**Code Description  
MP45DT02: digital microphone**

1. In **STM32CubeMX**, you must enable **I2S2** to Half-Duplex Master mode and set configuration of I2S2 with transmission mode to Mode Master Receive and Audio Frequency to 44kHz. Then, you must enable **USART2** to asynchronous mode. You will see pin PA2 and PA3 will be enabled as USART2\_Tx and USART2\_Rx. Finally you can generate file.
2. In main.c, before while loop coding, you have to receive the **PDM\_value** from microphone (MP45DT02) by I2S receive. In my code sample, you will receive this with size of 20 into **PDM\_Buffer** arrays.
3. In each iteration - you use 20 for loop iteration, you need to calculate average of each iteration by get the **PDM\_value** from each **PDM\_Buffer** and decrease **PCM\_value** by 8 bit (half block size of PDM) and increase **PCM\_value** by 1 until **PDM\_value** is zero. After that you will do follow this equation. By LEAKY\_KEEP\_RATE is 0.95.   
    leaky\_PCM\_buffer += PCM\_value   
    leaky\_PCM\_buffer \*= LEAKY\_KEEP\_RATE

leaky\_AMP\_buffer += absolute of leaky\_PCM\_buffer

leaky\_AMP\_buffer \*= LEAKY\_KEEP\_RATE

1. After you calculated the **leaky\_AMP\_buffer** value finish,you will incrase PCM\_value by 1 and change maxAmp to the highest value of **leaky\_AMP\_buffer** value.
2. Finally, send **maxApp** value to show on your display by UART transmit when **pcmCount** = 2500 in order to see the maximum amplitude. Then while loop will repeat step 2 to 5 again.