

# Teknologi Baru dan Inovasi Sistem

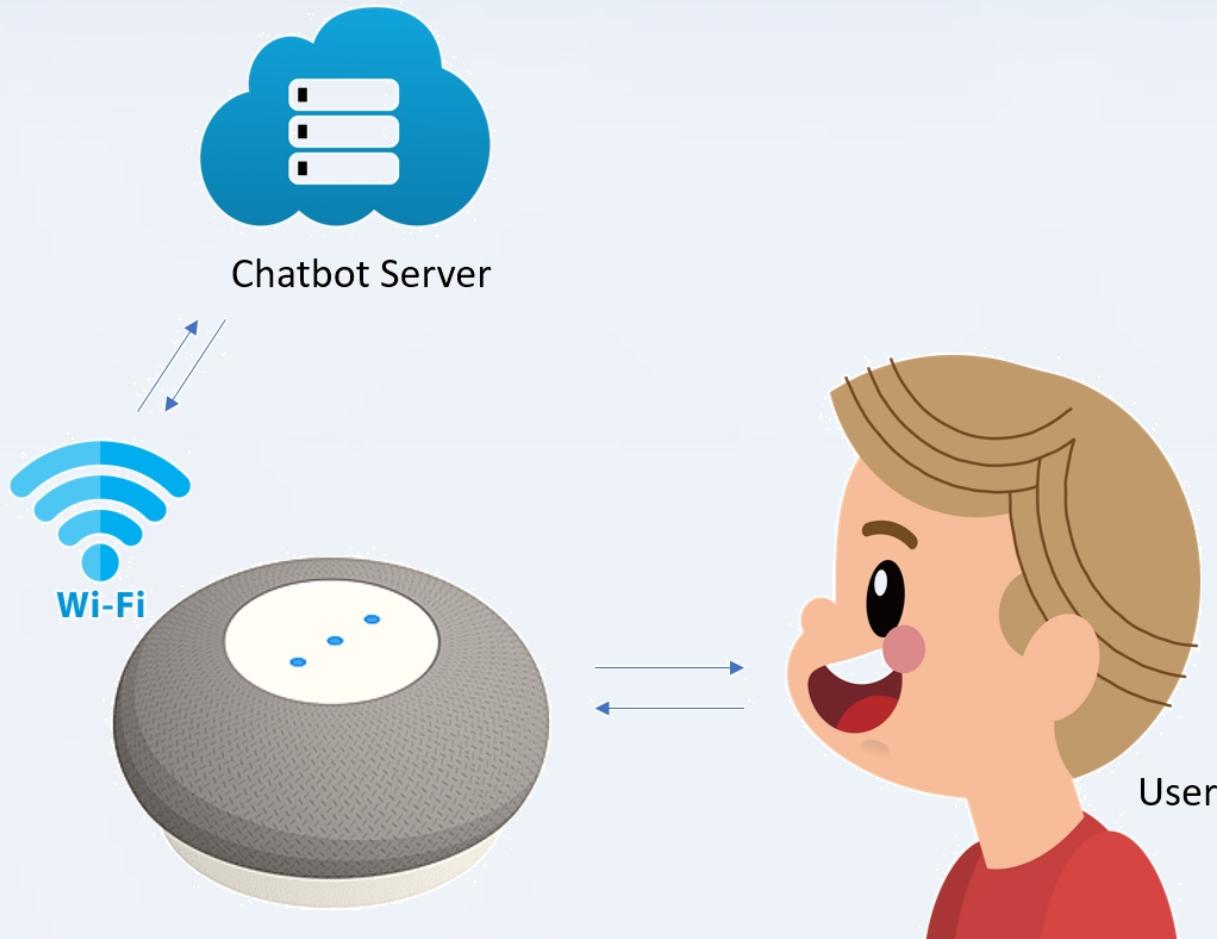
Meeting #7

Prof. Dr. Ridwan Sanjaya  
Andre Kurniawan Pamudji, S.Kom, M.Ling

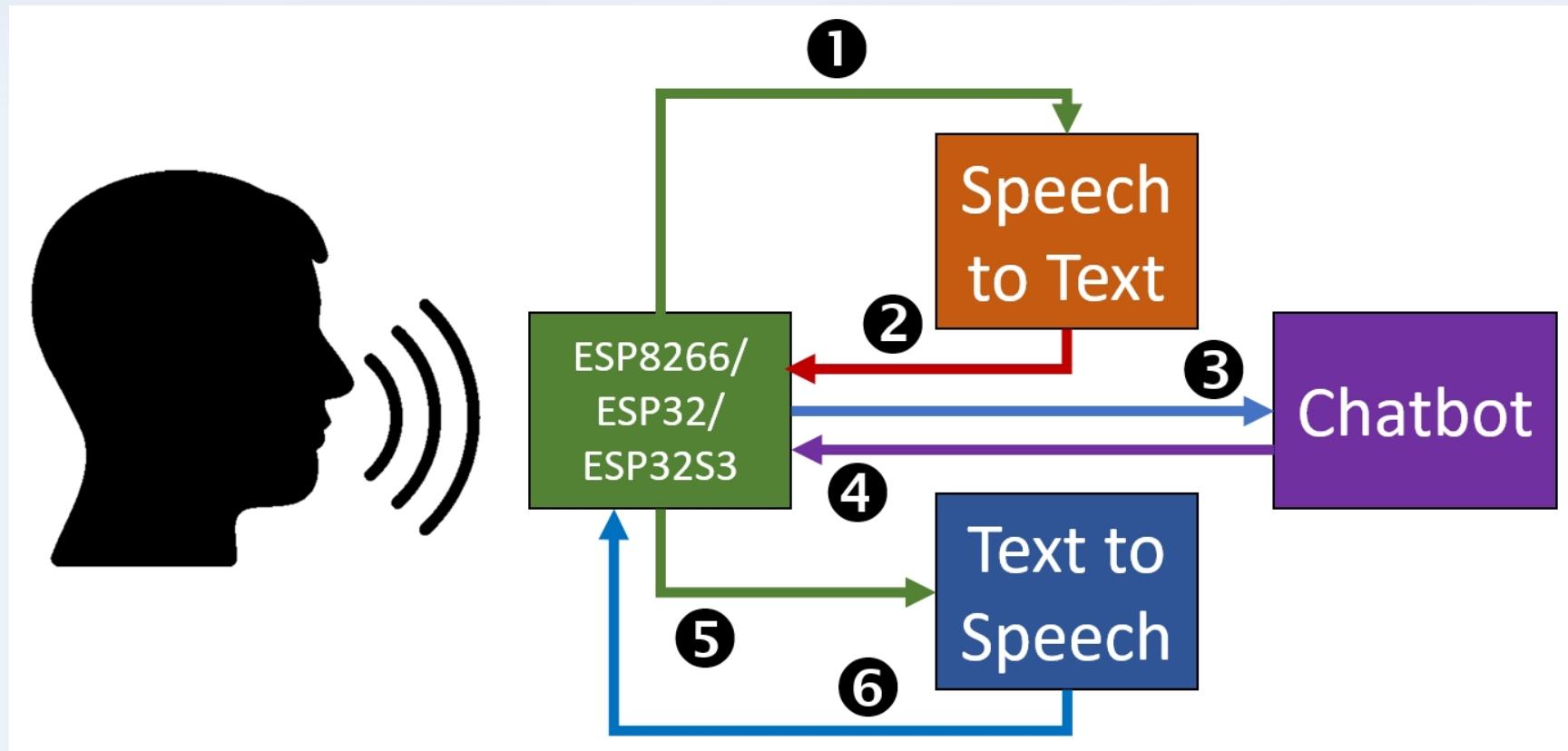
# Agenda

1. Program-O dan AIML Dasar
2. AIML Tingkat Lanjut
3. Penggunaan Voice API
4. Aplikasi dengan MIT App Inventor
5. LINE Bot
6. WhatsApp Bot
7. Smart Speaker

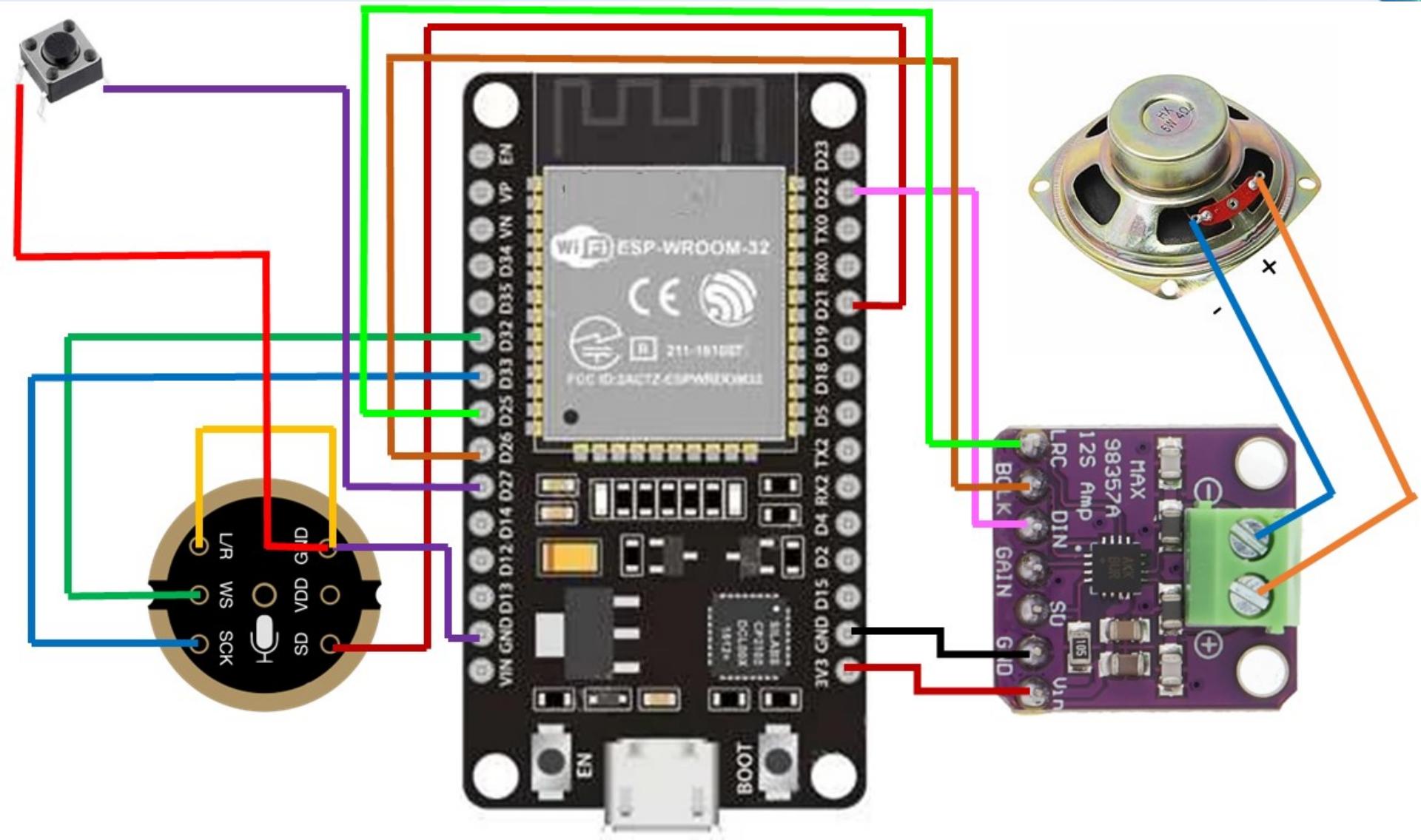
# Ilustrasi Smart Speaker



# Cara Kerja



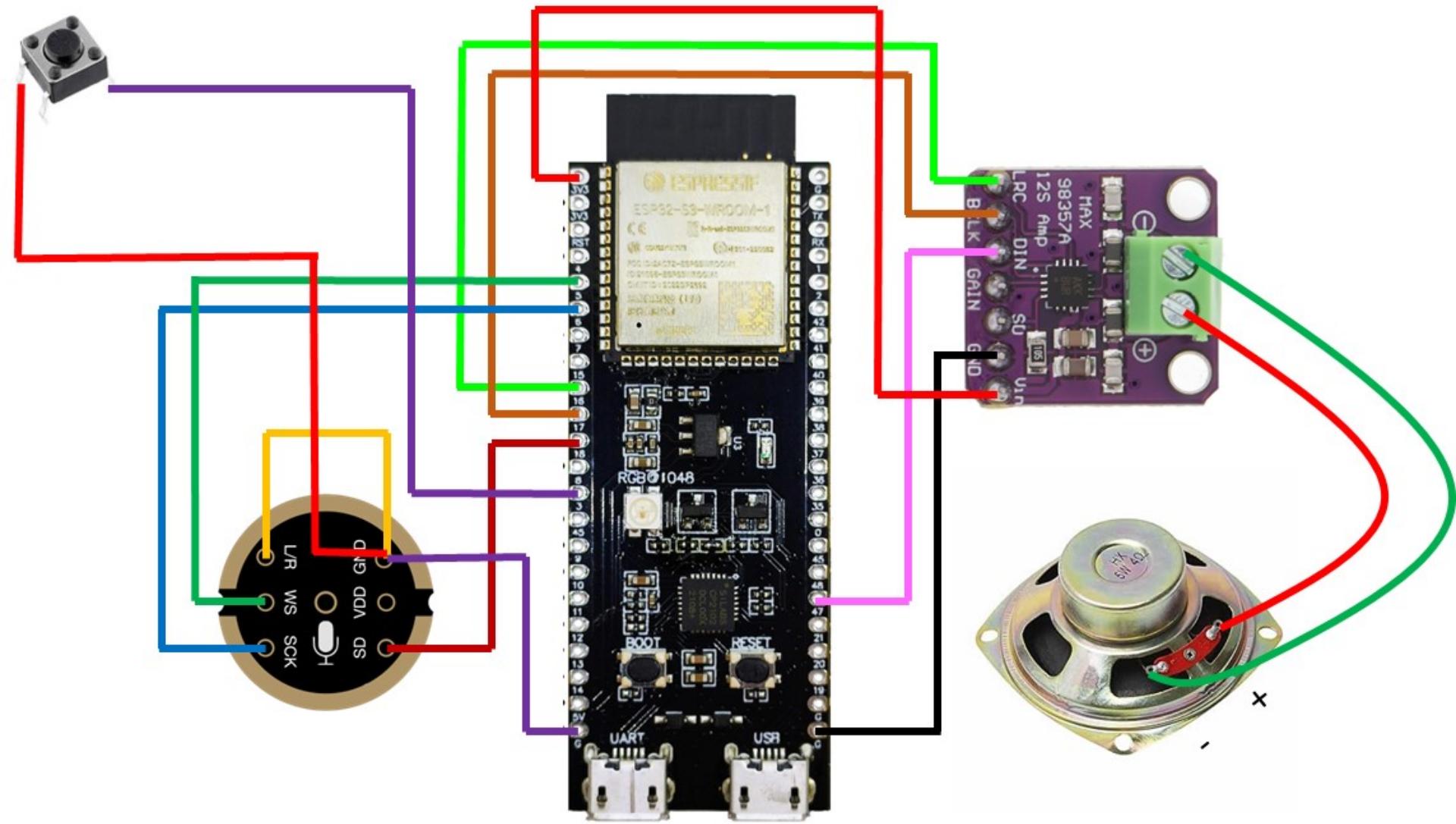
# ESP32



# ESP32 Pinout

	GPIO	Description
<b><i>INMP441 Pin</i></b>		
SCK	33	Clock line for I2S input (BCLK)
WS	32	Left/Right channel select (LRCLK)
SD	21	Audio data from microphone to MCU
L/R	GND	Selects mono (GND = left channel)
GND	GND	Ground
<b><i>MAX98357A Pin</i></b>		
BCLK	26	Clock line for I2S output (BCLK)
LRC	25	Left/Right channel select (LRCLK)
DIN	22	Audio data from MCU to speaker
VDD	3.3V	Power supply
GND	GND	Ground
<b><i>Push Button</i></b>		
Pin 1	27	
Pin 2	GND	

# ESP32-S3



# ESP32-S3 Pinout

	GPIO	Description
<b><i>INMP441 Pin</i></b>		
SCK	5	Clock line for I2S input (BCLK)
WS	4	Left/Right channel select (LRCLK)
SD	18	Audio data from microphone to MCU
L/R	GND	Selects mono (GND = left channel)
GND	GND	Ground
<b><i>MAX98357A Pin</i></b>		
BCLK	17	Clock line for I2S output (BCLK)
LRC	16	Left/Right channel select (LRCLK)
DIN	47	Audio data from MCU to speaker
VDD	3.3V	Power supply
GND	GND	Ground
<b><i>Push Button</i></b>		
Pin 1	47	
Pin 2	GND	

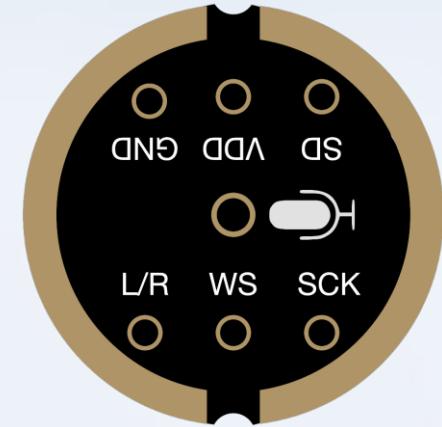
# MAX98357A

- Chip audio **amplifier** dengan **DAC** (Digital to Analog Converter) terintegrasi, khususnya I2S Digital Audio Amplifier.
- Fungsi:
  - menerima sinyal digital audio lewat I2S (Inter-IC Sound)
  - mengubahnya langsung jadi output audio analog berdaya tinggi untuk menggerakkan speaker (mono)
- Karakteristik:
  - Antarmuka input: I2S
  - DAC terintegrasi
  - Output mono
  - Supply voltage: 3.3V atau 5V



# INMP441

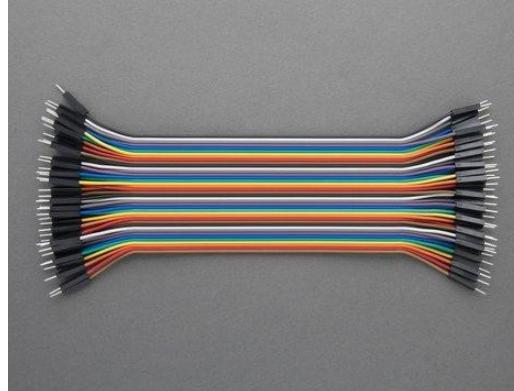
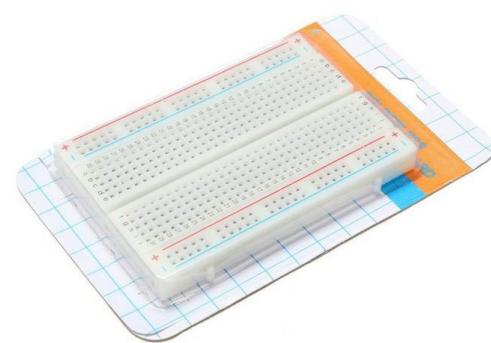
- digital MEMS **microphone** yang bisa langsung mengeluarkan data audio dalam format I2S
- Fungsi:
  - Menangkap suara (mikrofon) dan langsung mengubahnya jadi data digital dalam format I2S
- Karakteristik:
  - Jenis: Mikrofon digital (bukan analog)
  - Antarmuka: I2S
  - Keluaran: Data audio digital 24-bit
  - Frekuensi sampling: Hingga 48 kHz
  - Supply voltage: 3.3V



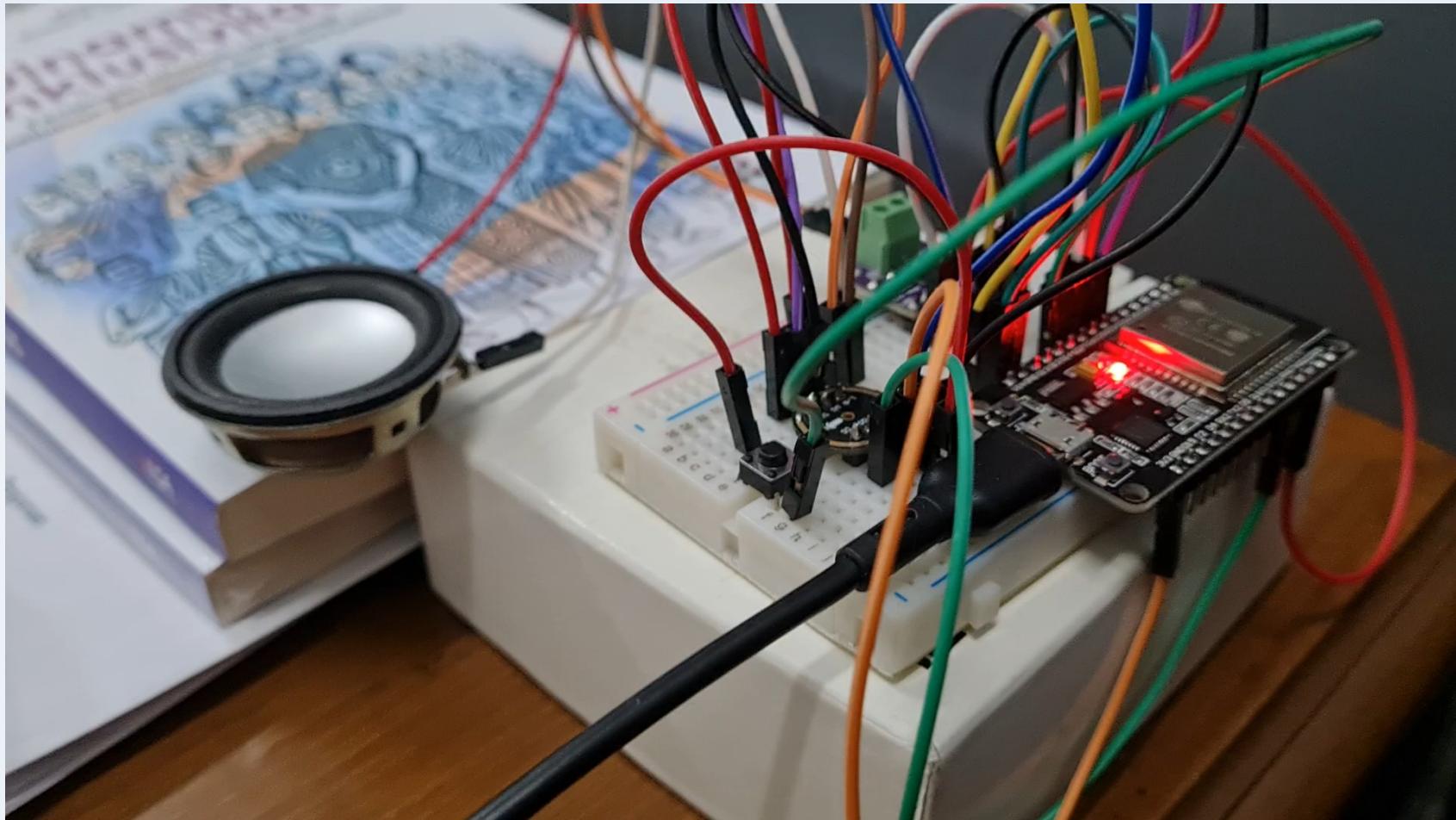
# Lainnya

- Speaker
- Push Button
- Breadboard
- Kabel Jumper
- Kabel Data (Micro USB/USB C)

**Micro USB → ESP32    USB C → ESP32-S3**



# Implementasi



# Produk di Pasar Online

Jual Xiaozhi Ai Robot Intelligent x + tokopedia.com/freshtrend/xiaozhi-ai-robot-intelligent-dialogue-voice-robot... Tentang Tokopedia Pusat Edukasi Seller Promo Tokopedia Care

Gratis Ongkir + Banyak Promo belanja di aplikasi > School Tokopedia Kategori Cari di Tokopedia 21 1 13 Game D... Ridw... Dikirim ke Alamat rumah Ridwan Sanjaya

Home > Mainan & Hobi > Mainan Remote Control > Mainan Robot > Xiaozhi Ai Robot Intelligent Dialogue Voice Robot Conversation Encryption Customizable...

**Rp2.237.704**

Pilih color: S3 Yellow

S3 Yellow S3 Black S3 White

S3Pro Yellow S3Pro White

S3Pro Black

Detail

Atur jumlah dan catatan

S3 Yellow Stok: 666

Subtotal Rp2.237.704

PreOrder + Keranjang

Chat Wishlist Share

SOEGIJAPRANATA



# Produk di Pasar Online

Jual Xiaozhi AI Robot Intelligent x +

tokopedia.com/freshtrend/xiaozhi-ai-robot-intelligent-voice-dialogue-robots-...

Gratis Ongkir + Banyak Promo belanja di aplikasi > Tentang Tokopedia Pusat Edukasi Seller Promo Tokopedia Care

tokopedia Kategori Cari di Tokopedia

21 3 13 Dikirim ke Alamat rumah Ridwan Sanjaya ✓

Home > Mainan & Hobi > Mainan Remote Control > Mainan Robot > Xiaoz...

Xiaozhi AI Robot Intelligent Voice Dialogue Robots LCD Screen Voiceprint Recognition Children...

Rp2.014.000

Pilih color: B

B A

Kondisi: Baru

Waktu Preorder: 30 Hari

Min. Pemesanan: 1 Buah

Etalase: Semua Etalase

Atur jumlah dan catatan

B

— 1 + Stok: 666

Subtotal Rp2.014.000

PreOrder + Keranjang

Chat Wishlist Share

SOEGIJAPRANATA

# Produk di Pasar Online

Jual DeepSeek XiaoZhi AI Voice

tokopedia.com/iibbuunnuurrhaayya/deepseek-xiaozhi-ai-voice-chat-robot-b... 21 3 13

Gratis Ongkir + Banyak Promo belanja di aplikasi Tentang Tokopedia Pusat Edukasi Seller Promo Tokopedia Care

tokopedia Kategori Cari di Tokopedia Dikirim ke Alamat rumah Ridwan Sanjaya

Home > Rumah Tangga > Laundry > Bola Pencuci Baju > DeepSeek XiaoZh...

**ESP32 S3 N16R8  
Xiaozhi AI DeepSeek Voice Chat**

**DeepSeek XiaoZhi AI Voice Chat  
Robot Ball ESP32-S3 1.28 inch LCD  
N16R8 Development Board Smart...**

**Rp784.000**

**Detail**

Kondisi: Baru  
Min. Pemesanan: 1 Buah  
Etalase: **Semua Etalase**

ESP32-S3 Development Board Multi-Function Mini Robot Tabletop Ornaments LCD Display Smart Assistant Robot 1.28in for Home Office  
Features:  
1. Advanced ESP32-S3 Performance: Powered by the ESP32S3N16R8 chip, this AI voice chat robot delivers

Atur jumlah dan catatan  
- 1 + Stok Total: 58  
Subtotal **Rp784.000**

**Beli Langsung** **+ Keranjang**

Chat Wishlist Share

SOEGIJAPRANATA

# Produk di Pasar Online

Promo EZTECH AI Robot X1 Me

tokopedia.com/eztechid/eztech-ai-robot-x1-mendukung-deepseek-percakap...

Gratis Ongkir + Banyak Promo belanja di aplikasi

Tentang Tokopedia Pusat Edukasi Seller Promo Tokopedia Care

School

Cari di Tokopedia

21 3 13

Game D... Ridw...

Dikirim ke Alamat rumah Ridwan Sanjaya

Home > Mainan & Hobi > Mainan Remote Control > Mainan Robot > EZTECH AI Robot X1 Mendukung DeepSeek Percakapan AI Lancar, Belajar Multi-Bahasa...

EZTECH OFFICIAL STORE

AI Robot HaloBaby

AI ROBOT-X1

Support Deepseek

Gratis seumur hidup

Pengucapan alami

3 Bulan Warranty

Original

FREE SHIPPING

AI X1 Black

AI X1 Blue

AI X1 Pink

Rp395.560

56% Rp899.000

Harga Terbaik

Atur jumlah dan catatan

AI X1 Black

Stok: 70

Subtotal

Rp899.000

Rp395.560

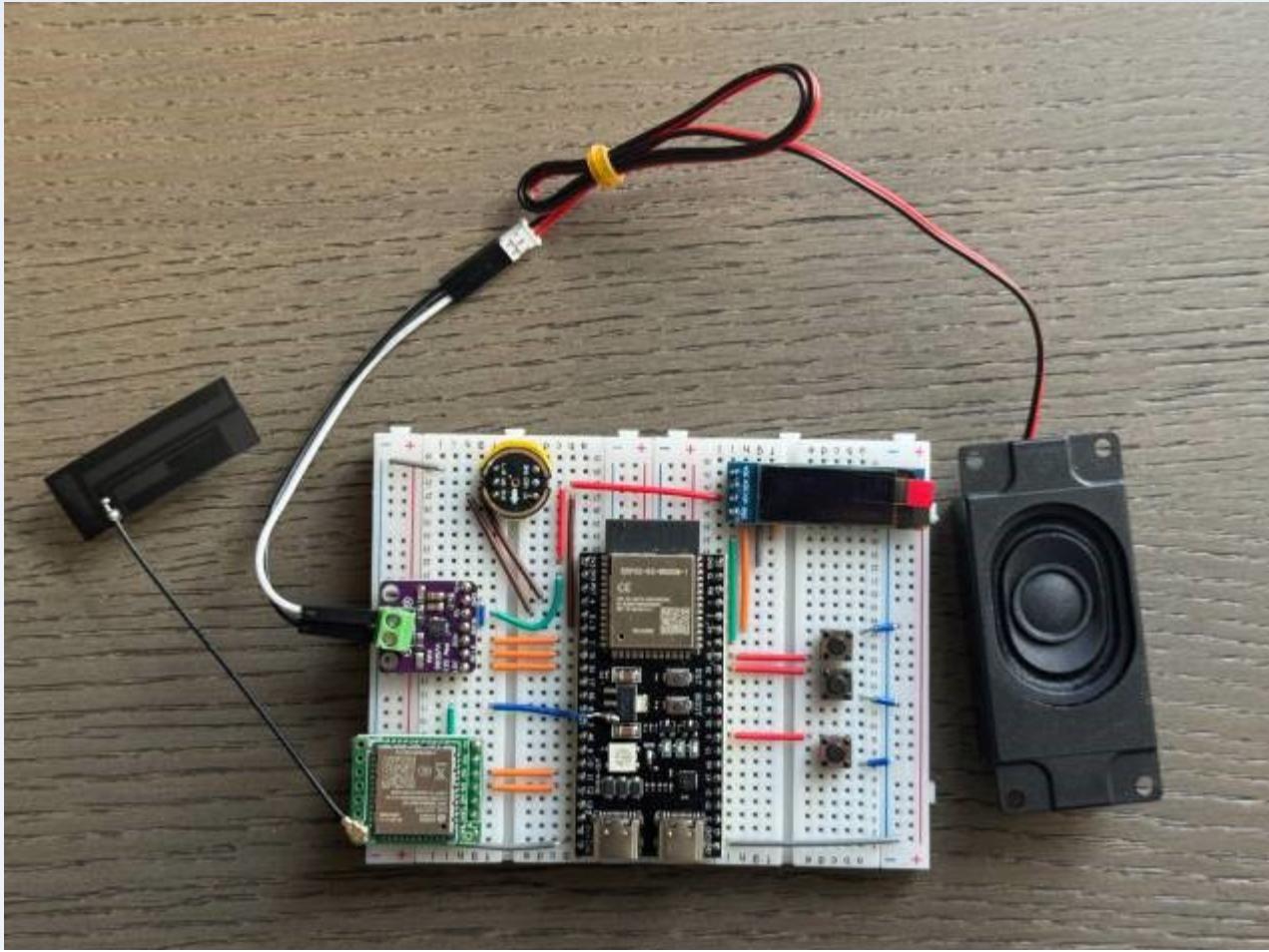
Beli Langsung + Keranjang

Chat Wishlist Share

Detail

SOEGIJAPRANATA

# Rangkaian Xiaozhi



<https://ccnphfhqs21z.feishu.cn/wiki/F5krwD16viZoF0kKkvDcrZNYnhb>

# Produk-Produk Xiaozhi



# Tampilan Produk



# Kode Program

- <https://bit.ly/ESP32Code>
  - WIFI\_SSID → Nama hotspot
  - WIFI\_PASSWORD → Password hotspot
  - DEEPGRAM\_API\_KEY → Dapatkan di deepgram.com (Gratis kredit 200 USD)
  - ajax.php selain di dalam ESP32Code, juga ada di project voice script

Pastikan alamatnya sudah benar di baris

```
$json = file_get_contents("http://xxx/  
conversation_start.php?bot_id=1&say=\"$say.\"");
```

# Deepgram

Pricing & Plans | Deepgram

deepgram.com/pricing

Deepgram Products Solutions Resources Devs Enterprise Pricing Log In Get A Demo Sign Up Free

### Pay As You Go

**Free** \$200 of credit

Then pay-as-you-go. No minimums. No expiration. **No credit card required.**

[Sign Up Free](#)

- ✓ Access all endpoints in public models
- ✓ Concurrency Limits
  - Speech-to-text:
    - Up to 100 for the REST API
    - Up to 50 for the WSS API
    - Up to 5 for Deepgram Whisper Cloud
  - Text-to-speech:
    - Up to 15 for the REST API + WSS API
  - Voice Agent API:

### Growth

**\$4k+ / year** Save up to 20%

With pre-paid credits for the year. Credits are redeemed against actual usage.

[Buy Now](#)

- ✓ Access all endpoints in public models
- ✓ Concurrency Limits
  - Speech-to-text:
    - Up to 100 for the REST API
    - Up to 50 for the WSS API
    - Up to 5 for Deepgram Whisper Cloud
  - Text-to-speech:
    - Up to 15 for the REST API + WSS API
  - Voice Agent API:

### Enterprise

**Custom Pricing**

For businesses with large volumes, data or deployment requirements, or support needs.

[Contact Sales](#)

- ✓ Access all endpoints in public models with **our best discounts**
- ✓ Access to custom-trained speech-to-text models
- ✓ Priority access to new endpoints and models
- ✓ Highest concurrency support
- ✓ Self-hosted deployment options

SOEGIJAPRANATA

# Registrasi Deepgram

Create an account

console.deepgram.com/signup?\_gl=1\*1o6fad... \_gcl\_au\*MTgyOTkxMDA2LjE3NTk2...

School

## Deepgram Console

Already have an account? [LOG IN →](#)



### Create an account

Transform your products with cutting edge voice AI

Get \$200 in credit **absolutely free**. That can fuel a voice agent for at least 50 hours. No credit card needed.

Voice Agents    Speech to Text

Text to Speech    Audio Intelligence

 Sign up with Google

 Sign up with GitHub

 Sign up with Azure

OR

Email address

you@email.com

SOEGIJAPRANATA

# Login dan Membuat API Key

Screenshot of the Deepgram console showing the 'Create API Key' section.

The URL in the browser is <https://console.deepgram.com/project/1b960f68-b4b9-429c-9c09-bf69da293b61>.

**Left Sidebar:**

- Dashboard
- API Keys
- Usage
- Project & Team
- Billing
- Enterprise** (highlighted)
- Fine-tuned models
- Volume discount
- Dedicated support
- SLAs & self-hosted and more...
- Or pick a plan →
- Share Feedback
- Community Help

**Header:**

- onlyridwan@gmail.com's Project
- API Playground
- Docs
- Ridwan Ridwan

**Main Content:**

## onlyridwan@gmail.com's Project

Project ID: 1b960f68-b4b9-429c-9c09-bf69da293b61

**Create API Key**  
Create an API Key to authenticate your API requests.

**Create API Key**

**Credit**  
**\$199.95**

Your plan:  
**Pay As You Go**

Upgrade to receive better rates & benefits.

Explore our APIs

Speech to Text

Text to Speech

Voice Agent

SOEGIJAPRANATA

# API Key

API Keys

console.deepgram.com/project/1b960f68-b4b9-429c-9c09-bf69da293b61/keys

Deepgram

Dashboard

API Keys

Usage

Project & Team

Billing

Enterprise

✓ Fine-tuned models  
✓ Volume discount  
✓ Dedicated support  
✓ SLAs & self-hosted and more...

Or pick a plan →

Share Feedback

Community Help

Remember to save your API Keys in a safe spot. For security purposes, secrets are not recoverable.

Create a New API Key

API Keys act like a password for API Authentication. Insert the secret from your API Key into your request like so:

**Authorization: Token <YOUR\_SECRET>**

Your secret should look like a 40 character alphanumeric.

**BEST PRACTICES**

**FORGOT YOUR SECRET?**

## API Keys

Comment, Creator, Tag, Identifier, or Scope

Filter by:

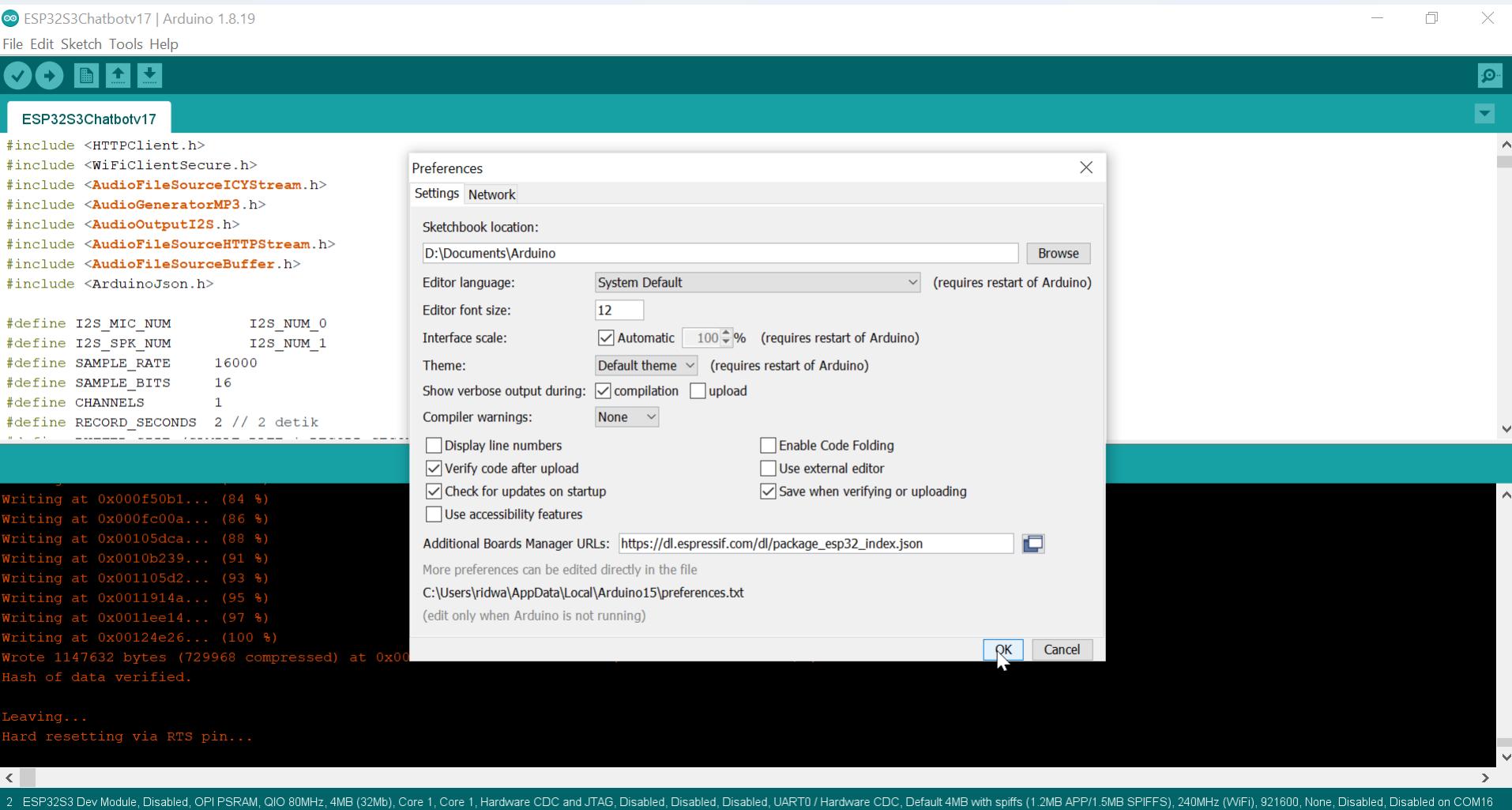
Comment	Secret	Role	Created by	Created	Expires
esp32-s3	*****	Owner	Ridwan Ridwan	April 19, 2025	-

See expired keys

For security purposes, secrets are not recoverable. If you've forgotten the secret, you can delete the API Key and create a new one above.

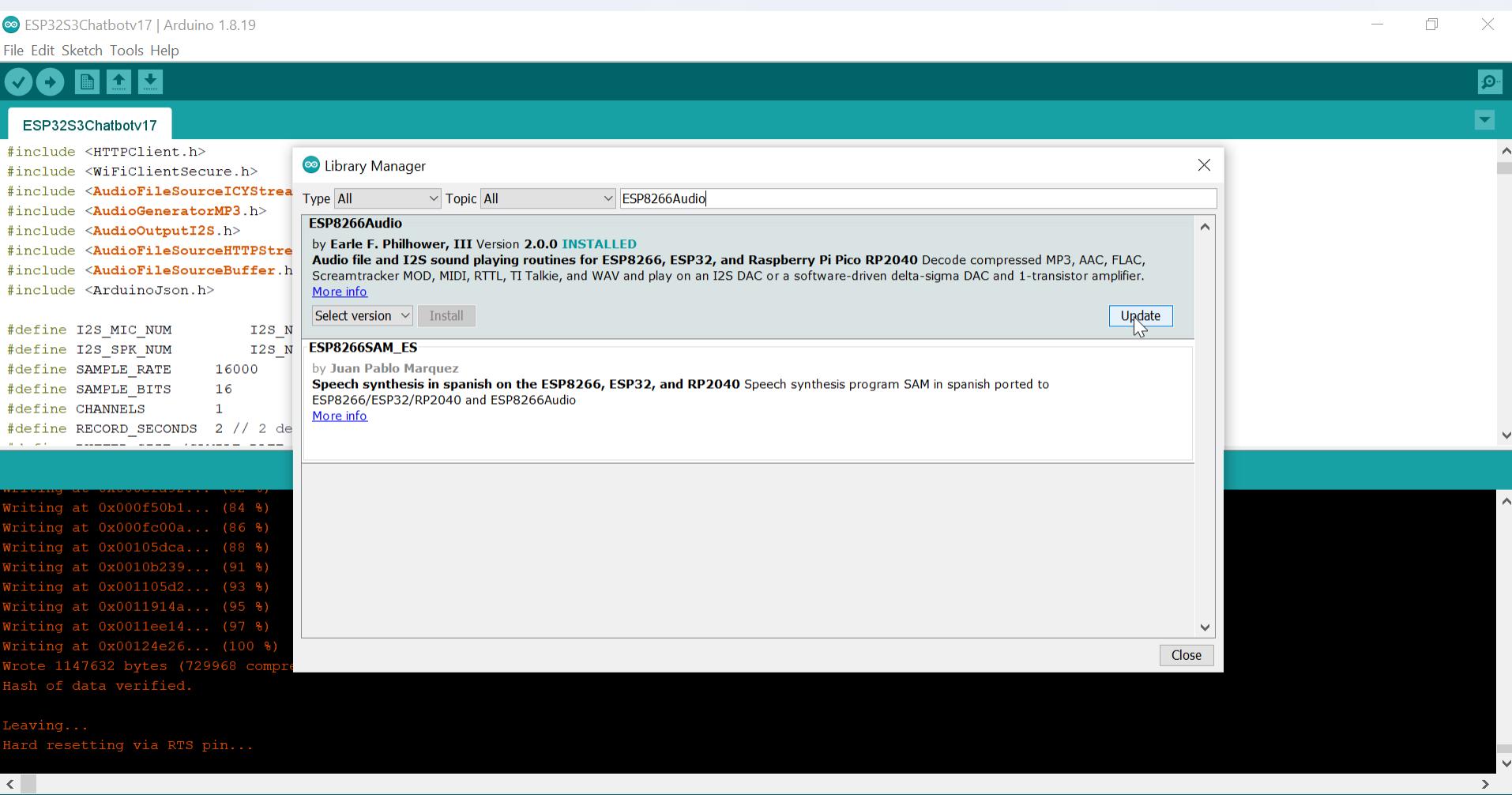
# Board Manager

- File → Preferences → Additional Board Manager URLs



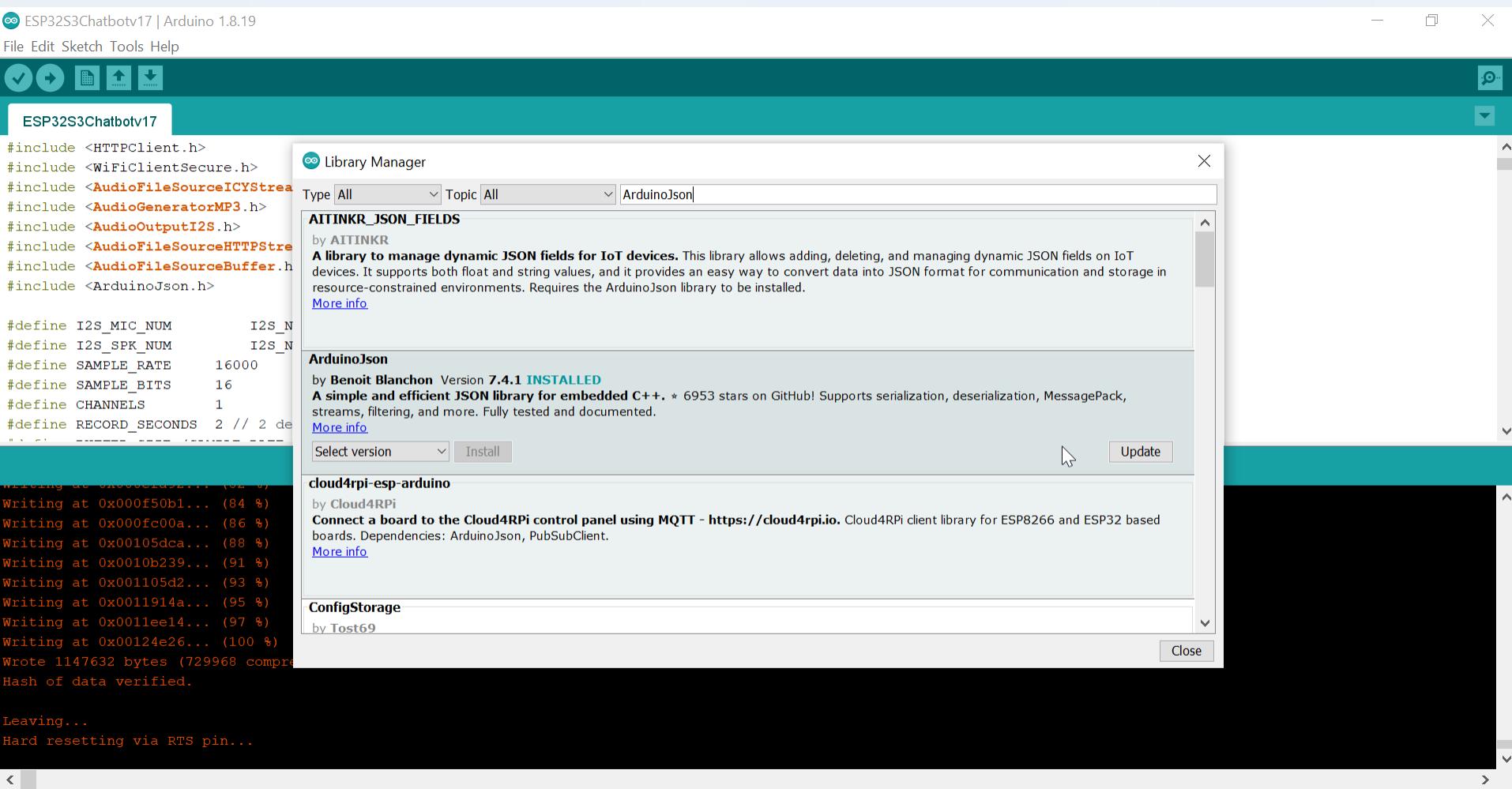
# Library

- Tools → Manage Libraries → ESP8266Audio



# Library

- Tools → Manage Libraries → ArduinoJson



# BOARD: ESP32

# Board, Partition Scheme

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** ESP32Chatbotv17 | Arduino 1.8.19
- Toolbar:** Includes icons for Auto Format, Archive Sketch, Fix Encoding & Reload, Manage Libraries..., Serial Monitor, and Serial Plotter.
- Sketch Area:** Displays the code for "ESP32Chatbotv17".
- Tools Menu:** Opened, showing options like Auto Format (Ctrl+T), Archive Sketch, Fix Encoding & Reload, Manage Libraries..., Serial Monitor, Serial Plotter, WiFi101 / WiFiNINA Firmware Updater, Board: "ESP32 Dev Module", Upload Speed: "921600", CPU Frequency: "240MHz (WiFi/BT)", Flash Frequency: "80MHz", Flash Mode: "QIO", Flash Size: "4MB (32Mb)", Partition Scheme: "Minimal SPIFFS (1.9MB APP with OTA/190KB SPIFFS)", Core Debug Level: "None", PSRAM: "Disabled", Arduino Runs On: "Core 1", Events Run On: "Core 1", Erase All Flash Before Sketch Upload: "Disabled", JTAG Adapter: "Disabled", Zigbee Mode: "Disabled", Port: "COM13", Get Board Info, Programmer, and Burn Bootloader.
- Board Manager Submenu:** A dropdown menu under the Boards option in the Tools menu. It lists various ESP32 boards:
  - Boards Manager...
  - Arduino AVR Boards
  - ESP32 Arduino
  - ESP32 Arduino (Arduino)
  - ESP8266 Boards (3.1.2)
  - ESP32P4 Dev Module
  - ESP32H2 Dev Module
  - ESP32C6 Dev Module
  - ESP32S3 Dev Module
  - ESP32C3 Dev Module
  - ESP32S2 Dev Module
  - ESP32 Dev Module
  - ESP32-WROOM-DA Module
  - ESP32 Wrover Module
  - ESP32 PICO-D4
  - ESP32S3 Dev Module Octal (WROOM2)
  - ESP32-S3-Box
  - ESP32-S3-USB-OTG
  - ESP32S3 CAM LCD
  - ESP32S2 Native USB
  - ESP32 Wrover Kit (all versions)
  - Aventen S3 Sync
  - BharatPi Node Wifi Module
  - BharatPi A7672S 4G Module
  - BharatPi LoRa Module
  - UM BLING
  - UM FeatherS2
  - UM FeatherS2 Neo
  - UM FeatherS3
- Bottom Status Bar:** Shows the build configuration: 1600, Core 1, Core 1, None, Disabled, Disabled on COM13.

# Opsi Lain

botv17 | Arduino 1.8.19

Tools Help

Auto Format	Ctrl+T	Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS)
Archive Sketch		Default 4MB with ffat (1.2MB APP/1.5MB FATFS)
Fix Encoding & Reload		8M with spiffs (3MB APP/1.5MB SPIFFS)
Manage Libraries...	Ctrl+Shift+I	Minimal (1.3MB APP/700KB SPIFFS)
Serial Monitor	Ctrl+Shift+M	No FS 4MB (2MB APP x2)
Serial Plotter	Ctrl+Shift+L	No OTA (2MB APP/2MB SPIFFS)
WiFi101 / WiFiNINA Firmware Updater		No OTA (1MB APP/3MB SPIFFS)
Board: "ESP32 Dev Module"	>	No OTA (2MB APP/2MB FATFS)
Upload Speed: "921600"	>	No OTA (1MB APP/3MB FATFS)
CPU Frequency: "240MHz (WiFi/BT)"	>	No OTA (2MB APP/2MB FATFS)
Flash Frequency: "80MHz"	>	No OTA (1MB APP/3MB FATFS)
Flash Mode: "QIO"	>	Huge APP (3MB No OTA/1MB SPIFFS)
Flash Size: "4MB (32Mb)"	>	Minimal SPIFFS (1.9MB APP with OTA/190KB SPIFFS)
Partition Scheme: "Huge APP (3MB No OTA/1MB SPIFFS)"	>	16M Flash (2MB APP/12.5MB FATFS)
Core Debug Level: "None"	>	16M Flash (3MB APP/9.9MB FATFS)
PSRAM: "Disabled"	>	RainMaker 4MB
Arduino Runs On: "Core 1"	>	RainMaker 4MB No OTA
Events Run On: "Core 1"	>	RainMaker 8MB
Erase All Flash Before Sketch Upload: "Disabled"	>	Zigbee ZCZR 4MB with spiffs
JTAG Adapter: "Disabled"	>	Zigbee ZCZR 8MB with spiffs
Zigbee Mode: "Disabled"	>	Custom
Port	>	
Get Board Info	>	



# Kompilasi Kode Arduino

ESP32Chatbotv17 | Arduino 1.8.19

File Edit Sketch Tools Help

ESP32Chatbotv17

```
#include <HTTPClient.h>
#include <WiFiClientSecure.h>
#include <AudioFileSourceICYStream.h>
#include <AudioGeneratorMP3.h>
#include <AudioOutputI2S.h>
#include <AudioFileSourceHTTPPSStream.h>
#include <AudioFileSourceBuffer.h>
#include <ArduinoJson.h>

#define I2S_NUM          I2S_NUM_0
#define SAMPLE_RATE      16000
#define SAMPLE_BITS      16
#define CHANNELS         1
#define RECORD_SECONDS   2 // 2 detik
#define BUFFER_SIZE (SAMPLE_RATE * RECORD_SECONDS * CHANNELS * 2) // 2 byte
. . . . .
```

Done uploading.

```
Writing at 0x000fe7f5... (84 %)
Writing at 0x001082e7... (86 %)
Writing at 0x0010db30... (89 %)
Writing at 0x00112c0a... (91 %)
Writing at 0x0011c15c... (93 %)
Writing at 0x001218c8... (95 %)
Writing at 0x00126e7c... (97 %)
Writing at 0x0012c93c... (100 %)
Wrote 1183120 bytes (748955 compressed) at 0x00010000 in 10.8 seconds (effective 874.8 kbit/s)...
Hash of data verified.
```

Leaving...

Hard resetting via RTS pin...

192

ESP32 Dev Module, Disabled, Disabled, Minimal SPIFFS (1.9MB APP with OTA/190KB SPIFFS), 240MHz (WiFi/BT), QIO, 80MHz, 4MB (32Mb), 921600, Core 1, Core 1, None, Disabled, Disabled on COM13

SOEGIJAPRANATA

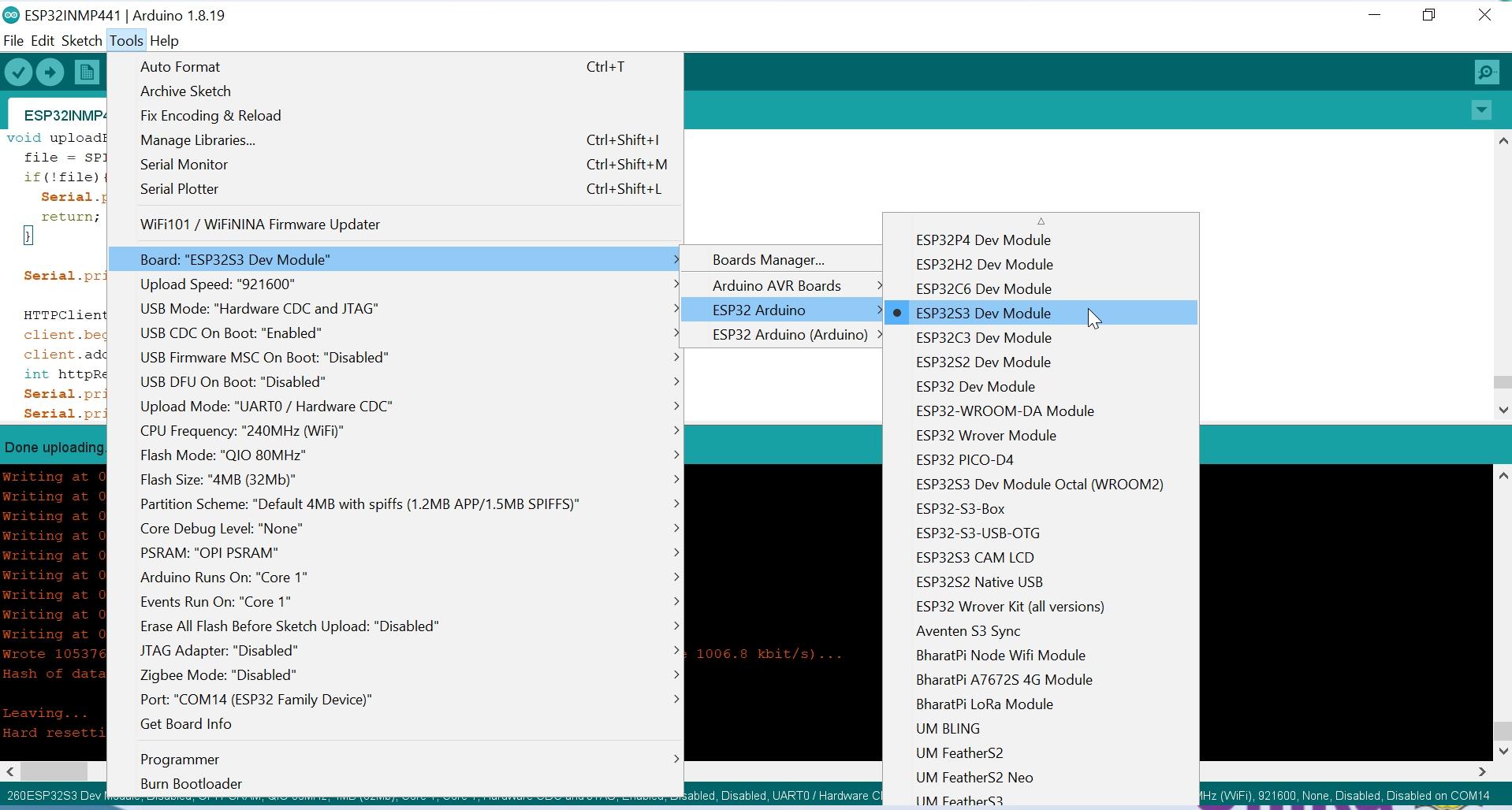
# Memantau Eksekusi

```
COM13 Send
Tombol ditekan. Mulai merekam...
Rekaman selesai.
🕒 Mengirim ke Deepgram...
🕒 Response: {"metadata": {"transaction_key": "deprecated", "request_id": "145288a7-bfac-49d6-adbc-286f5b86dded"}}
🕒 Hasil Transkripsi:
Selamat pagi
Tombol dilepas. Mainkan kembali...
Menjalankan Google TTS...
🕒 Respon dari server:
Selamat pagi! Apa kabarmu hari ini?
Timeout. Memaksa stop...
Selesai playTTS...
E (557106) i2s(legacy): i2s_driver_uninstall(1562): I2S port 0 has not installed
Tombol ditekan. Mulai merekam...
Rekaman selesai.
🕒 Mengirim ke Deepgram...
🕒 Response: {"metadata": {"transaction_key": "deprecated", "request_id": "9a196b8c-ba14-4edb-9c87-6d106cf87845"}}
🕒 Hasil Transkripsi:
Kabarku baikbaik saja
Tombol dilepas. Mainkan kembali...
Menjalankan Google TTS...
🕒 Respon dari server:
Selamat tinggal. Baiii!!
Timeout. Memaksa stop...
Selesai playTTS...
E (571692) i2s(legacy): i2s_driver_uninstall(1562): I2S port 0 has not installed
< >
 Autoscroll  Show timestamp Newline 115200 baud Clear output
```



# **BOARD: ESP32-S3**

# Board, Partition Scheme



# Kompilasi Kode Arduino

ESP32S3Chatbotv17 | Arduino 1.8.19

File Edit Sketch Tools Help

ESP32S3Chatbotv17

```
#include <HTTPClient.h>
#include <WiFiClientSecure.h>
#include <AudioFileSourceICYStream.h>
#include <AudioGeneratorMP3.h>
#include <AudioOutputI2S.h>
#include <AudioFileSourceHTTPPSStream.h>
#include <AudioFileSourceBuffer.h>
#include <ArduinoJson.h>

#define I2S_MIC_NUM           I2S_NUM_0
#define I2S_SPK_NUM           I2S_NUM_1
#define SAMPLE_RATE            16000
#define SAMPLE_BITS             16
#define CHANNELS                1
#define RECORD_SECONDS        2 // 2 detik

Writing at 0x000f50b1... (84 %)
Writing at 0x000fc00a... (86 %)
Writing at 0x00105dca... (88 %)
Writing at 0x0010b239... (91 %)
Writing at 0x001105d2... (93 %)
Writing at 0x0011914a... (95 %)
Writing at 0x0011ee14... (97 %)
Writing at 0x00124e26... (100 %)
Wrote 1147632 bytes (729968 compressed) at 0x00010000 in 11.9 seconds (effective 773.8 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...
```

ESP32S3 Dev Module, Disabled, OPI PSRAM, QIO 80MHz, 4MB (32Mb), Core 1, Core 1, Hardware CDC and JTAG, Disabled, Disabled, Disabled, UART0 / Hardware CDC, Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS), 240MHz (WiFi), 921600, None, Disabled, Disabled on COM16

SOEGIJAPRANATA

# Memantau Eksekusi

```
COM16
Send
-----
E (108315) i2s(legacy): i2s_driver_uninstall(1562): I2S port 0 has not installed
Uninstall i2s driver...
E (109075) i2s(legacy): i2s_check_cfg_validity(1000): this i2s port is in use
E (109075) i2s(legacy): i2s_driver_install(1654): I2S configuration is invalid
E (109078) i2s(legacy): i2s_set_pin(1928): ws_io_num invalid
Timeout. Memaksa stop...
Selesai playTTS...
E (111946) i2s(legacy): i2s_driver_uninstall(1562): I2S port 1 has not installed
Tombol ditekan. Mulai merekam...
E (125897) i2s(legacy): i2s_driver_uninstall(1562): I2S port 1 has not installed
E (125897) i2s(legacy): i2s_check_cfg_validity(1000): this i2s port is in use
E (125903) i2s(legacy): i2s_driver_install(1654): I2S configuration is invalid
Rekaman selesai.
✖ Mengirim ke Deepgram...
✖ Gagal: send payload failed
✖ JSON Error: EmptyInput
Tombol dilepas. Mainkan kembali...
Menjalankan Google TTS...
E (134324) i2s(legacy): i2s_driver_uninstall(1562): I2S port 0 has not installed
Uninstall i2s driver...
E (135626) i2s(legacy): i2s_check_cfg_validity(1000): this i2s port is in use
E (135626) i2s(legacy): i2s_driver_install(1654): I2S configuration is invalid
E (135629) i2s(legacy): i2s_set_pin(1928): ws_io_num invalid
Timeout. Memaksa stop...
Selesai playTTS...
E (138710) i2s(legacy): i2s_driver_uninstall(1562): I2S port 1 has not installed
Newline 115200 baud Clear output
 Autoscroll  Show timestamp
```



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