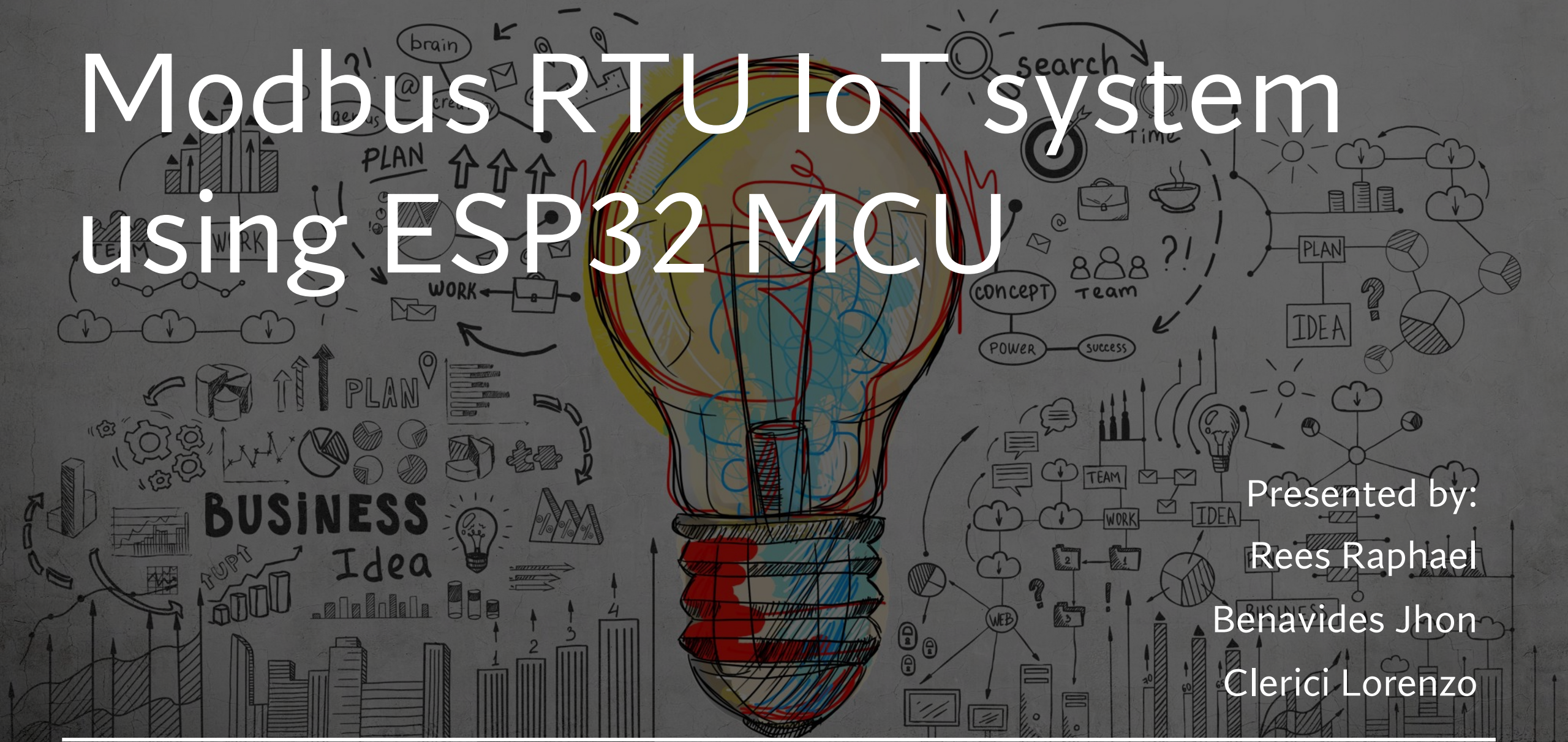
Modbus RTU IoT system using ESP32 MCU



Presented by:

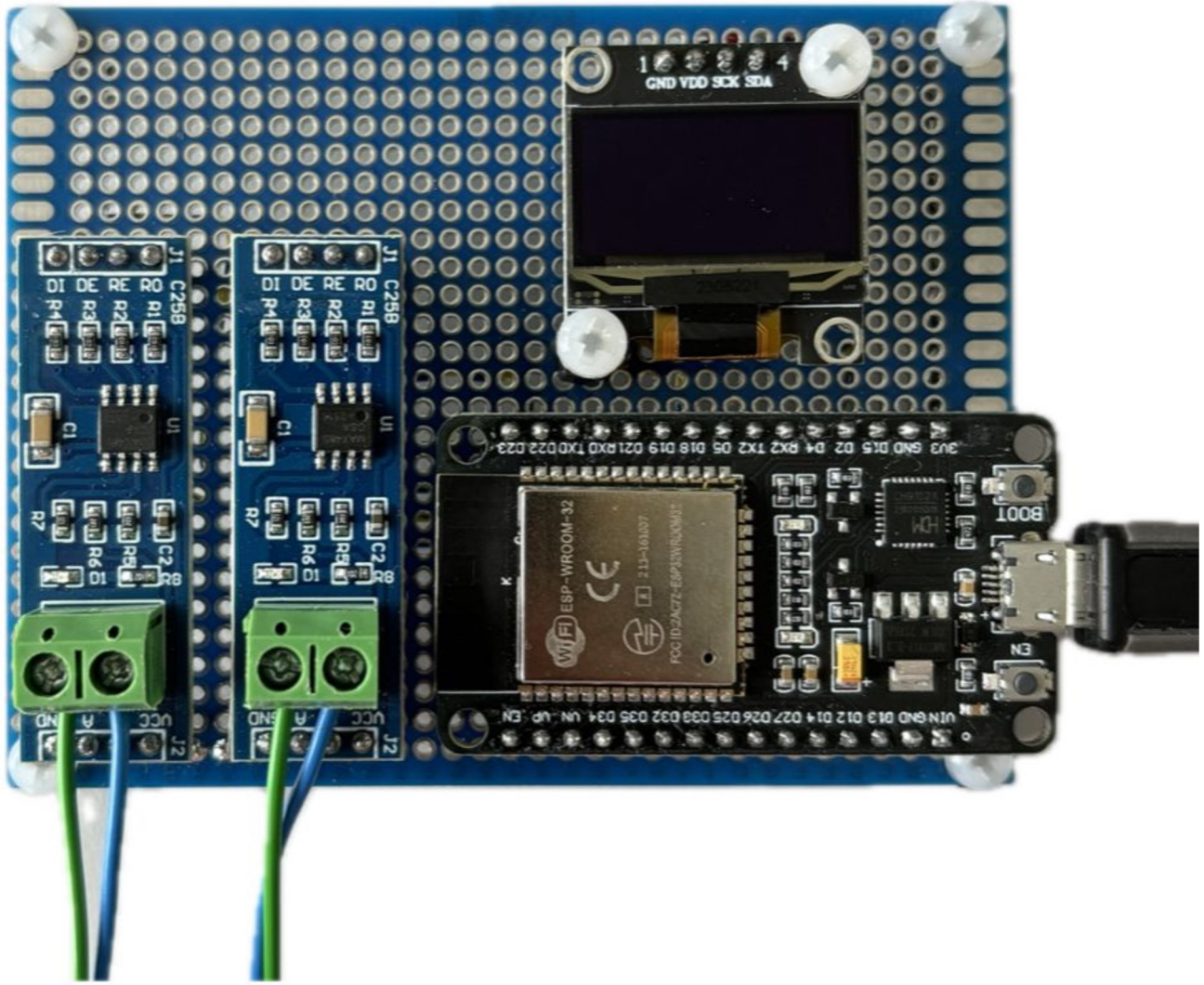
Rees Raphael

Benavides Jhon

Clerici Lorenzo

Content

- Project goals
- Operation mechanism
- Wifi configuration
- FreeRTOS operation
- Modbus slave operation
- Master operation
- HTML web server

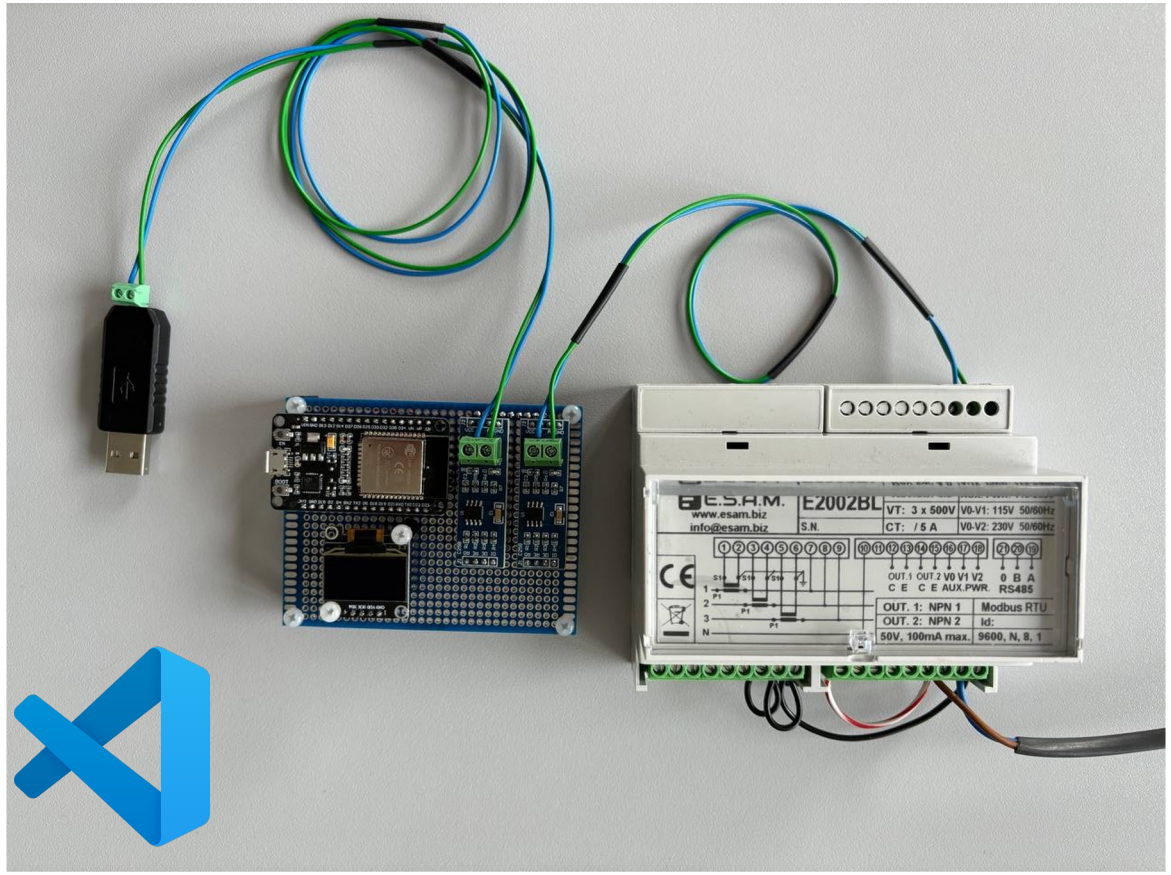


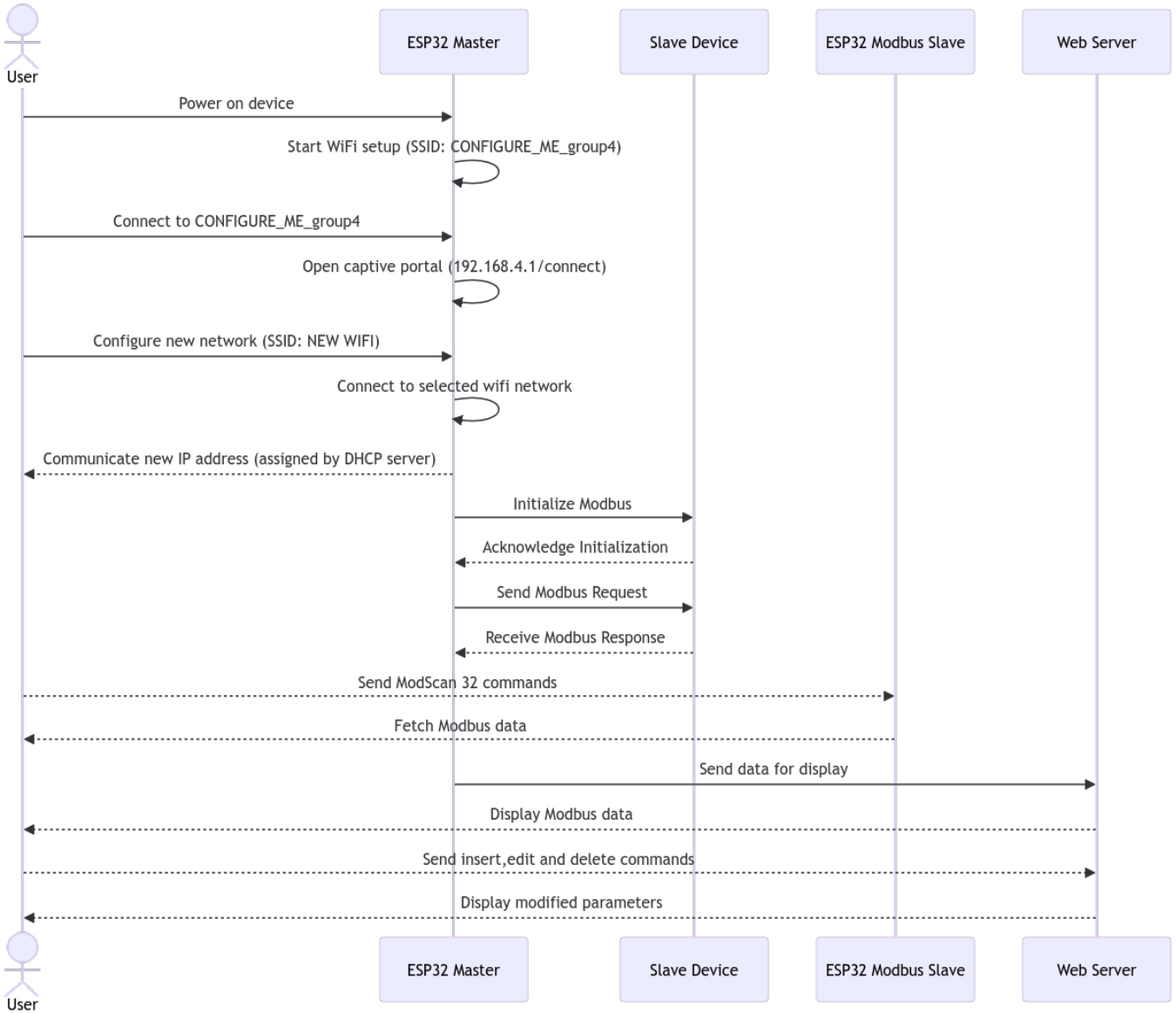
Project Goals

Develop a system capable of sending Modbus RTU requests to an external device, receiving the data of the holding registers and displaying it on a web server for the user analysis and monitoring.

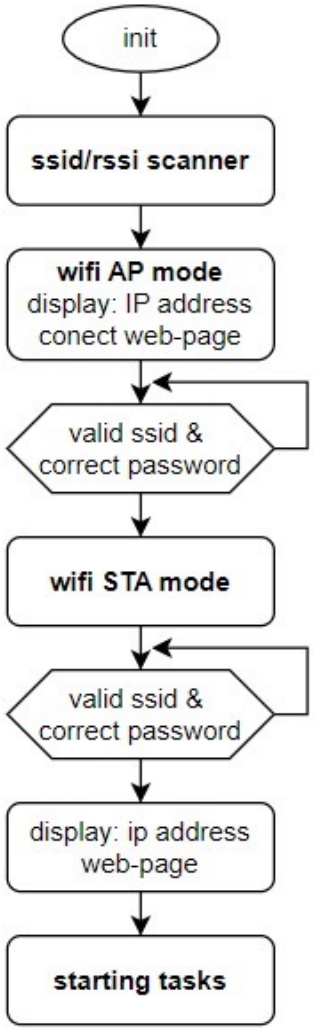
The main components of the projects are:

- ESP32 microcontroller
- ESAM E2002 device
- ModScan software located on a remote computer for user interaction.
- IDF Espressif VS code extension



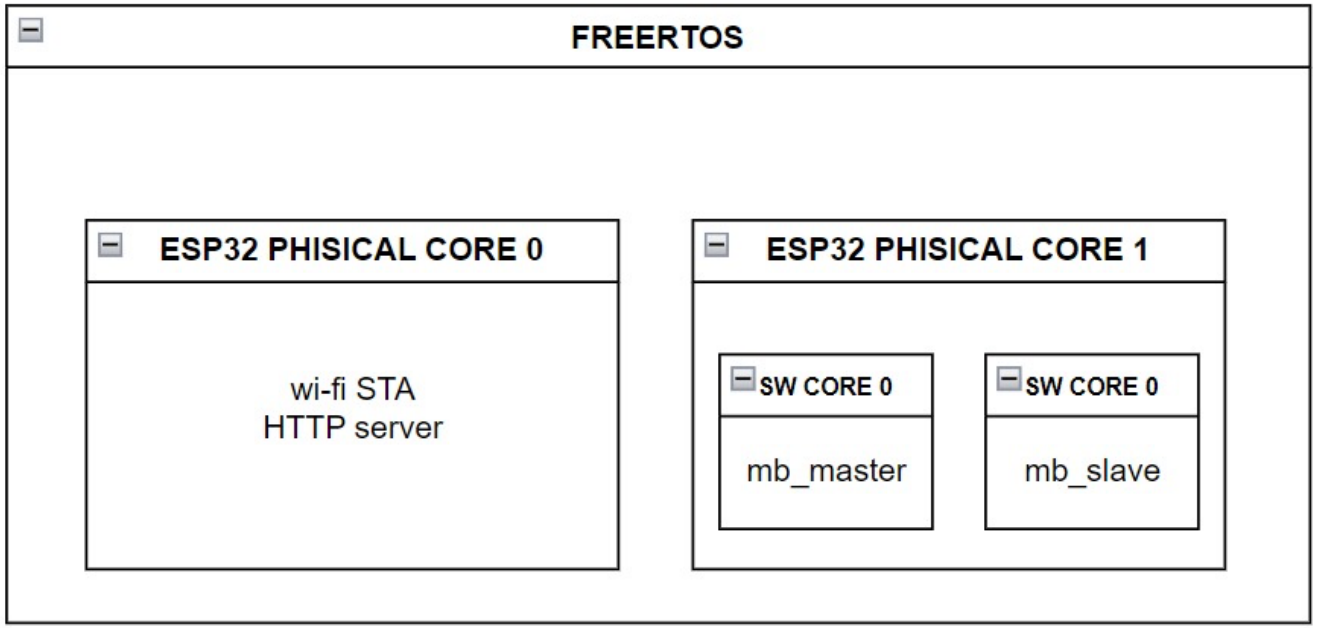


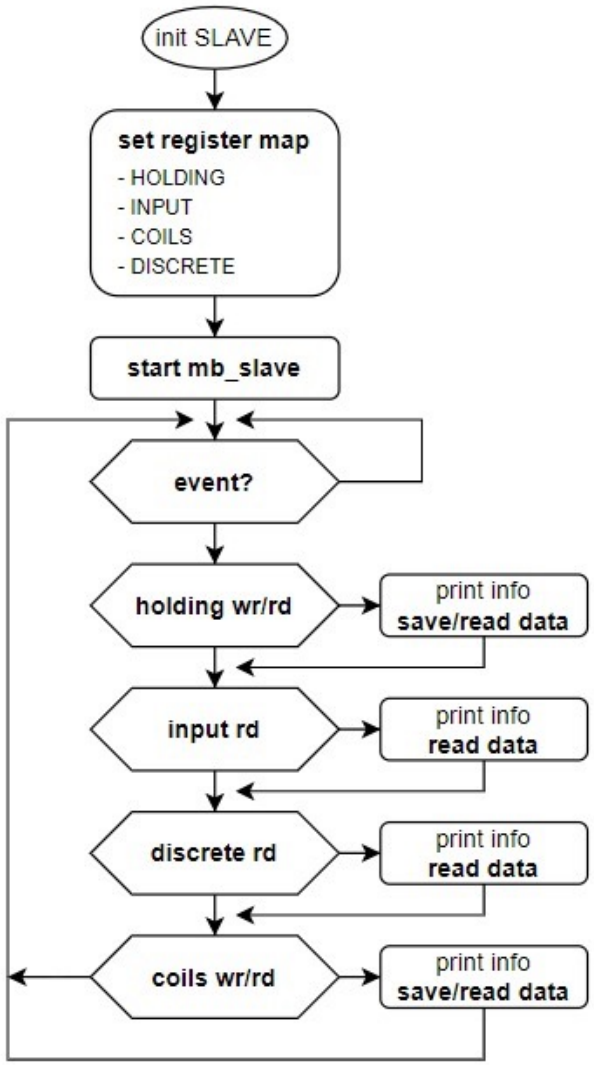
Operation mechanism



Wifi configuration

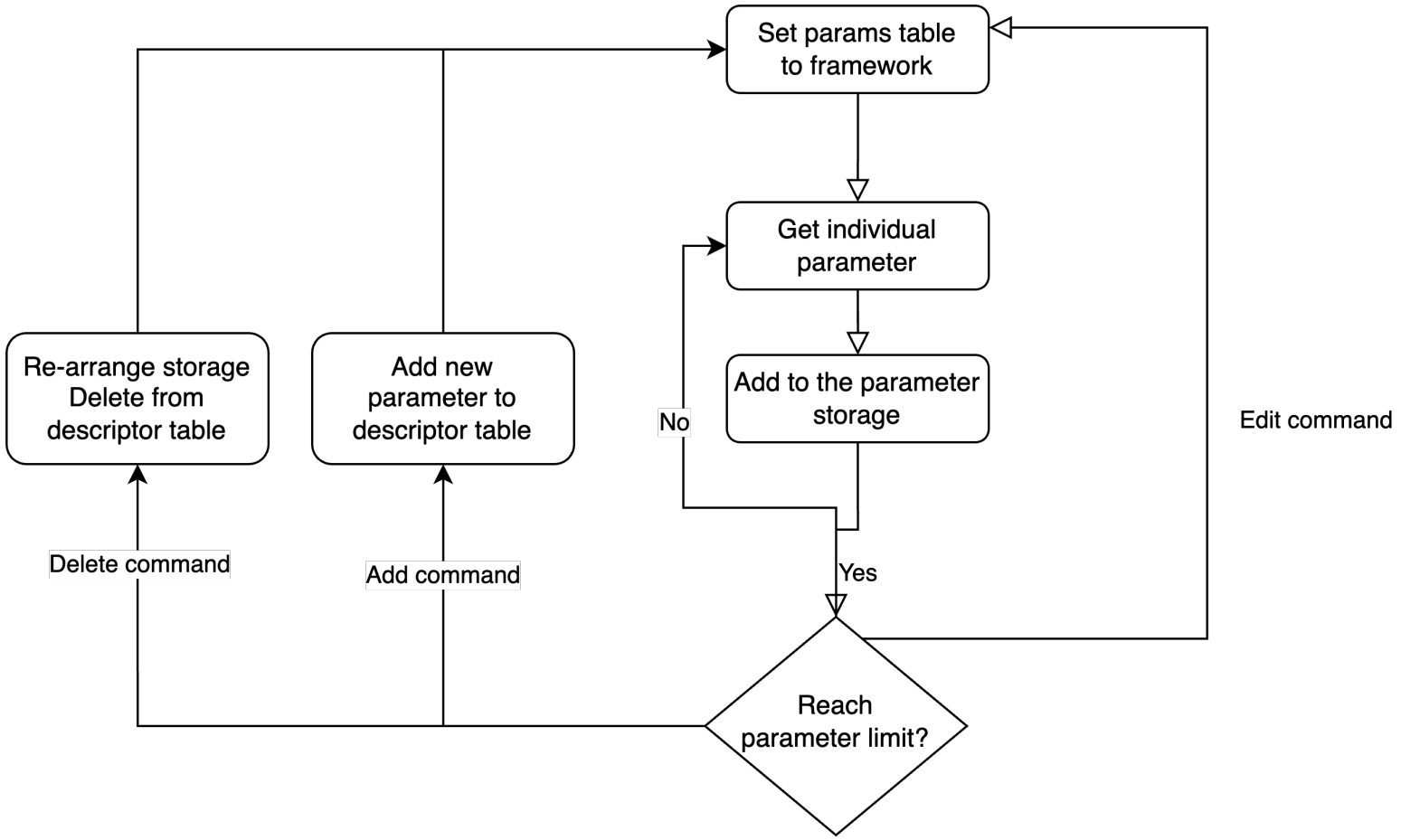
FreeRTOS operation





Modbus slave operation

Master operation



Html web server

Scanned SSIDs

SSID	RSSI	Actions
RaphSamsung	-32	◉
AndroidAP_jfbb	-50	○
SUPSI	-70	○
eduroam	-70	○
USI	-70	○
USI-Guest	-70	○
SUPSI-IoT	-70	○
SUPSI-Guest	-70	○
iPsk	-71	○
mc-exams	-71	○
ESP32-Access-Point	-73	○
Remi	-76	○
USI-Guest	-82	○
mc-exams	-83	○
USI-Guest	-83	○
USI	-83	○
iPsk	-83	○
SUPSI	-83	○
eduroam	-83	○
SUPSI-Guest	-83	○

Password:

•••••••• connect

ESP32 Modbus Configuration

Data Entries:

ID	Name	Description	Units	Slave ID	Register Type	Register Start	Register Size	Data Type	Data Size	Value	Instance Offset	Parameter Options	Access Mode	Actions
0	Voltage Phase 1	Voltage Phase 1	V	1	0	123	2	3	4	**231.08**	0	0	2	Edit Delete
1	Temperature	Temperature	C	1	0	157	2	3	4	**31.38**	0	0	2	Edit Delete