**Internet Radio using PCM5102A**

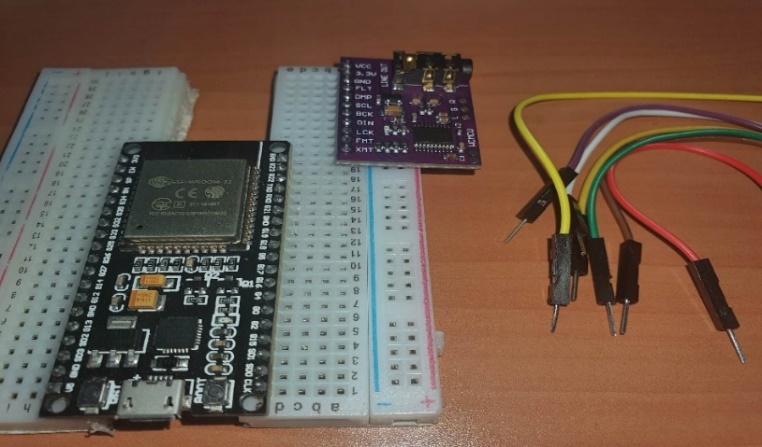
the following is a guide on how to create an internet radio using the PCM5102A amplifier.  
for this tutorial, we used the Arduino IDE.  
**assumptions:**

* you have downloaded the Arduino IDE.
* you have configured the IDE to work with the “DOIT ESP32 DIVKIT V1” board.

a guide to all the steps above can be found in the “bank of knowledge”.

**needed material:**

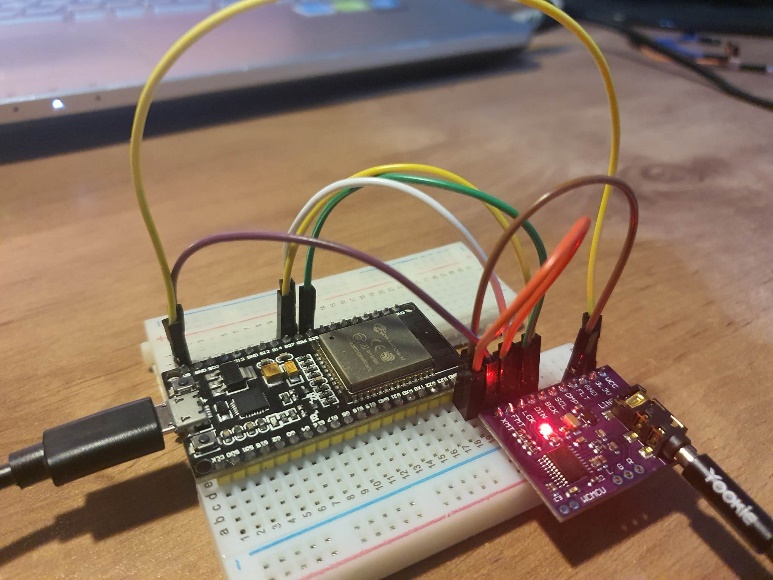
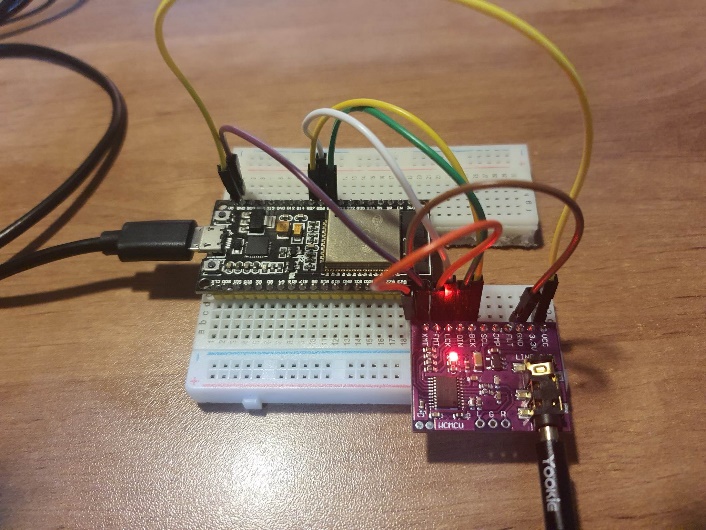
* ESP32 microcontroller
* PCM5102A amplifier
* breadboard
* WiFi connection
* 7 wires
* earphones with an aux jack

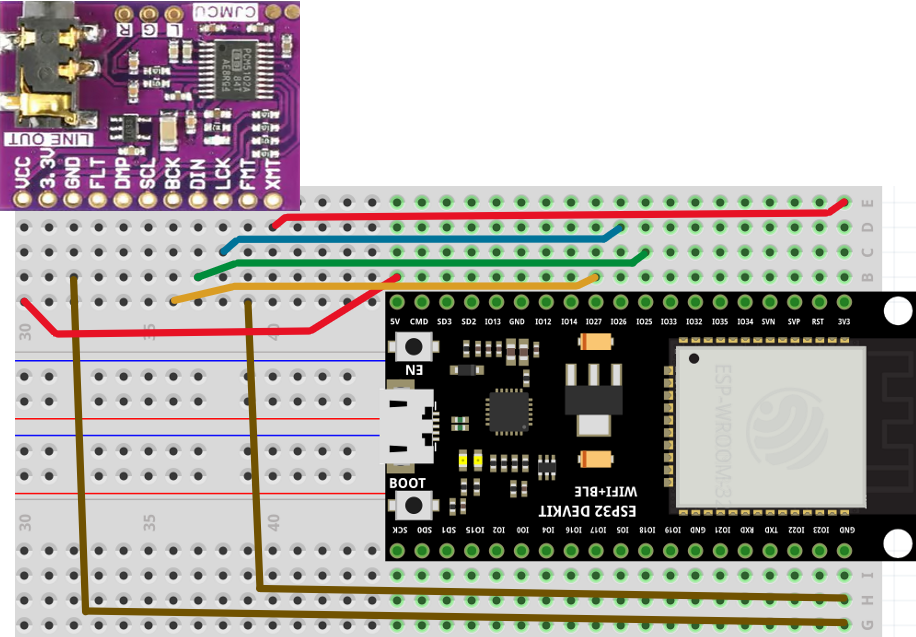


**step 1:** download the following Github repository as a zip file to your computer:  
<https://github.com/schreibfaul1/ESP32-audioI2S>  
  
**step 2:** go to the Arduino IDE -> Sketch -> include library -> add .ZIP library -> choose the file you’ve downloaded in step 1.

**step 3:** setup the wiring as shown in the “audio input and output for microcontrollers” presentation, or as follows:

|  |  |
| --- | --- |
| **PCM5102/A** | **ESP32** |
| Vcc | Vcc (5V) |
| GND | GND |
| BCK or BCLK | Pin 27 (G27) |
| DIN | Pin 25 (G25) |
| LCK | Pin 26 (G26) |
| FMT | GND |
| XMT | Vcc (5v\3.3v) preferably 3.3V |



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**step 4:** copy and paste the following code:

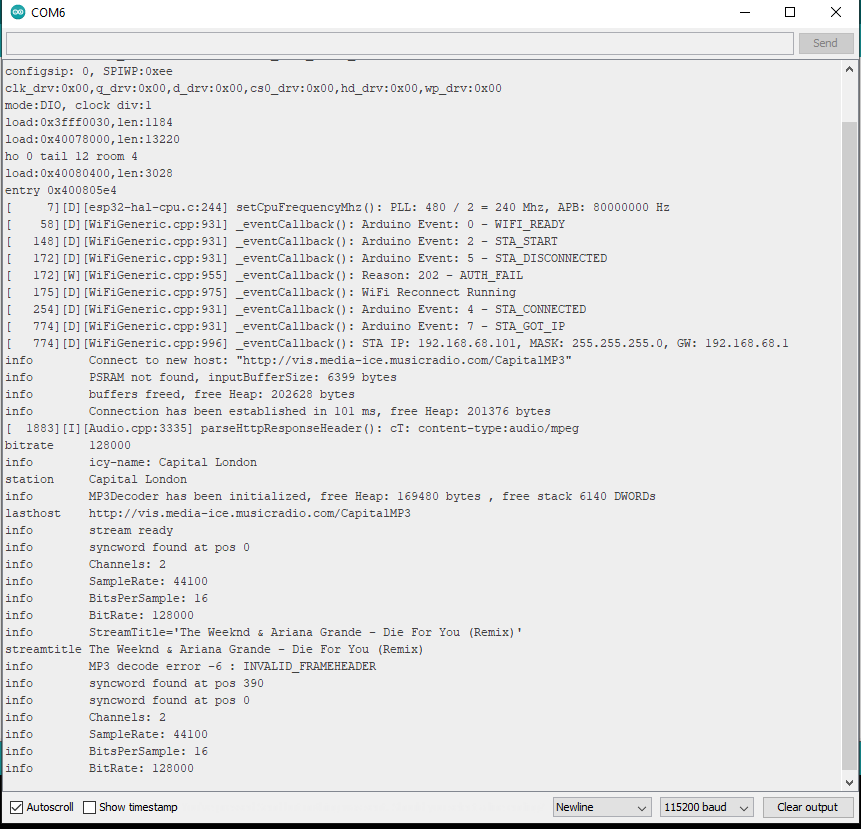
* #include "Arduino.h"  
  #include "WiFi.h"  
  #include "Audio.h"  
    
  // Digital I/O used  
  #define I2S\_DOUT 25 // DIN connection  
  #define I2S\_BCLK 27 // Bit clock  
  #define I2S\_LRC 26 // Left Right Clock  
    
  Audio audio;  
    
  String ssid = "your WiFi name"; // insert your WiFi name here  
  String password = "your Password"; // insert your WiFi password here  
    
  void setup() {  
   Serial.begin(115200);  
   WiFi.disconnect();  
   WiFi.mode(WIFI\_STA);  
   WiFi.begin(ssid.c\_str(), password.c\_str());  
   while (WiFi.status() != WL\_CONNECTED) delay(1500);  
   audio.setPinout(I2S\_BCLK, I2S\_LRC, I2S\_DOUT);  
   audio.setVolume(15); // 0...21  
    
  // audio.connecttohost("http://www.wdr.de/wdrlive/media/einslive.m3u");  
  // audio.connecttohost("http://macslons-irish-pub-radio.com/media.asx");  
  // audio.connecttohost("http://mp3.ffh.de/radioffh/hqlivestream.aac"); // 128k aac  
  // audio.connecttohost("http://mp3.ffh.de/radioffh/hqlivestream.mp3"); // 128k mp3  
   audio.connecttohost("http://vis.media-ice.musicradio.com/CapitalMP3"); // 128k mp3  
  // audio.connecttospeech("Wenn die Hunde schlafen, kann der Wolf gut Schafe stehlen.", "de");  
  // audio.connecttohost("http://media.ndr.de/download/podcasts/podcast4161/AU-20190404-0844-1700.mp3"); // podcast  
  }  
    
  void loop()  
  {  
   audio.loop();  
  }  
    
  // optional  
  void audio\_info(const char \*info){  
   Serial.print("info "); Serial.println(info);  
  }  
  void audio\_id3data(const char \*info){ //id3 metadata  
   Serial.print("id3data ");Serial.println(info);  
  }  
  void audio\_eof\_mp3(const char \*info){ //end of file  
   Serial.print("eof\_mp3 ");Serial.println(info);  
  }  
  void audio\_showstation(const char \*info){  
   Serial.print("station ");Serial.println(info);  
  }  
  void audio\_showstreaminfo(const char \*info){  
   Serial.print("streaminfo ");Serial.println(info);  
  }  
  void audio\_showstreamtitle(const char \*info){  
   Serial.print("streamtitle ");Serial.println(info);  
  }  
  void audio\_bitrate(const char \*info){  
   Serial.print("bitrate ");Serial.println(info);  
  }  
  void audio\_commercial(const char \*info){ //duration in sec  
   Serial.print("commercial ");Serial.println(info);  
  }  
  void audio\_icyurl(const char \*info){ //homepage  
   Serial.print("icyurl ");Serial.println(info);  
  }  
  void audio\_lasthost(const char \*info){ //stream URL played  
   Serial.print("lasthost ");Serial.println(info);  
  }  
  void audio\_eof\_speech(const char \*info){  
   Serial.print("eof\_speech ");Serial.println(info);  
  }

**NOTE:** make sure that the defined Pins match the wiring!

**step 5:** connect the ESP32 to your computer, compile and run the code, and then connect your earphones to the aux jack on your PCM5102. you might need to press on the “reset” button on your ESP32.  
**NOTE:**

* it doesn’t matter if the earphones were already connected or not when the code was being uploaded to the esp32.
* the earphones connection is a bit sensitive. if you don’t hear a sound, try moving the headphone jack a little bit.

you should see something similar to the following in the serial monitor:



**step 6:** enjoy your internet radio 😊