

PSI3542 – 2023

SISTEMAS EMBARCADOS PARA IOT

AULA 13 – ATIVIDADE 13.2 ESPHOME DEVICE 1 SENSOR TEMP E HUM

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Home

Home Assistant



Thermostat

Smart Thermostat

Person



Alireza



ESPHome



Partly cloudy
Home

23.9 °C
0 mm

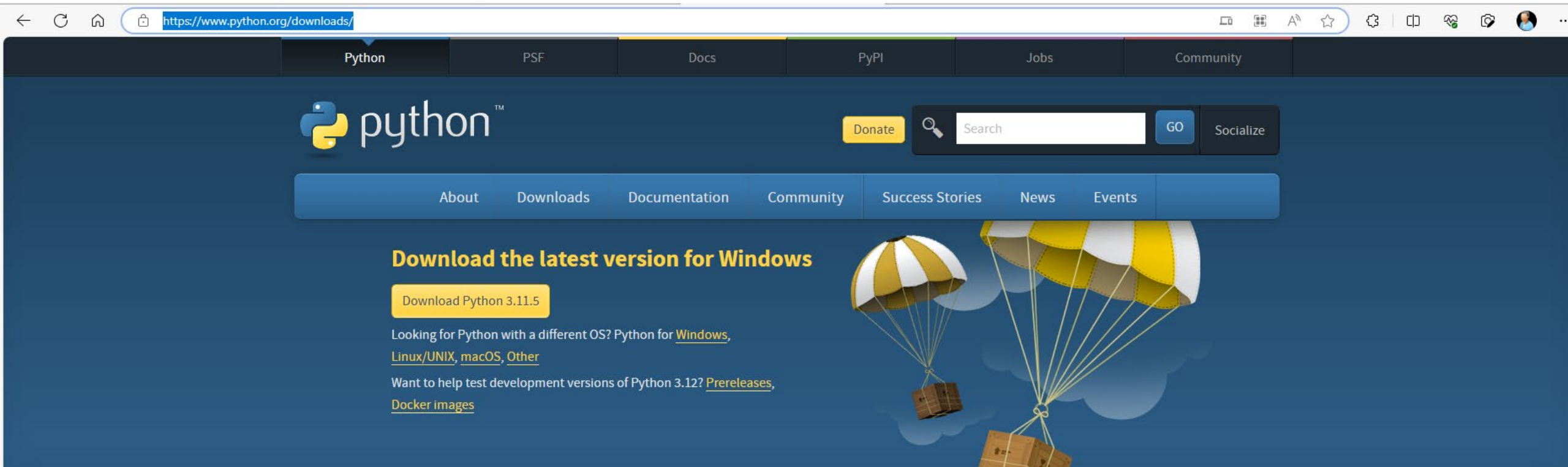
INSTALAÇÃO DO ESPHOME

4 ALTERNATIVAS DE INSTALAÇÃO (<https://peyanski.com/complete-esp-home-installation-guide/>)

- ✓ HOME ASSISTANT
- ✓ LINHA DE COMANDOS
- ✓ CONTAINER DOCKER
- ✓ BROWSER

LINHA DE COMANDOS PYTHON

- Instalar PYTHON 3 <https://www.python.org/downloads/>
- Não se esqueça de colocar no PATH



The screenshot shows the Python.org website's download page. The browser's address bar displays <https://www.python.org/downloads/>. The website features a dark blue header with navigation links: Python, PSF, Docs, PyPI, Jobs, and Community. Below the header is the Python logo, a 'Donate' button, a search bar with a 'GO' button, and a 'Socialize' button. A secondary navigation bar includes links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area is titled 'Download the latest version for Windows' and contains a yellow button labeled 'Download Python 3.11.5'. Below this button, there are links for 'Python for Windows, Linux/UNIX, macOS, Other' and 'Prereleases, Docker images'. The background of the page features an illustration of two yellow and white striped parachutes with cardboard boxes hanging from them, set against a blue sky with clouds.

Instalar o ESPHOME

- pip3 install wheel
- pip3 install esphome

ATIVIDADE 13.2

DISPOSITIVO ESPHOME COM SWITCH

ROTEIRO

- CRIAR UM PROJETO ESPHOME
 - `esphome wizard livingroom_<numero usp>.yaml`
- CONECTAR O ESP32/8266 VIA CABO USB
- GRAVAR O FIRMWARE
 - `esphome run livingroom_<numero usp>.yaml`
- INTEGRAR O DISPOSITIVO NO HOME ASSISTANT
 - CONFIGURATIONS->INTEGRATIONS
- EDITAR O ARQUIVO DE CONFIGURAÇÃO (`livingroom_<numero usp>.yaml`) PARA INCLUIR
 - `switch:`
 - `- platform: gpio`
 - `name: "Living Room Thermostat"`
 - `pin: 2`
- GRAVAR O FIRMWARE ATRAVÉS DE OTA
- TESTAR O SWITCH ATRAVÉS DO HOME-ASSISTANT

ATIVIDADE 13.3

DISPOSITIVO ESPHOME COM SWITCH E DHT11/22

ROTEIRO

- <https://esphome.io/components/sensor/dht.html>
- CONECTAR O DHT11/22 AO ESP32/8266
- EDITAR O ARQUIVO DE CONFIGURAÇÃO DO DISPOSITIVO PARA INCLUIR O DHT11/22
 - # Example configuration entry
 - sensor:
 - - platform: dht
 - pin: 15
 - temperature:
 - name: "Living Room Temperature"
 - humidity:
 - name: "Living Room Humidity"
 - update_interval: 60s
- GRAVAR O FIRMWARE ATRAVÉS DE OTA
- VERIFICAR O FUNCIONAMENTO ATRAVÉS DO HOME-ASSISTANT

Pinagem esp32 devkit v1 30 pinos

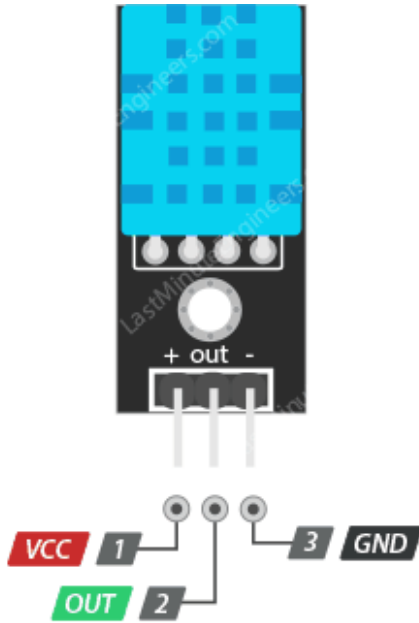
DOIT ESP32 DEVKIT V1 PINOUT

Pin	Function	Pin	Function
pin15	Chip-enable signal,Active High. EN	pin15	GPI023 SPI_MOSI HS1_STROBE
pin14	ADC PA RTC_GPI00 ADC1_CH0 SENSOR_VP GPIO36	pin14	GPI022 EMAC_TXD1 U0RTS I2C_SCL
pin13	ADC PA RTC_GPI03 ADC1_CH3 SENSOR_VN GPIO39	pin13	GPI01 EMAC_RXD2 U0TXD CLK_OUT3
pin12	RTC_GPI04 ADC1_CH6 VDET1 GPIO34	pin12	GPI03 U0RXD CLK_OUT2
pin11	RTC_GPI05 ADC1_CH7 VDET2 GPIO35	pin11	GPI021 EMAC_TX_EN I2C_SDA
pin10	XTAL_32kHz Touch9 RTC_GPI09 ADC1_CH4 GPIO32	pin10	GPI019 EMAC_TXD0 U0CTS SPI_MISO
pin9	XTAL_32kHz Touch8 RTC_GPI08 ADC1_CH5 GPIO33	pin9	GPI018 SPI_CLK HS1_DATA7
pin8	DAC_1 RTC_GPI06 ADC2_CH8 EMAC_RXD0 GPIO25	pin8	GPI05 EMAC_RX_CLK SPI_CS0 HS1_DATA6
pin7	DAC_2 RTC_GPI07 ADC2_CH9 EMAC_RXD1 GPIO26	pin7	GPI017 EMAC_CLKOUT180 U2_TXD HS1_DATA5
pin6	Touch7 RTC_GPI017 ADC2_CH7 EMAC_RX_DV GPIO27	pin6	GPI016 EMAC_CLKOUT U2_RXD HS1_DATA4
pin5	Touch6 RTC_GPI016 ADC2_CH6 EMAC_TXD2 GPIO14	pin5	GPI04 EMAC_TX_ER ADC2_CH0 RTCIO10 Touch0 HSPIHD SD_DATA1 HS2_DATA1
pin4	Touch5 RTC_GPI015 ADC2_CH5 EMAC_TXD3 GPIO12	pin4	GPI02 ADC2_CH2 RTCIO12 Touch2 HSPIWP
pin3	Touch4 RTC_GPI014 ADC2_CH4 EMAC_RX_ER GPIO13	pin3	GPI015 EMAC_RXD3 ADC2_CH3 RTCIO13 Touch3 MTDO HSPI_CS0 SD_CMD HS2_CMD
pin2	GND	pin2	GND
pin1	VIN	pin1	VDD 3V3

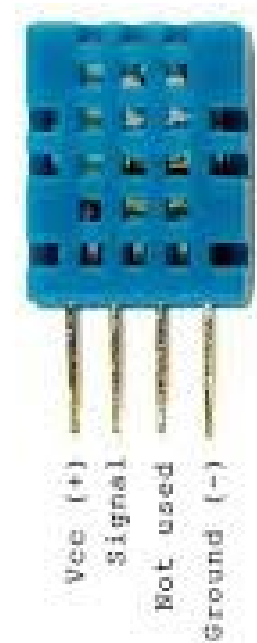
- POWER
- GND
- Serial Pin
- Analog Pin
- Control
- Physical Pin
- Port Pin
- Touch Pin
- DAC Pin



CUIDADO! Dht11/22 pinagens



DHT11 Module Pinout



ATIVIDADE 13.4

DISPOSITIVO ESPHOME COM SWITCH, DHT11 E CONTROLE DE TEMPERATURA

ROTEIRO

- EDITE O ARQUIVO DE CONFIGURAÇÃO DO DISPOSITIVO PARA INCLUIR UM CONTROLE DE TEMPERATURA SIMPLES (FIXO) TOMANDO COMO EX:
 - sensor:
 - - platform: dht
 - humidity:
 - name: "Living Room Humidity"
 - on_value_range:
 - - above: 65.0
 - then:
 - - switch.turn_on: dehumidifier1
 - - below: 50.0
 - then:
 - - switch.turn_off: dehumidifier1
 - temperature:
 - name: "Living Room Temperature"

ATIVIDADE 13.5

CONTROLE CLIMÁTICO 1

CONTROLE CLIMÁTICO BANG-BANG

- DOIS TIPOS DE CONTROLE CLIMÁTICO:
 - BANG-BANG
 - https://esphome.io/components/climate/bang_bang
 - https://en.wikipedia.org/wiki/Bang%E2%80%93bang_control
 - TERMOSTATO
 - <https://esphome.io/components/climate/thermostat.html>
- IMPLEMENTE UM CONTROLE CLIMÁTICO NO DISPOSITIVO ESPHOME TOMANDO COMO BASE O CONTROEL BANG-BANG ACIMA

BOM TRABALHO

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