

## IOT

A tutorial about generating push notifications with Telegram for ElectricLink.  
Pushing notification will be activated once someone arrives home and triggers the bot, the bot will give feedback by showing a LED once the user wants to charge another device by answering to the bot with a yes or no.

1 Error



## Start of telegram bot

1 Download telegram and create a bot

1.1 Start with downloading the Telegram app on a phone.

1.2 In the Telegram search bar type: 'botfather'. Make sure you enter this correctly. (1)

1.3 Talk to botfather and type: /newbot

1.4 Follow the instruction botfather gives you and fill in your name and username.

1.5 Go back in the application on your phone and search: "IDBot"

1.6 Open IDbot and type: /getid and receive your ID. You will need this later.

If you do not enter botfather correctly you will simply not find it.

## Arduino, applying code for connecting bot

2 Arduino

2.1 Open Arduino on your laptop.

2.2 Once you are in Arduino go to Tools>Boards>Manage Boards... and download ESP8266

2.3 Open your browser and Google. Here you search and download the Universal Arduino Telegram Bot library.

2.4 Add the library you just downloaded to Sketch>Include Library> Add.ZIP Library

2.5 Next you have to download AduinoJson. You will find this in Sketch>Include Library>Manage Libraries> and search ArduinoJson.

3 Including the code

3.1 Go to: [https://github.com/CarmenWibier/IoT-product-ElectricLink/  
blob/44575f147f31182542406d270ab6a2fc8a3a1ad2/  
CONNECTING%20BOT](https://github.com/CarmenWibier/IoT-product-ElectricLink/blob/44575f147f31182542406d270ab6a2fc8a3a1ad2/CONNECTING%20BOT)

Here you copy the described code and paste this in a new sketch in Arduino.

## 3.1 Error

```
Telegram
  ↴
    ↴ Sensors
      Complete project details at https://Telegram-control-esp32-esp8266-node-red-output/
Project created using Brian Lough's Universal Telegram Bot Library: https://github.com/witnesseesnow/Universal-Arduino-Telegram-Bot
Example based on the Universal Arduino Telegram Bot Library: https://github.com/witnesseesnow/Universal-Arduino-Telegram-Bot/blob/master/examples/7SPED6/7SPED6.ino
  ↴

#ifndef ESP32
#define WiFi_h
#include <ESP32WiFi.h>
#else
#include <ESP8266WiFi.h>
#endif
#include <WiFiClientSecure.h>
#include <UniversalTelegramBot.h> // Universal Telegram Bot Library written by Brian Lough: https://github.com/witnesseesnow/Universal-Arduino-Telegram-Bot
#include <ArduinoJson.h>

// Replace with your network credentials
const char* ssid = "REPLACE_WITH_YOUR_SSID";
const char* password = "REPLACE_WITH_YOUR_PASSWORD";

// Initialise Telegram BOT
#define BOTToken "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX" // your Bot Token (Get from Botfather)

Done uploading.
Features: WiFi
MAC address: 5C:8A:8C:91:ec:b0:11
uploading stub...
  ↴
  ↴ Club naming...
  ↴
  ↴ File size...
  ↴
  ↴ Auto-detected Flash size: 4MB
  ↴
  ↴ compressed 406248 bytes to 299284...
Writing at 0x00000000... (0) %
Writing at 0x00000000... (0) %
Writing at 0x00000000... (25) %
Writing at 0x00000000... (26) %
Writing at 0x00000000... (27) %
Writing at 0x00000000... (36) %
Writing at 0x00000000... (37) %
Writing at 0x00000000... (47) %
Writing at 0x00000000... (52) %
Writing at 0x00000000... (53) %
Writing at 0x00000000... (63) %
Writing at 0x00000000... (73) %
Writing at 0x00000000... (84) %
Writing at 0x00000000... (85) %
Writing at 0x00000000... (95) %
Writing at 0x00000000... (100) %
Writing at 0x00000000... (299284 compressed) at B00000000 in 26.4 seconds (effective 122.9 kbit/s)...%
  ↴
  ↴ auto resetting via RTS pin...
  ↴
  ↴ Done resetting via RTS pin...
```

Once uploading the sketch i got this error. Nothing happened on the Amica board and the Serialmonitor displayed symbols.

## Solution

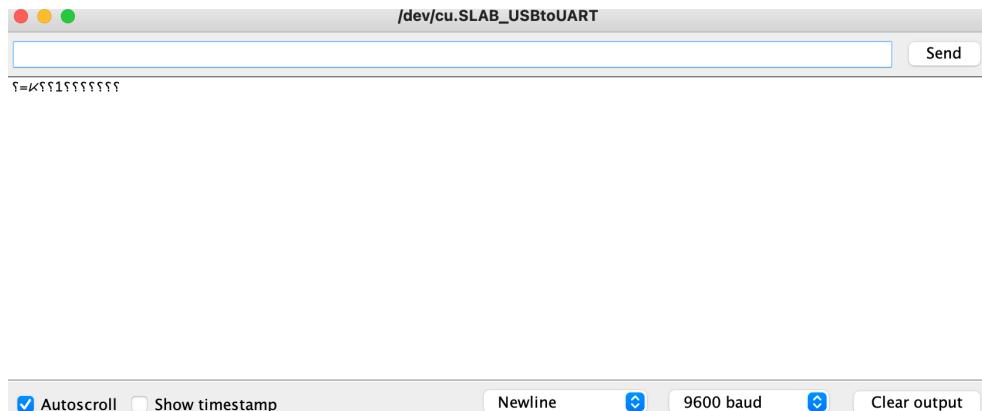
Turn on the Hotspot on your phone (make sure your wifi is turned OFF) and fill the information in Arduino at **ssid** and **password**.

Fill in your Telegram BOTtoken at `#define BOTtoken`

Fill in Chat\_ID (see step 1.6) at **#define CHAT\_ID**

## 3.2 Error

The serialboard still displayed symbols.

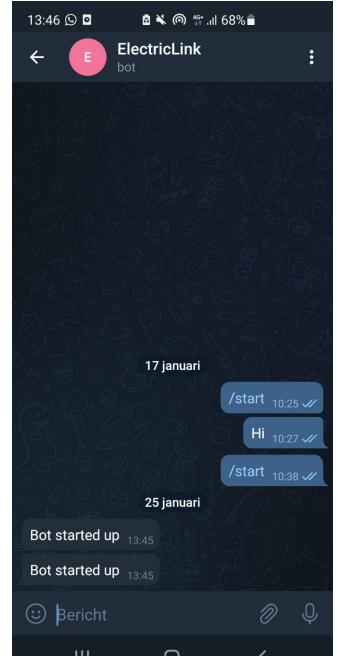


```
void setup() {  
    Serial.begin(115200);  
  
    ↓  
  
void setup() {  
    Serial.begin(9600);
```

## Solution

Go to your code and find `Serial.begin`. Change the number to whatever is written in your code.

Your code should work now. press upload again.



## Adding light for feedback

First im going to try and add a LEDstrip for feedback when a message is send to the users phone.

I started with mixing different pieces of code

Copy this code to follow along: <https://github.com/CarmenWibier/IoT-product-ElectricLink/blob/df9a49c654598f4477e379e82a412c61f11d126b/MERGING%20CODE>

Everything seems to work at the moment of execution. The bot send a message to telegram and the LED strip is working.

However, the serial monitor gave these symbols without giving complications (yet)

The screenshot shows the Arduino Serial Monitor window titled "sketch\_jan17\_edit | Arduino 1.8.16". The top status bar indicates the port is "/dev/cu.SLAB\_USBtoUART". The main text area displays memory usage statistics:

```
l4:33:56.487 -> ? {r? p
  IRAM : 305412      - code in Flash      (code or CACHE...)
  IRAM : 28405 / 32768 - code in IRAM      (IRAM_ATTR, ISRs...)
  DATA : 1608 )       - initialized variables (global, static) in ...
  RODATA : 3228 ) / 81920 - constants      (global, static) in ...
  BSS : 26064 )       - zeroed variables   (global, static) in ...
Sketch uses 396653 bytes (37%) of program storage space. Maximum is 1048576 bytes (100%). Global variables use 30900 bytes (37%) of dynamic memory, leaving 510576 bytes available for local variables.
```

At the bottom of the serial monitor, there are checkboxes for "Autoscroll" and "Show timestamp", and a "Newline" button.

## Making telegrambot send another message

Next I want the telegram bot to send a message to the user after its connected.

I tried to merge my existing code with a new code from:

<https://github.com/witnessmenow/Universal-Arduino-Telegram-Bot/blob/master/examples/ESP8266/EchoBot/EchoBot.ino#L51>

The code seemed to make Arduino crash multiple times, but after some tries it did successfully connect my bot again.

### ERROR

The code didn't send my custom message however. I decided to test the stand alone code first to see what I could change.



## ERROR

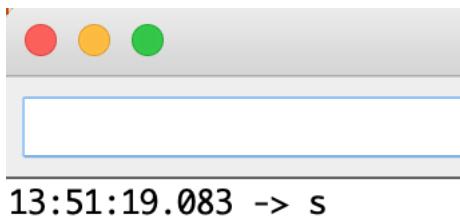
- The copied code appared not to let the telegram bot send a message, nothing happend after a succesfull upload.

```
bot.sendMessage(CHAT_ID, "Bot started up", "test");
```

- i decided to go back to my old code and add a second message to this. when i got back to my old code this didnt work either, the bot didnt respond at all this time.

```
bot.sendMessage(bot.messages[i].chat_id, bot.messages[i].text, "test2");  
}
```

- Back to the test code where i found a spot to fill in a custom message. This also didnt work again, the serial monitor also gave nothing back



I decided to call it a day right here since without already existing code or a tutorial I cant figure out how to make this work.

## PREVIOUS ATTEMPTS ON TELEGRAM MESSAGING START FROM PAGE 2

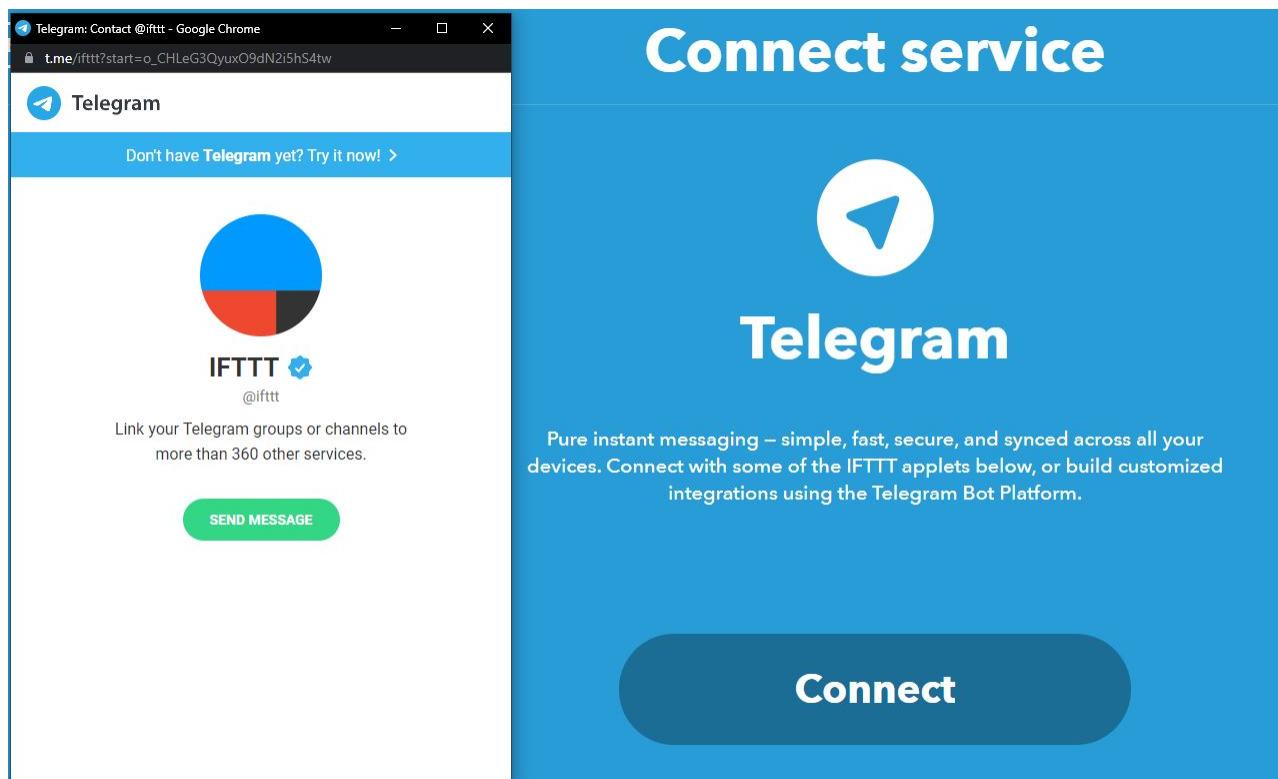
### 4 IFTTT

4.1 Next we are going to start and look at IFTTT. In Arduino go to Sketch>Include Library>Manage Libraries> and download IFTTTSender.

4.2 To use IFTTT with your board, we have to create a recipe on the website of IFTTT.

#### 4.1 Error

I tried to connect IFTTT to link with my board and without filling in information I got this message



#### Solution

I couldn't connect through browser so I tried to do these steps on my phone which made connection.

4.3 Authorize IFTTT in the Telegram app once you pressed **begin**. Select Telegram in the authorization.

#### 4.2 Error

I miss understood the steps in the tutorial I followed. Instead of Telegram another recipe has to be selected called **Maker**.

## 5 Maker (incase you didnt do these steps in step 4)

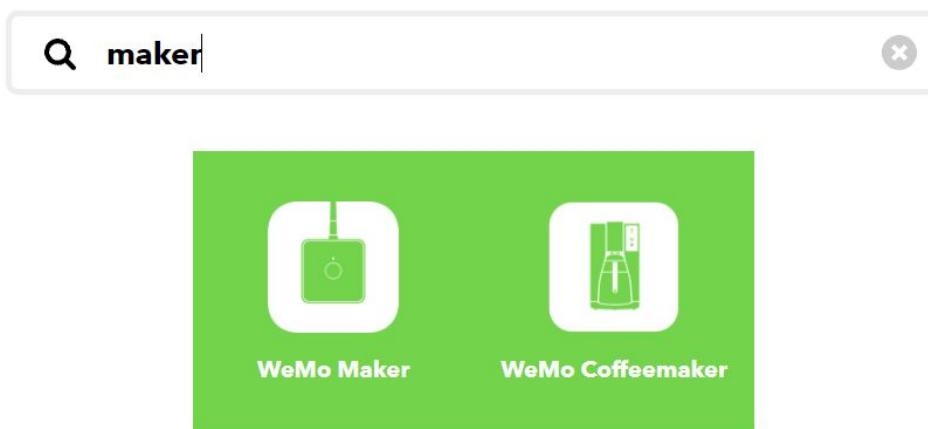
5.1 We are going to start and look at IFTTT. In Arduino go to Sketch>Include Library>Manage Libraries> and download IFTTTSMaker.

5.2 To use IFTTT with your board, we have to create a recipe on the website of IFTTT.

## 5 Error

It appears that **Maker** is discontinued and cant be found in IFTTT anymore.

# Choose a service



## 6 Error

After continuing this tutorial a day later I got a this error.

The screenshot shows the Arduino IDE interface with a sketch named "sketch\_oct10a" open. The code contains basic setup and loop functions. At the bottom, an error message is displayed in a red box: "Error compiling for board NodeMCU 1.0 (ESP-12E Mod)".

```
sketch_oct10a | Arduino 1.8.16
sketch_oct10a
void setup() {
  // put your setup code here, to run once:
}

void loop() {
  // put your main code here, to run repeatedly:
}

Error compiling for board NodeMCU 1.0 (ESP-12E Mod) Copy error messages
Error compiling for board NodeMCU 1.0 (ESP-12E Module).
31019KB), 2, v2 Lower Memory, Disabled, None, Only Sketch, 115200 on /dev/cu.SLAB_USBtoUART
```

I have encountered this error before and knew I had to delete and reset my setting of Adafruit all over again. This error also appears when the board isn't connected correctly, but I knew this wasn't the case. I reinstalled Adafruit and put all my settings back. I restarted my laptop and the same error appeared once again.

## Used sources and tutorials

Instructables. (2018, 1 maart). Send Notifications to Your Phone From an ESP8266. Geraadpleegd op 27 oktober 2021, van <https://www.instructables.com/Send-Notifications-to-Your-Phone-From-an-ESP8266/>

Santos, S. (2020, 2 september). Telegram: Control ESP32/ESP8266 Outputs with Arduino IDE. Random Nerd Tutorials. Geraadpleegd op 27 oktober 2021, van <https://randomnerdtutorials.com/telegram-control-esp32-esp8266-nodemcu-outputs/>

Push Notifications Arduino Esp8266 - Example of how to generate push notifications on your phone from your ESP8266 using the Arduino IDE. - (push-notifications-arduino-esp8266). (2016). Github. Geraadpleegd op 27 oktober 2021, van <https://opensourcelibs.com/lib/push-notifications-arduino-esp8266>

<https://github.com/witnessmenow/Universal-Arduino-Telegram-Bot/blob/master/examples/ESP8266/EchoBot/EchoBot.ino#L51>

<https://github.com/CarmenWibier/IoT-product-ElectricLink/blob/44575f147f31182542406d270ab6a2fc8a3a1ad2/CONNECTING%20BOT>