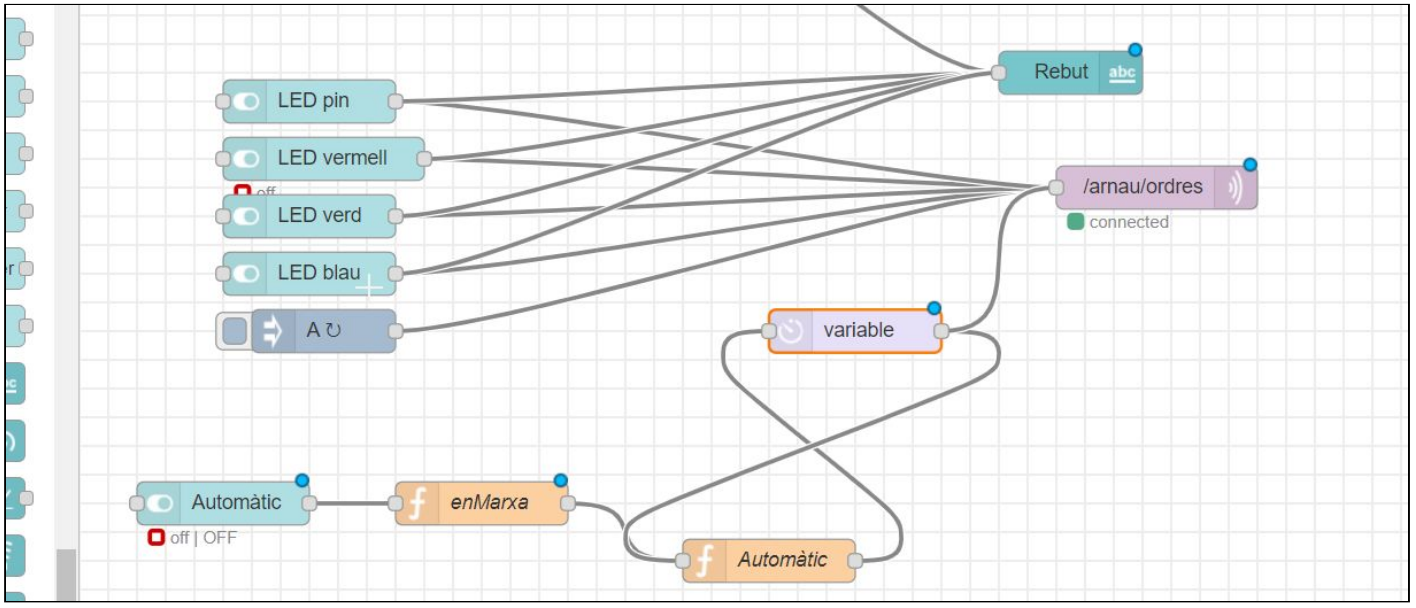
En el Dashboard s'ha creat un altre Grup " Altres" on ens mostrarà quan apretem un LED concret , el seu valor.

- S'ha creat una funció perque al premer Tramet deixem de visualitzar el valor especific del LED (12H,12L…)
- MOLT DE COMPTE, s'ha de vigilar no crear un bucle infinit (i tinguem problemes amb el Node -Red, hauriem de fer una copia dels fluxes abans evitar problemes)
-

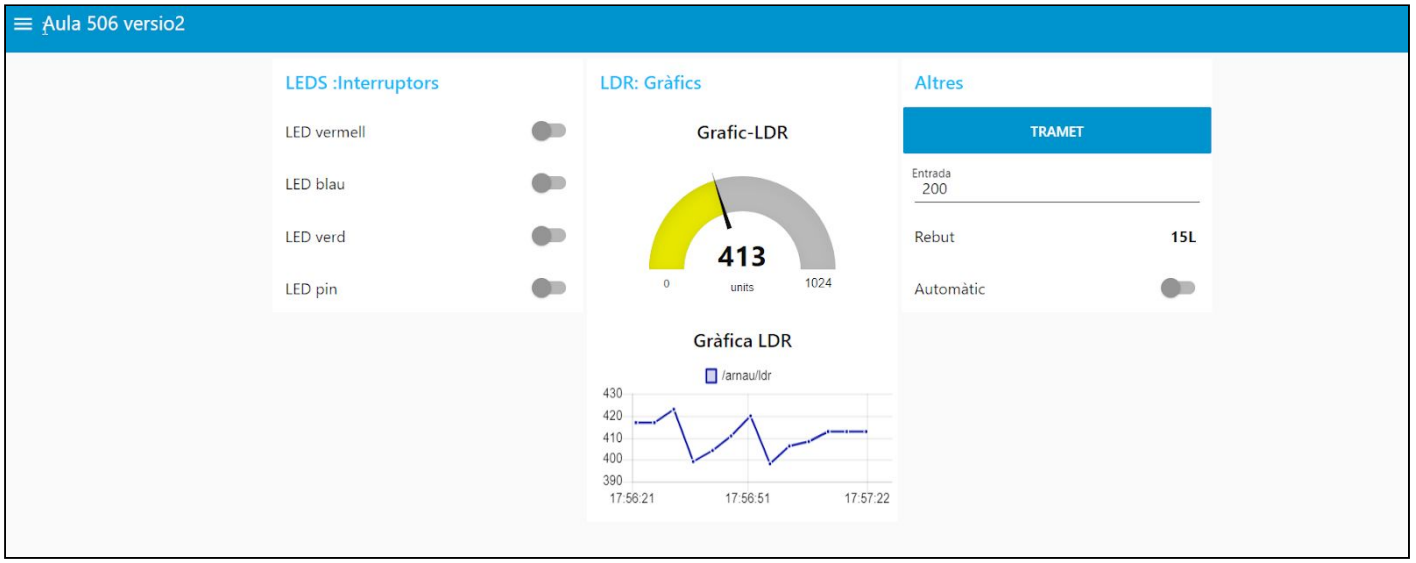


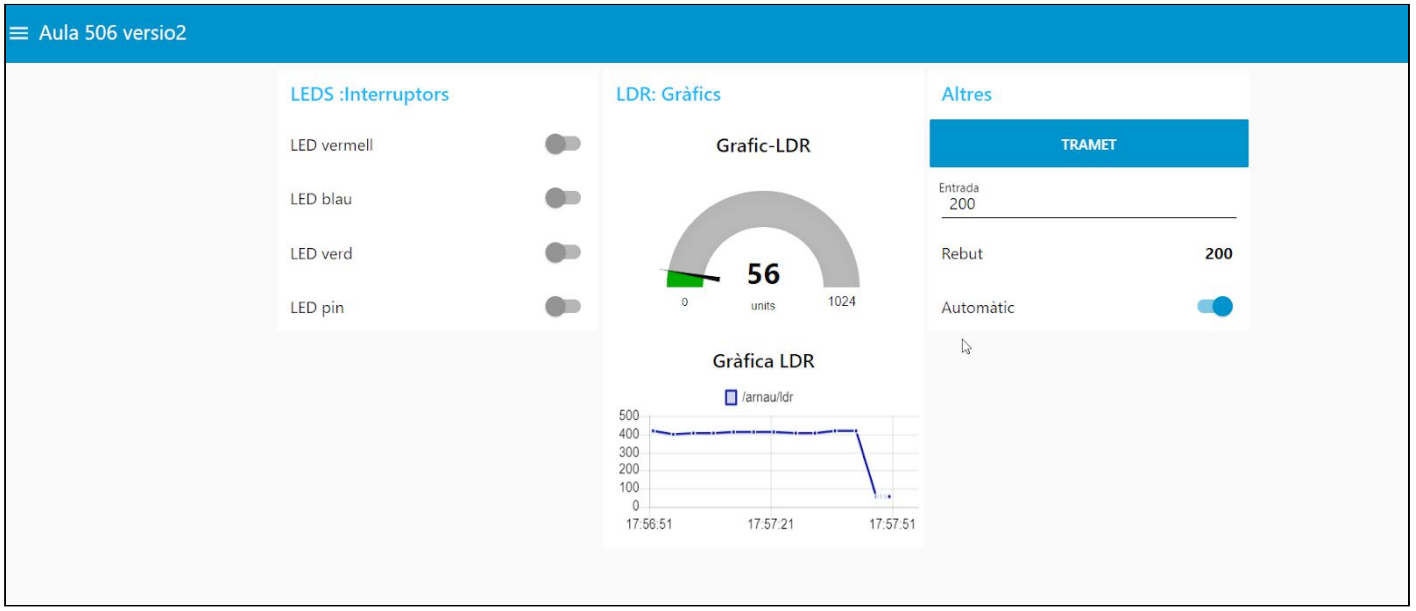
Nom i Cognoms	Data
Arnau Subirós Puigarnau	18-12-2019





Nom i Cognoms	Data
Arnau Subirós Puigarnau	18-12-2019





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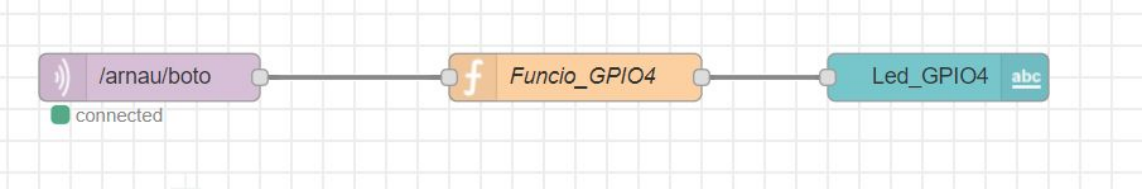
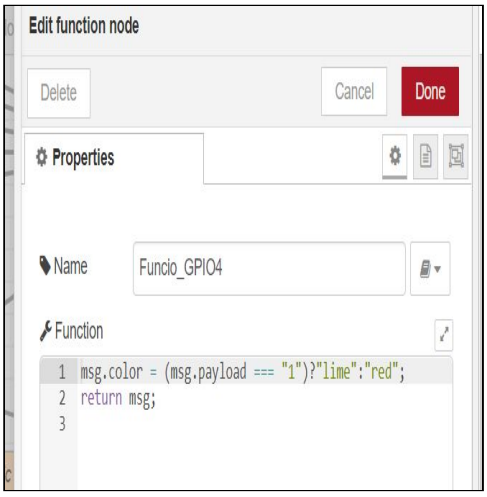
Arnau Subirós Puigarnau	18-12-2019

MODIFICACIO 17/12/2019 -INACABAT (per revisar)

- Se intenta que es visualizi en el Dashboard un “led” verd si apretem el GPIO4 i en cas contrari “led” vermell
- Se intenta desde el MQTT Dashboard APP del mobil”



Pero no m’ha sortit




```
#define TEMA_PUBLICA_ESTAT_BOTO "arnau/boto"
#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"
#define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"
```

```
void loop() {
  boolean bButtonState = !digitalRead(EXTERNAL_BUTTON);
  static boolean bLastButtonState = bButtonState;

  if (!client.connected()) {
    reconnect();
  }

  if (bButtonState != bLastButtonState) {
     bLastButtonState = bButtonState;
      delay(50);
       if (bButtonState)
       client.publish(TEMA_PUBLICA_ESTAT_BOTO, "1");
      else
       client.publish(TEMA_PUBLICA_ESTAT_BOTO, "0");
  }
  client.loop();
}
```

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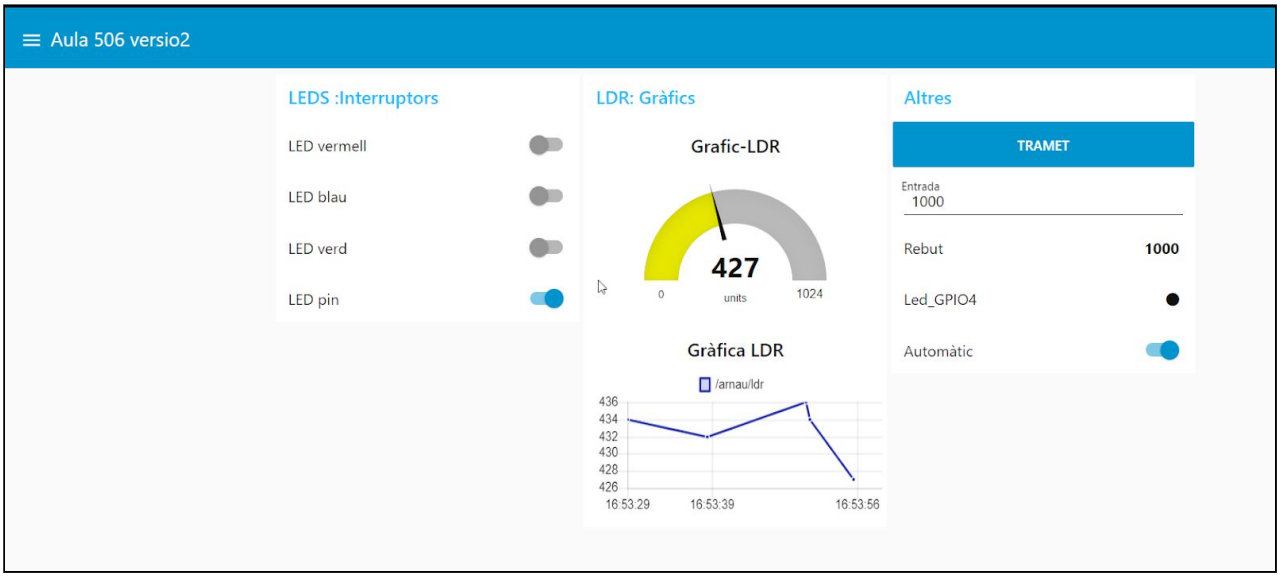

Torno a revisar, em donava error perque al codi de Arduino m'havia deixat "/"

```
esp8266_MQTT_pub_sub_02_versio4
//const char* ssid = "WLAN_FE55";
//const char* password = "4ec040328834f2a0ad26";

const char* ssid = "ASP";
const char* password = "eb2a63d14881";

//const char* ssid = "JESUITESFP_P5";
//const char* password = "8ecc6g8b";

//const char* mqtt_server = "192.168.1.200";
//const int mqtt_port = 1883; // normally 1883

const char* mqtt_server = "test.mosquitto.org";
const int mqtt_port = 1883; // normally 1883
//const char* mqtt_server = "test.mosquitto.org";
//const int mqtt_port = 1883; // normally 1883

#define TEMA_PUBLICA_ESTAT_BOTO "/arnau/boto"
#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"
#define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"

WiFiClient espClient;
PubSubClient client(espClient);

const byte ledPin = 2, ledRed = 15, ledGreen = 12, ledBlue = 13;
const byte button = EXTERNAL_BUTTON;

void callback(char* topic, byte* payload, unsigned int length) {
```

Nom i Cognoms	**Data**
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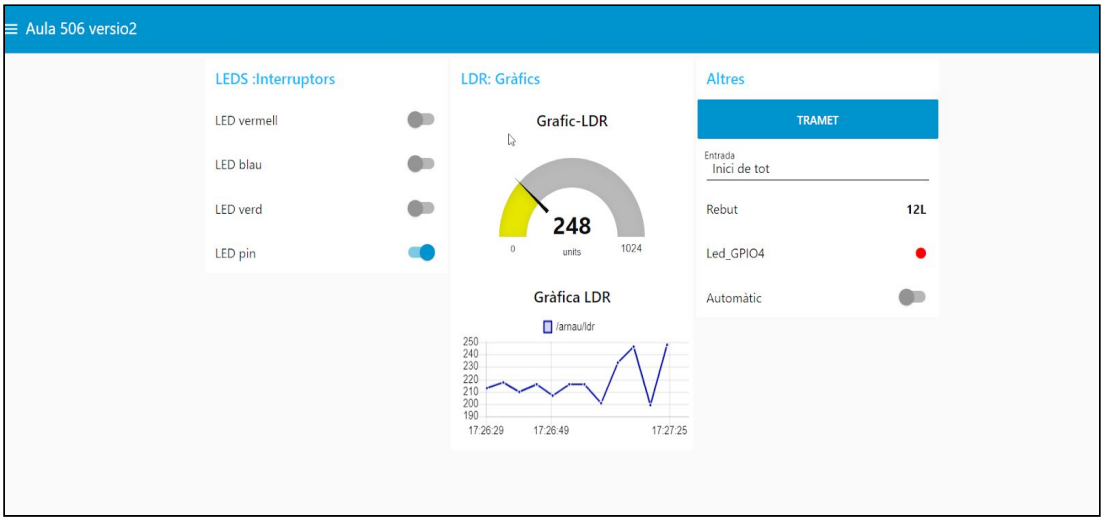

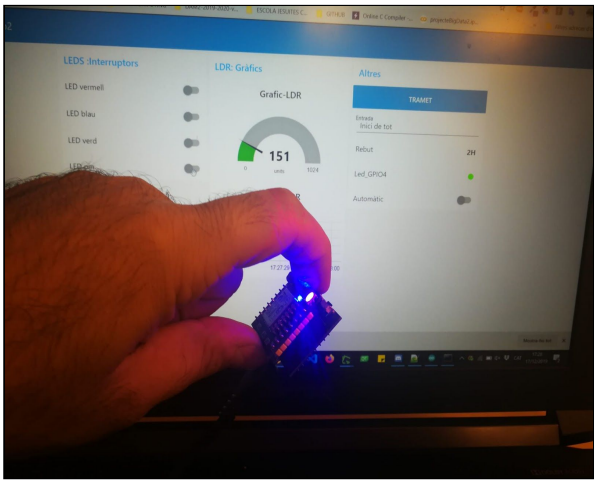

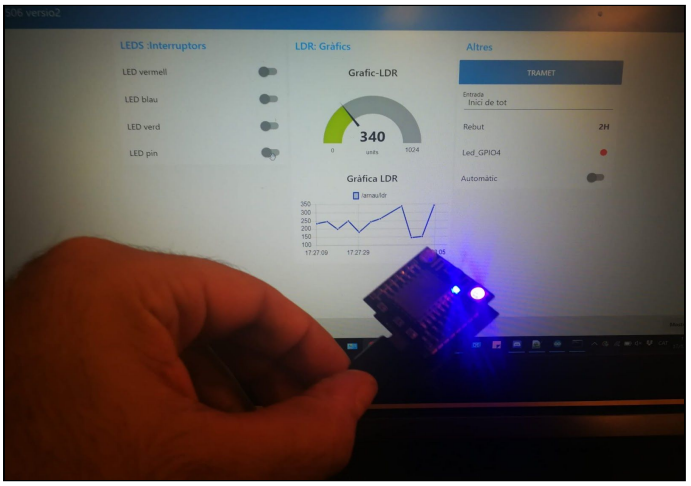

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Arnau Subirós Puigarnau	18-12-2019