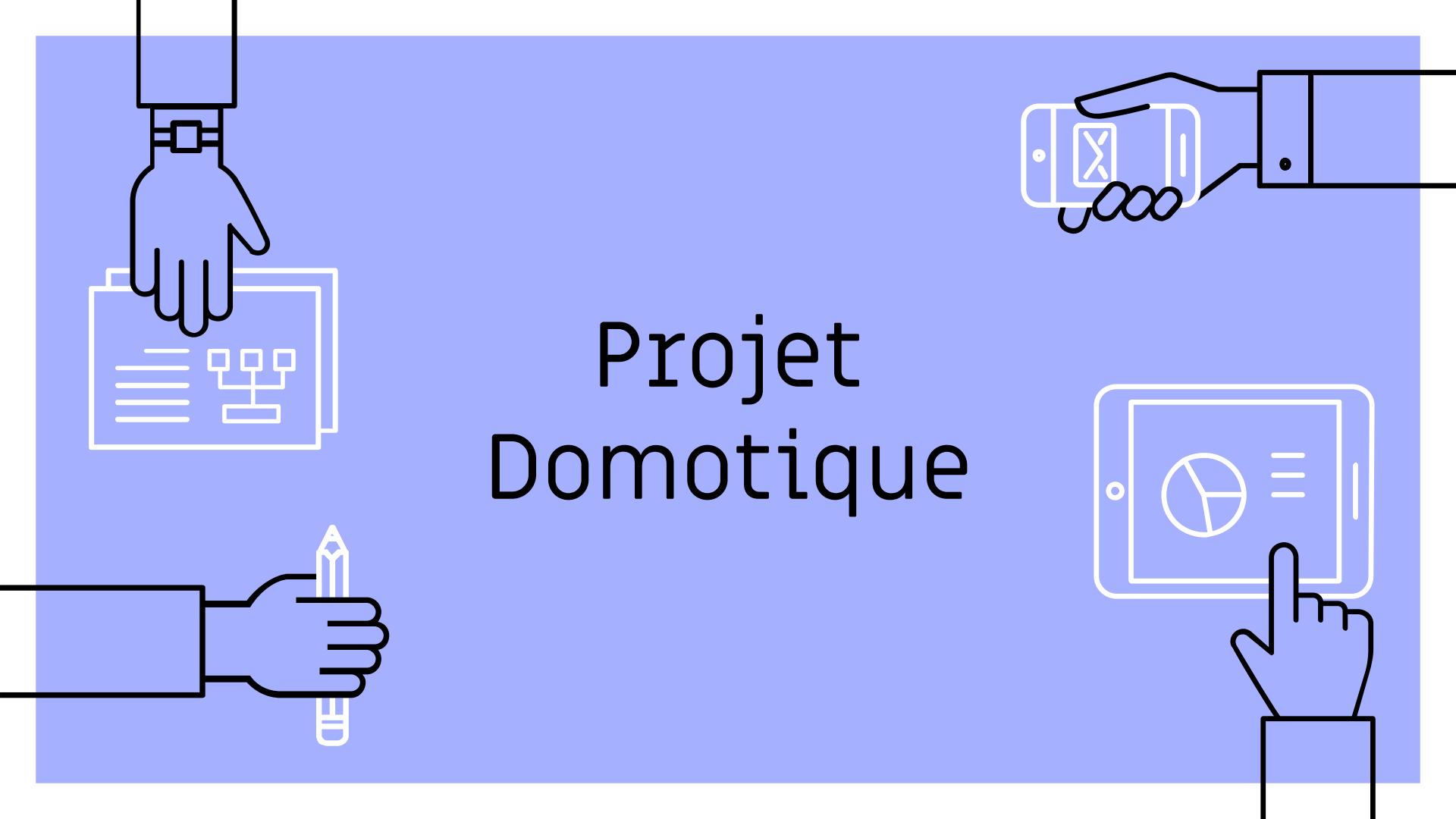


Projet Domotique



Membres du groupe

- ▷ Aykel Cheniour - aykel.cheniour@cpe.fr
- ▷ Valentin Valette - valentin.valette@cpe.fr
- ▷ Enagnon Farell Grazina Ahouandjinou - ah.farell@gmail.com
- ▷ Lucien Burdet - lucien.burdet@cpe.fr

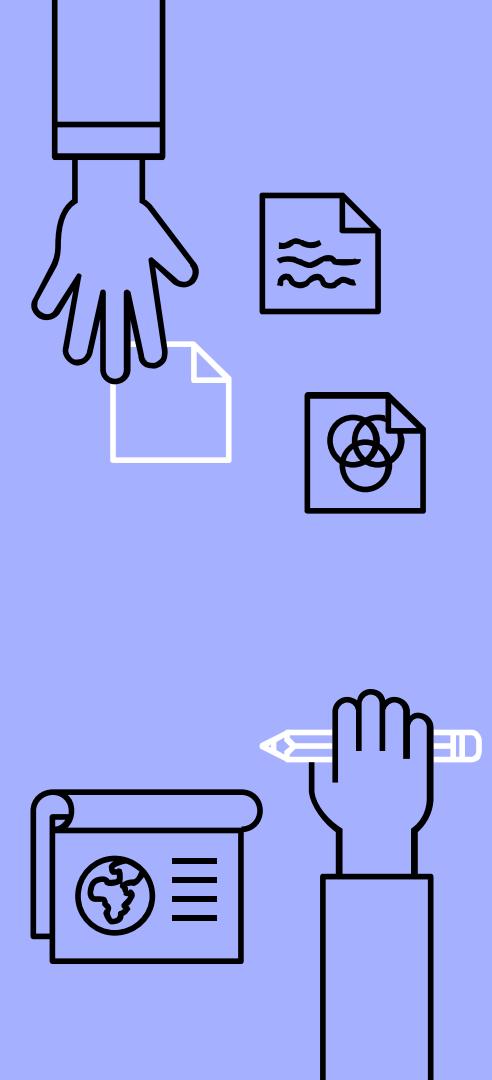
Supervisé par **Raphael Leber** et **Fabrice Jumel**.

Lien du dashboard :

<https://work.lucien-brd.com/>

Lien du git :

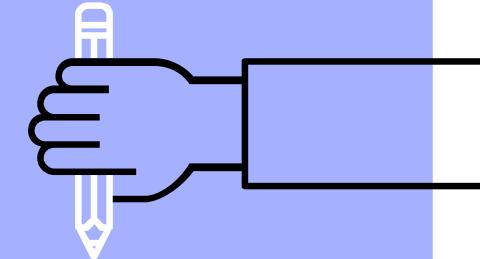
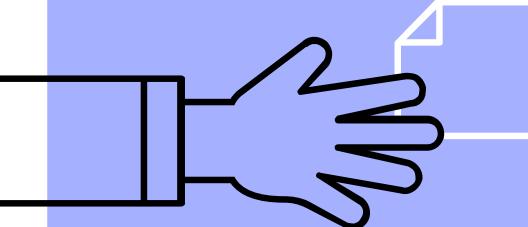
https://gitlab.com/5irc_prj_21-22/Sujet_2__Domotique_1/G2_Cheniour_Ah_ouandjinou_Burdet_Valette



Sommaire

- ▷ Introduction
- ▷ Activités réalisées
 - Serveur WEB
 - Robot Pepper
 - Serveur global
 - IOT
 - Power BI
- ▷ Démonstration
- ▷ Conclusion

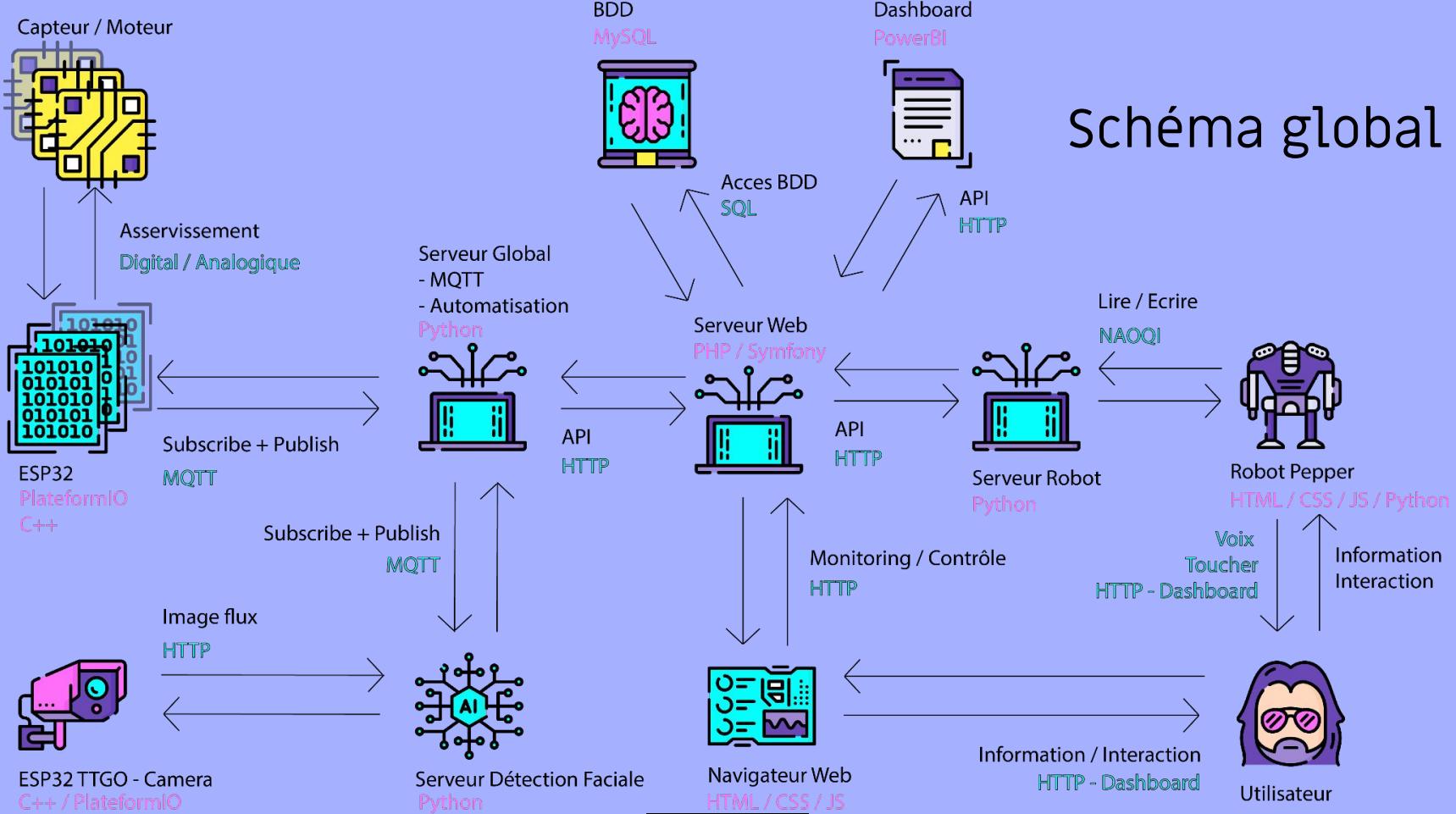


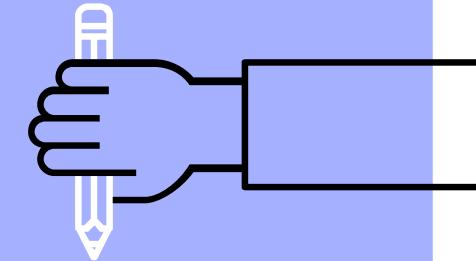


1. Introduction

Présentation du projet

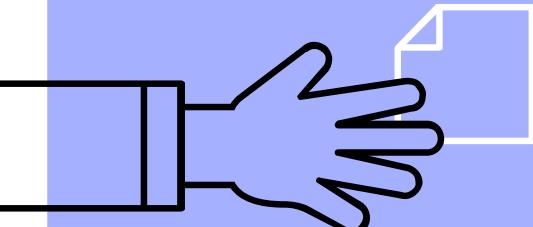
Schéma global





2.

Activités réalisées



Serveur WEB

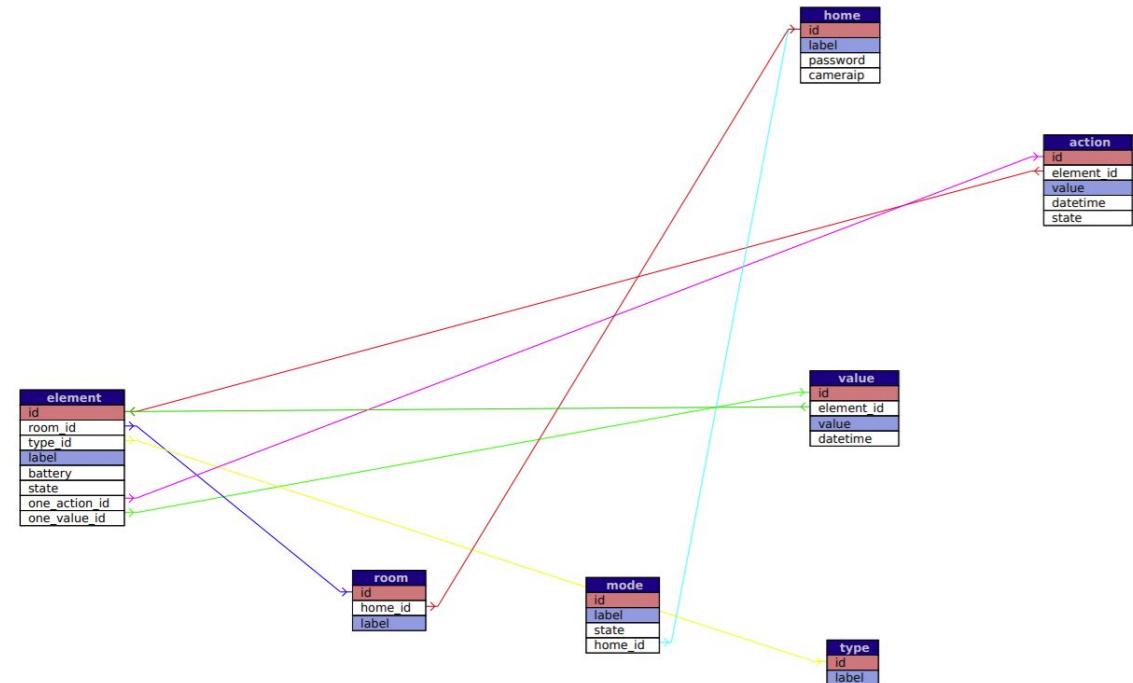
Application WEB :

- PHP - Symfony
- API
- Dashboard
- Base de données

Serveur Web

Base de données

▷ MySQL



Serveur Web

Dashboard

- ▷ Ajouter
- ▷ Supprimer
- ▷ Editer

The screenshot shows a laptop screen displaying a web application interface for a domotic system. The left sidebar menu includes 'Dashboard', 'Action', 'Element', 'Home', 'Room', 'Type', 'Value', 'API', and 'Doc'. The main content area is titled 'Element' and lists six items:

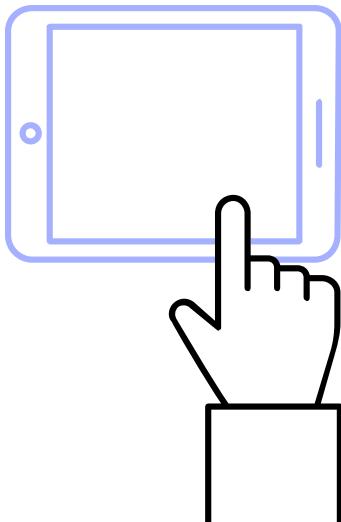
ID	Label	Battery	Room	Actions	Action	Element Values	Element Value	State	Type
8	sensor_temperature_living_room	Aucun(e)	living_room	1	129	21.0	21.0	OFF	sensor
9	sensor_humidity_living_room	Aucun(e)	living_room	2	Aucun(e)	86	12.0	OFF	sensor
11	actuator_entry_door_living_room	Aucun(e)	living_room	6	OFF	0	Aucun(e)	OFF	actuator
12	actuator_shutter_living_room	Aucun(e)	living_room	0	Aucun(e)	0	Aucun(e)	OFF	actuator
13	actuator_heating_living_room	Aucun(e)	living_room	0	Aucun(e)	0	Aucun(e)	OFF	actuator
326	actuator_ymc_living_room	Aucun(e)	living_room	0	Aucun(e)	0	Aucun(e)	OFF	actuator

Below the table, it says '6 résultats' and has navigation buttons 'Précédent' and 'Suivant'.

Serveur Web

API

- ▷ Ajouter
- ▷ Supprimer
- ▷ Editer



The screenshot shows a mobile application interface for an API platform. At the top, there's a header with the text "Domotique" and some status indicators. Below the header is a search bar labeled "Servers" with a dropdown arrow and an "Authorize" button with a lock icon. The main content area is titled "Action" and contains a list of API endpoints:

- GET /api/action/last/{labelement} Retrieves a Action resource.
- GET /api/actions Retrieves the collection of Action resources.
- POST /api/actions Creates a Action resource.
- GET /api/actions/get/unresolved Retrieves a Action resource.
- GET /api/actions/unresolved/{labelement} Retrieves a Action resource.
- GET /api/actions/{id} Retrieves the Action resource.
- PUT /api/actions/{id} Replaces the Action resource.
- DELETE /api/actions/{id} Removes the Action resource.
- PATCH /api/actions/{id} Updates the Action resource.

Below the "Action" section is another section titled "Element" with a similar list of endpoints:

- GET /api/element/{label} Retrieves a Element resource.
- GET /api/elements Retrieves the collection of Element resources.
- POST /api/elements Creates a Element resource.
- GET /api/elements/{id} Retrieves the Element resource.
- PUT /api/elements/{id} Replaces the Element resource.
- DELETE /api/elements/{id} Removes the Element resource.
- PATCH /api/elements/{id} Updates the Element resource.

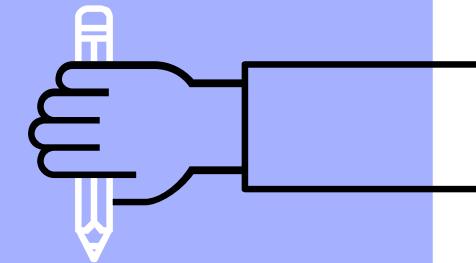
At the bottom of the screen, there's a section titled "Home" with the following endpoints:

- GET /api/home/{label} Retrieves a Home resource.
- GET /api/homes Retrieves the collection of Home resources.

A small cartoon character is visible in the bottom right corner of the app interface.

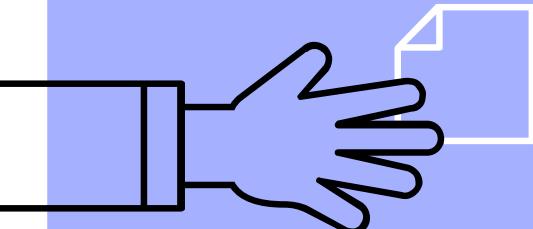
Action	Element	Mode	Home	Room	Type	Value
GET /api/action/last/{labelement}	GET /api/element/{label}	GET /api/get/mode/active/{labelhome}	GET /api/home/{label}	GET /api/room/{label}	GET /api/type/{label}	GET /api/value/last/{labelement}
GET /api/actions	GET /api/elements	GET /api/mode/{labelhome}/{label}	GET /api/homes	GET /api/rooms	GET /api/types	GET /api/values
POST /api/actions	POST /api/elements	GET /api/modes	POST /api/homes	POST /api/rooms	POST /api/types	POST /api/values
GET /api/actions/get/unresolved	GET /api/elements/{id}	POST /api/modes	GET /api/homes/{id}	GET /api/rooms/{id}	GET /api/types/{id}	GET /api/values/{id}
GET /api/actions/unresolved/{labelement}	PUT /api/elements/{id}	GET /api/modes/{id}	PUT /api/homes/{id}	PUT /api/rooms/{id}	PUT /api/types/{id}	PUT /api/values/{id}
GET /api/actions/{id}	DELETE /api/elements/{id}	PUT /api/modes/{id}	DELETE /api/homes/{id}	DELETE /api/rooms/{id}	DELETE /api/types/{id}	DELETE /api/values/{id}
PUT /api/actions/{id}	PATCH /api/elements/{id}	DELETE /api/modes/{id}	PATCH /api/homes/{id}	PATCH /api/rooms/{id}	PATCH /api/types/{id}	PATCH /api/values/{id}
DELETE /api/actions/{id}		PATCH /api/modes/{id}				
PATCH /api/actions/{id}						

Routes de l'API



2.

Activités réalisées



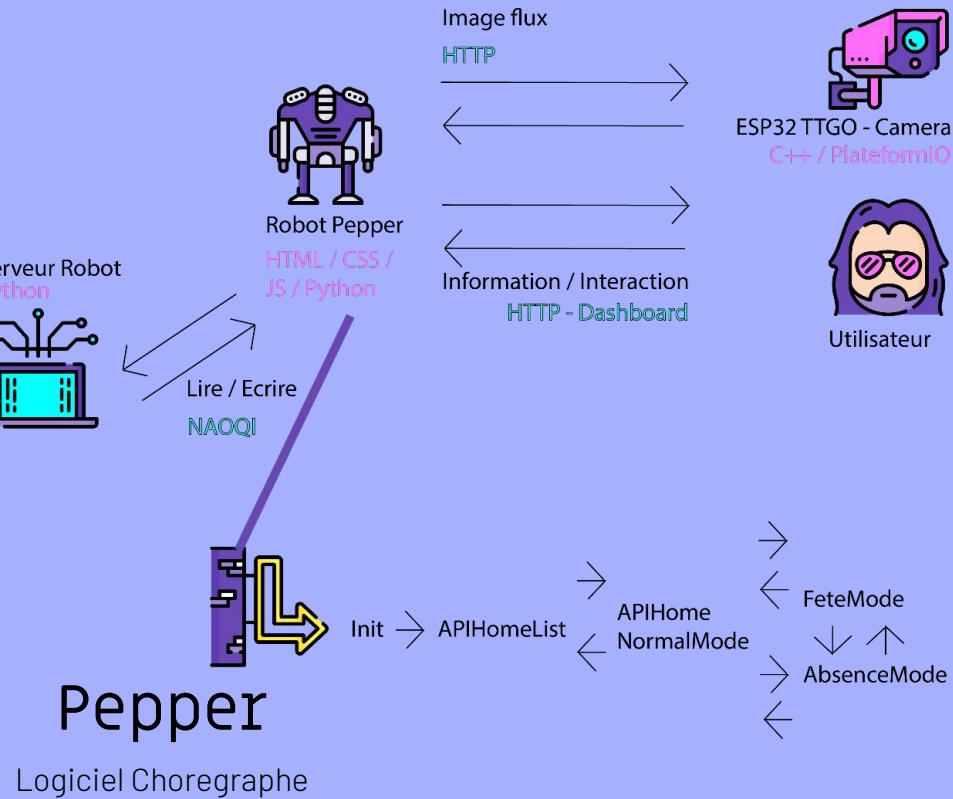
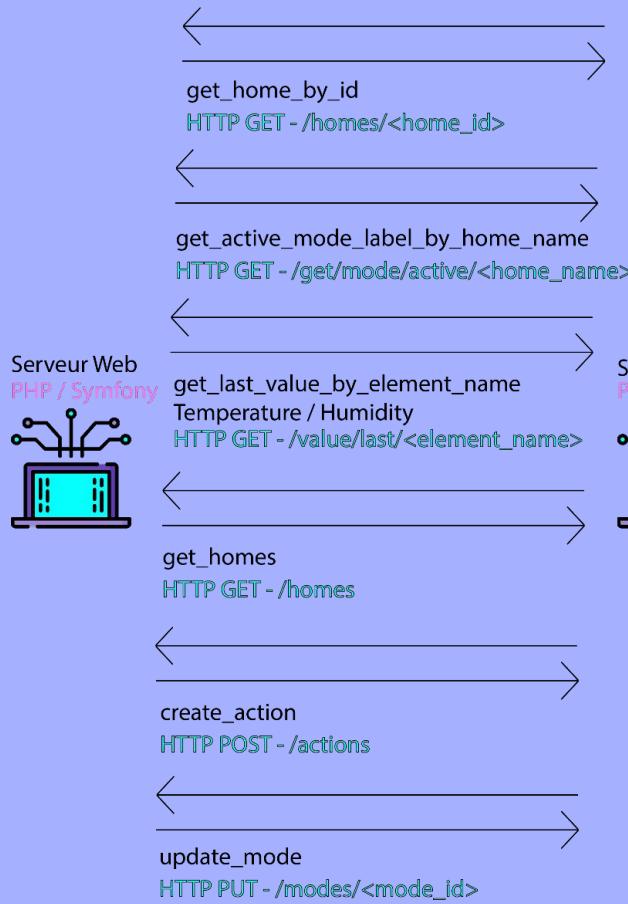
Robot Pepper

Robot Pepper

Serveur

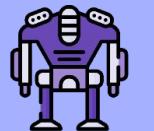
- ▷ Python - NAOQI
- ▷ Requêter l'API du serveur WEB
- ▷ Service visible par le Pepper





Pepper

Init

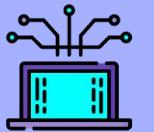
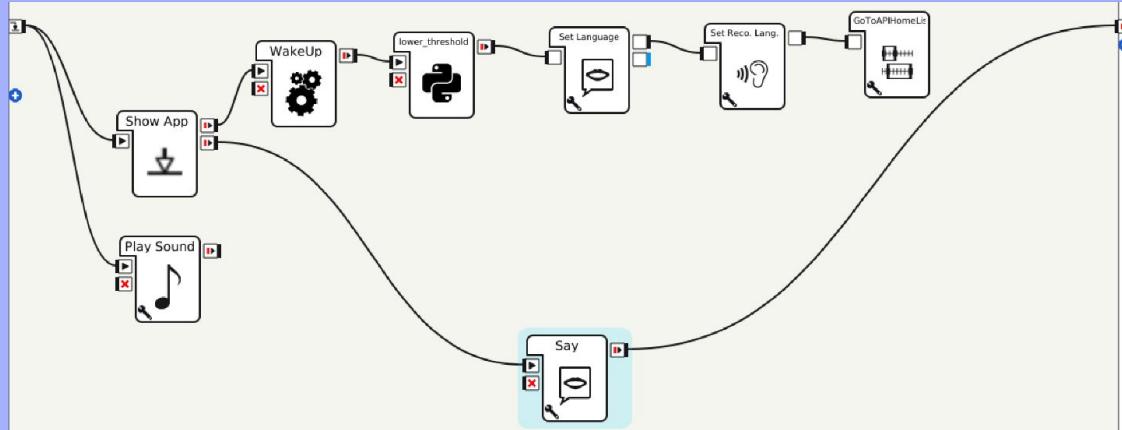


Robot Pepper

↑ GoToAPIHomeList
NAOqi

HTML / CSS / JS / Python

Init



Serveur Robot
Python



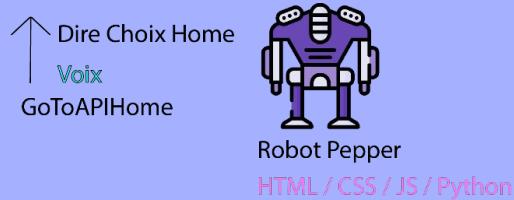
ESP32 TTGO - Camera
C++ / PlatformIO



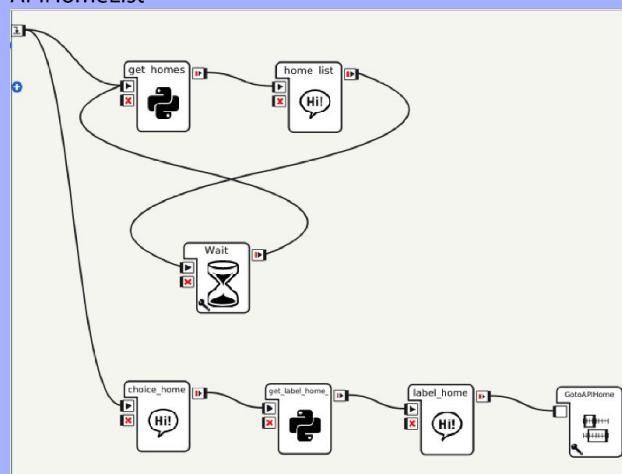
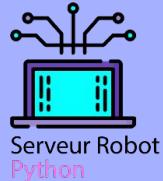
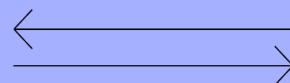
Utilisateur

Pepper

APIHomeList



APIHomeList



↑ Choix Home
Toucher
GoToAPIHome



Pepper

APIHome1

Dire Reset Home
Voix
GoToAPIHomeList



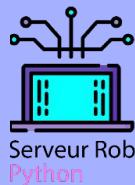
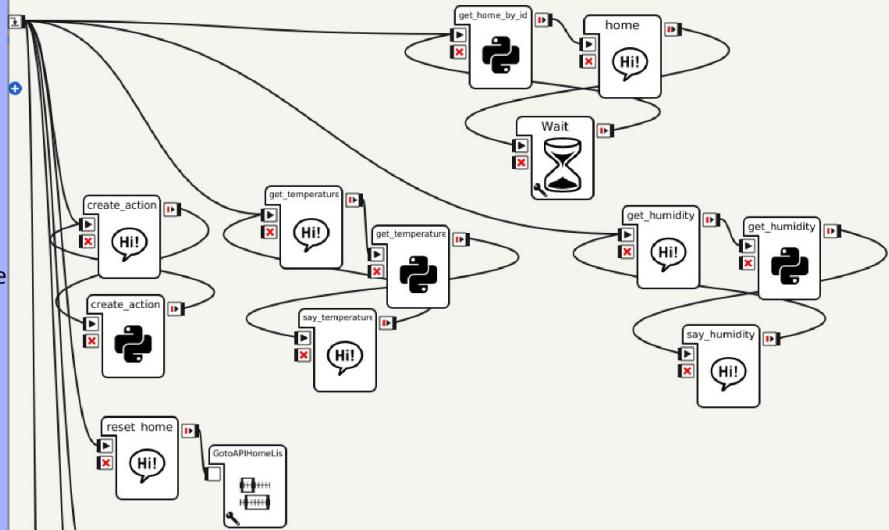
Robot Pepper

Dire Temperature / Humidity
Voix

Dire Create Action
Voix

Image flux
HTTP

APIHome



Serveur Robot
Python

get_home_by_id
NAOQI

get_last_value_
by_element_name
NAOQI

create_action
NAOQI



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Reset Home
Toucher / Voix
GoToAPIHomeList

Get Temperature / Humidity
Voix

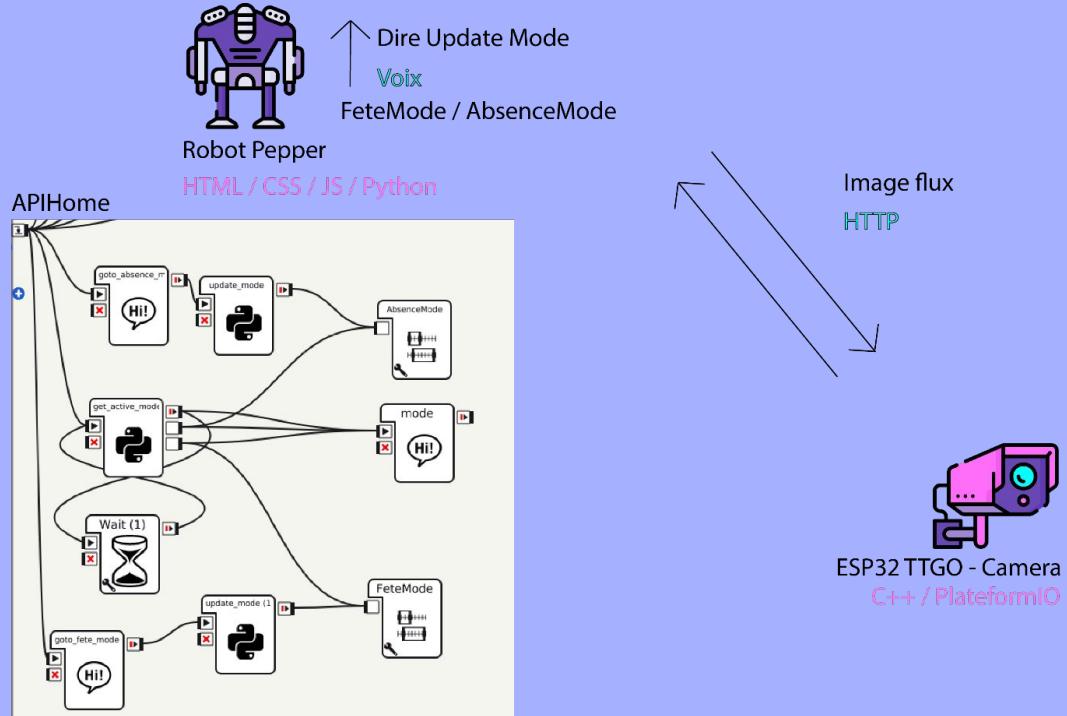
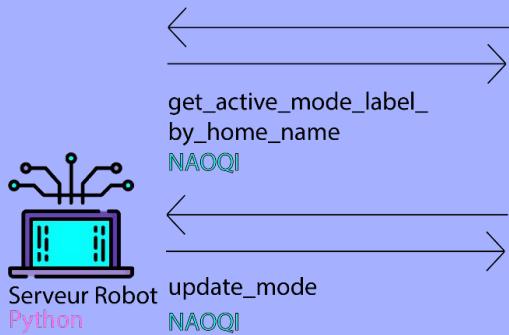
Create Action
Toucher



ESP32 TTGO - Camera
C++ / PlatformIO

Pepper

APIHome2

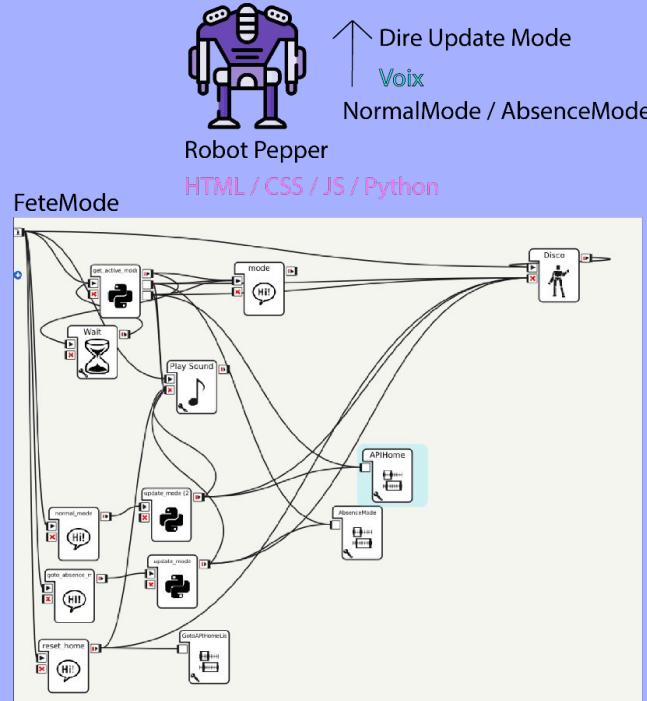
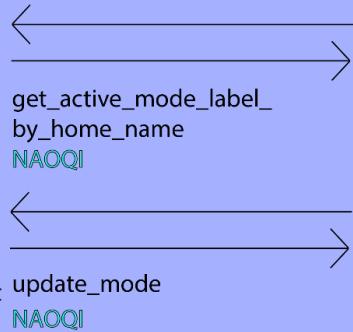


Pepper

ModeFete



Serveur Robot
Python



ESP32 TTGO - Camera
C++ / PlatformIO



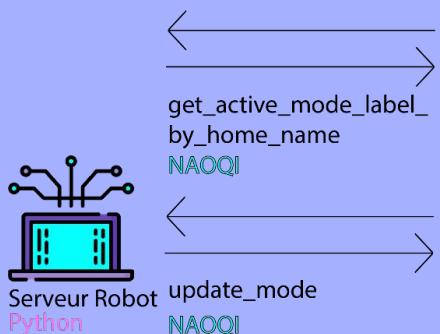
Utilisateur

Update Mode
Toucher

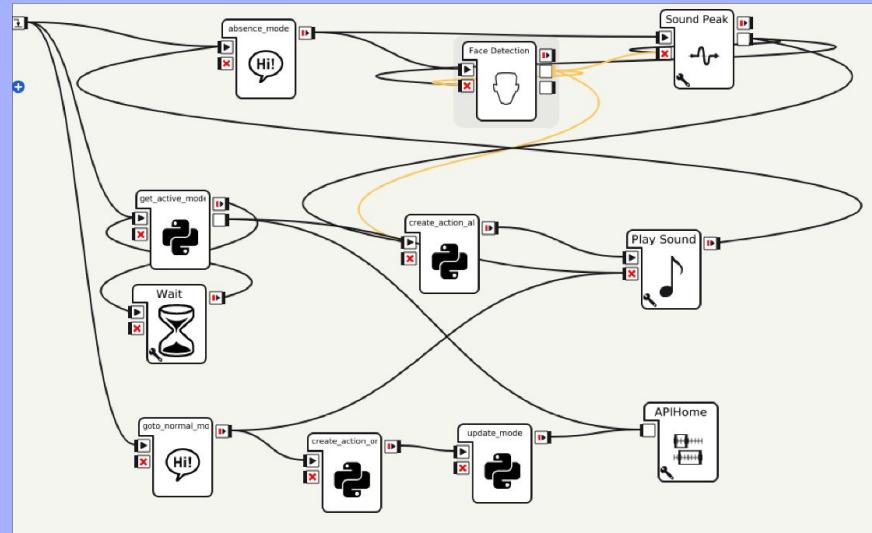
NormalMode / AbsenceMode

Pepper

AbsenceMode



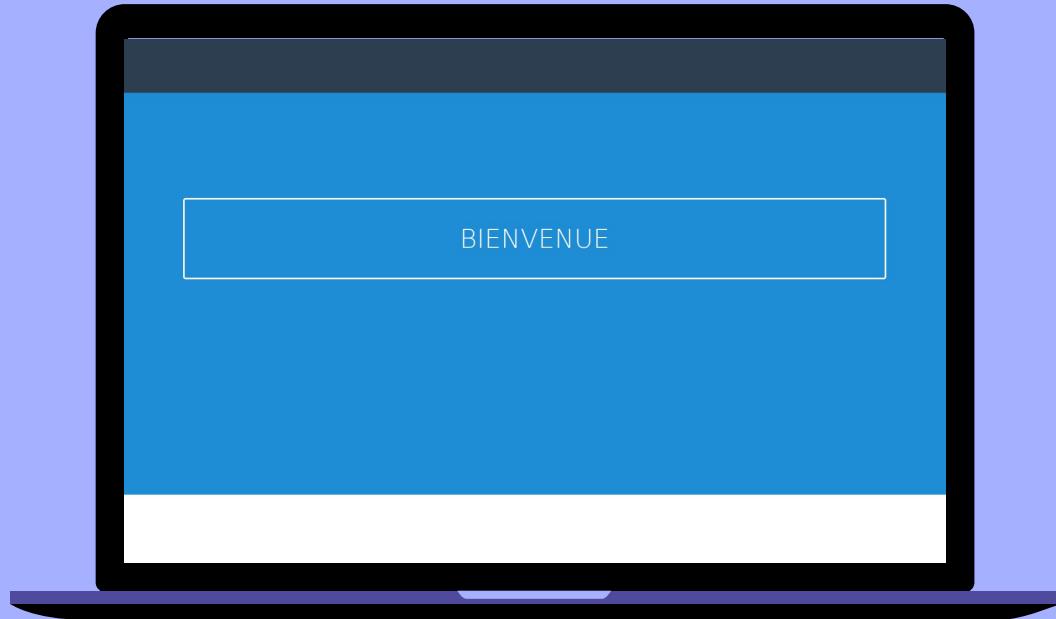
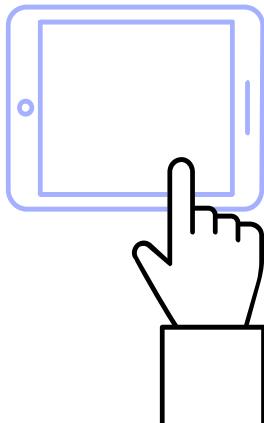
FeteMode



Robot Pepper

Dashboard

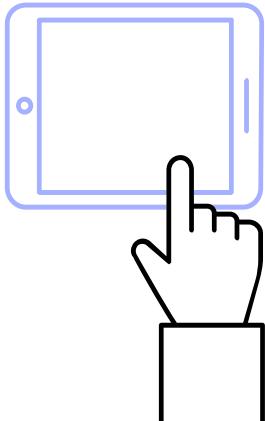
- ▷ HTML/CSS/JS
- ▷ Flux de la caméra
- ▷ Choisir Home
- ▷ Monitorer Home
- ▷ Choisir Mode



Robot Pepper

Dashboard

- ▷ Flux de la caméra
- ▷ Choisir Home
- ▷ Monitorer Home
- ▷ Choisir Mode



CHOIX DU HOME

HOME

MODE ABSENCE

MOT DE PASSE

RETOUR MODE NORMAL

HOME: HOME

RESET

"MODE ABSENCE" "MODE FÊTE" "MODE NORMAL"

TEMPÉRATURE CLIMAT TEMPS "QUELLE TEMPS FAIT-IL"

HUMIDITÉ FRAÎCHEUR HYGRÔMETRIE "QUELLE HUMIDITÉ FAIT-IL"

MODE ACTUEL: NORMAL

MODE NORMAL MODE FÊTE MODE ABSENCE

ROOM: LIVING_ROOM

Element: sensor_temperature_living_room

Etat Actuel	Value	Type	Action	#
OFF	0.0 le 17/1/2022 à 16:4:2	sensor	+ Etat: Done + Value: 10	<input type="button" value="Valider"/>

Element: sensor_humidity_living_room

Etat Actuel	Value	Type	Action	#
OFF	0.0 le 17/1/2022 à 16:3:54	sensor	+ Etat: NA + Value: NA	<input type="button" value="Valider"/>

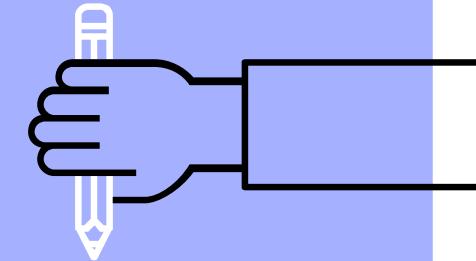
Element: sensor_luminosity_living_room

Etat Actuel	Value	Type	Action	#
OFF	0.0 le 17/1/2022 à 16:3:54	sensor	+ Etat: NA + Value: NA	<input type="button" value="Valider"/>

Element: sensor_entry_door_authentification_md5_living_room

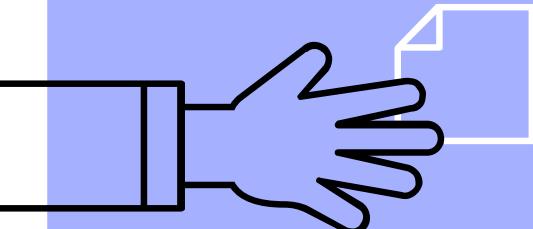
Etat Actuel	Value	Type	Action	#
OFF	NA	sensor	+ Etat: NA + Value: NA	<input type="button" value="Valider"/>

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2.

Activités réalisées



Serveur Global

Serveur Global

Accès à l'API

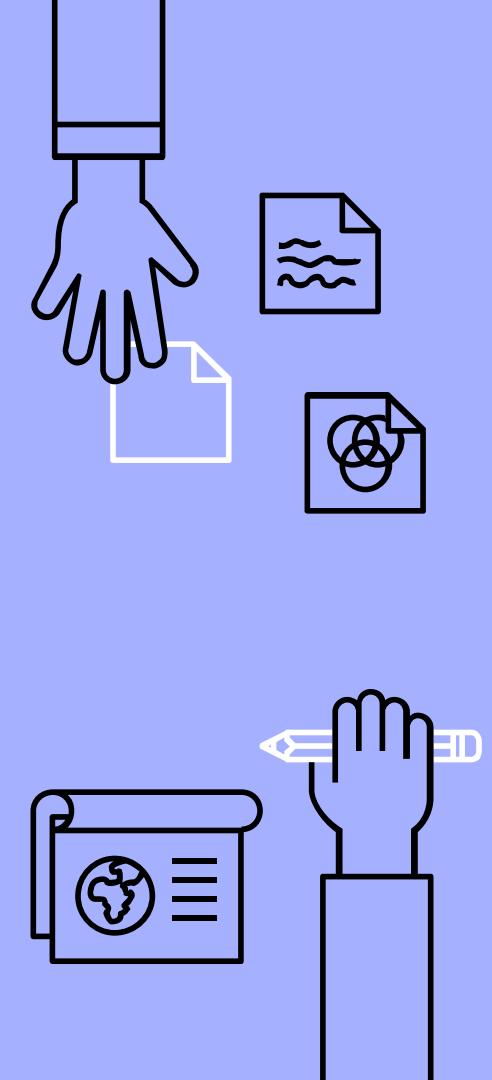
Accède à l'API via
Python :

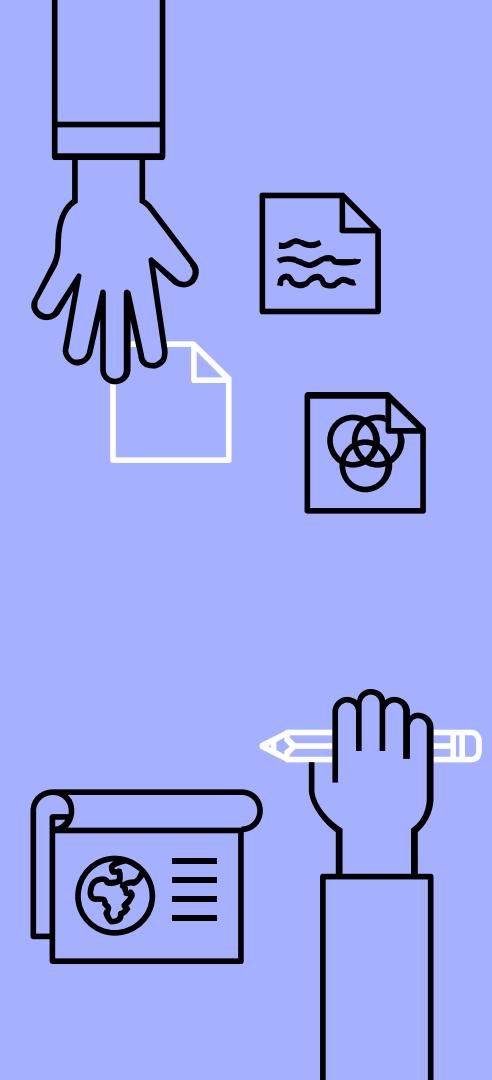
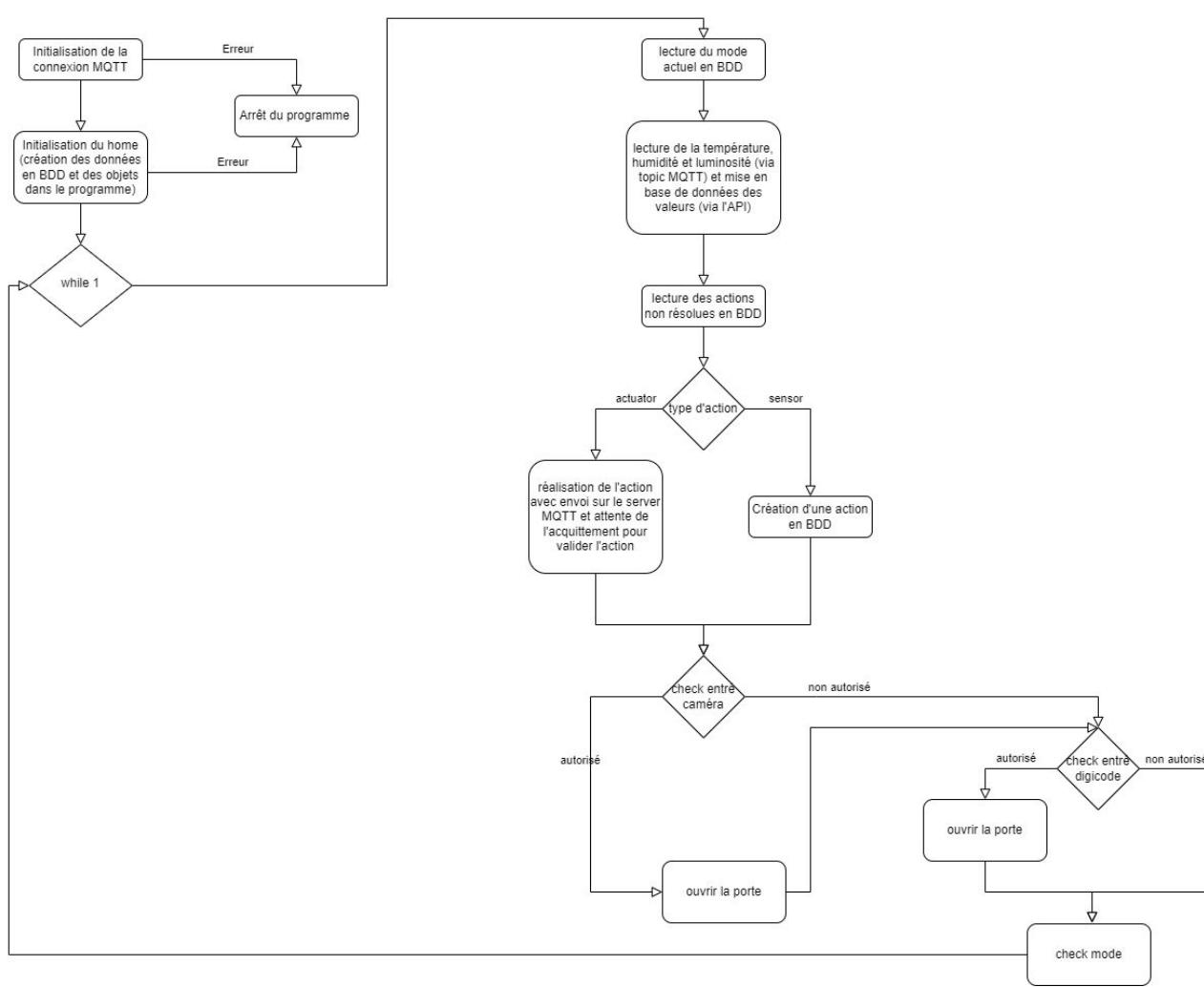
- ▷ Mise à jour des valeurs
- ▷ Récupération des valeurs

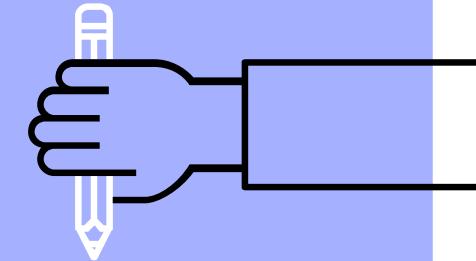
Supervise les microcontrôleurs

Avec MQTT, il supervise les microcontrôleurs :

- ▷ Récupération des valeurs (mise à jour en BDD)
- ▷ Assignment d'action (ouverture porte...)

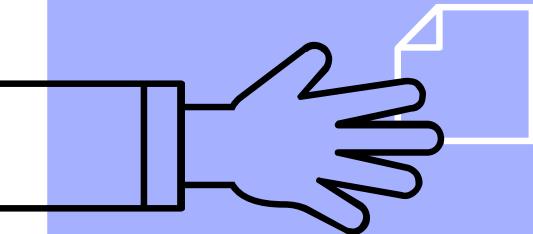






2.

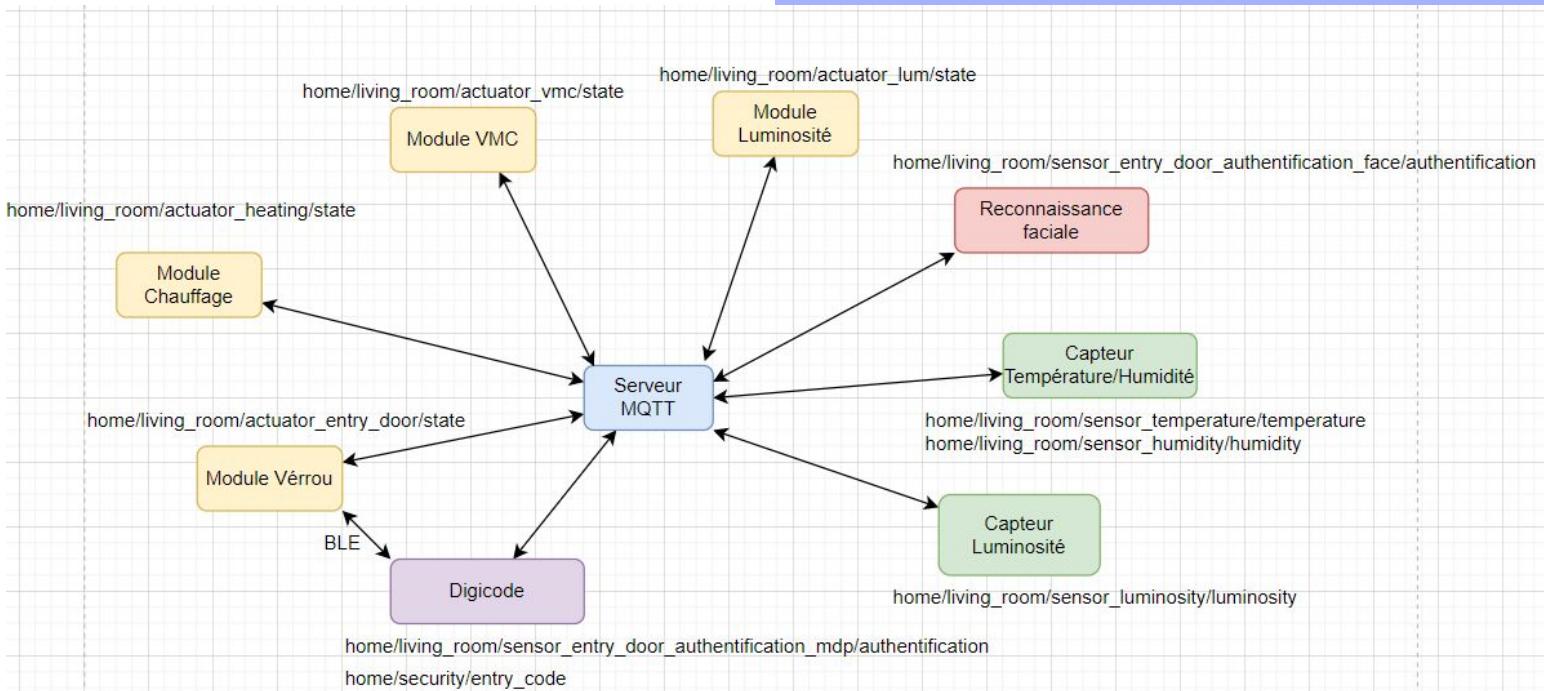
Activités réalisées



IOT

IOT

Schéma global



IOT - Reconnaissance Faciale

Serveur WEB - Wifi

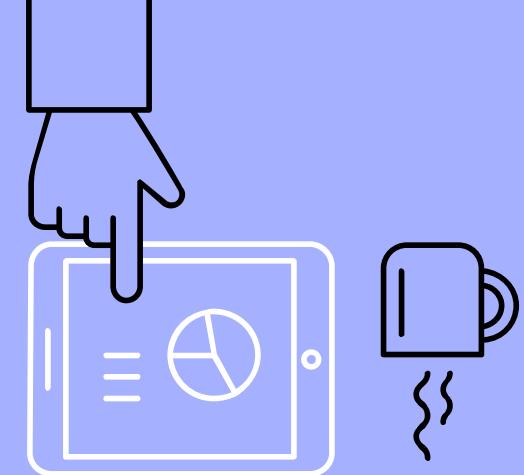
- ▷ Se connecte au Wifi.
- ▷ Serveur WEB permettant de partager le flux de la caméra.

Ecran

- Affichage sur l'écran du statut de la connection au Wifi.

Serveur python

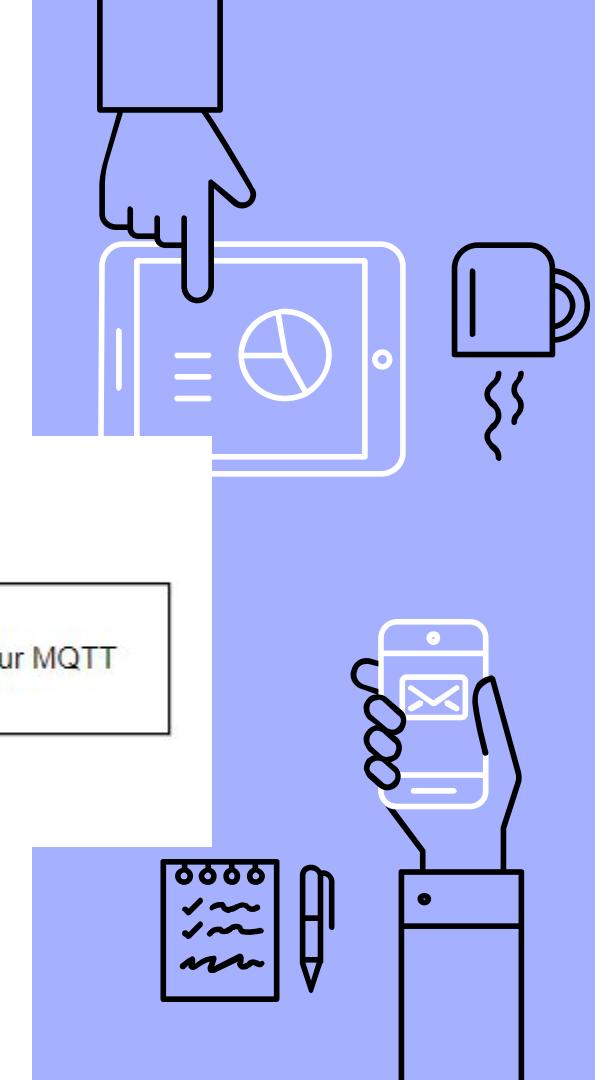
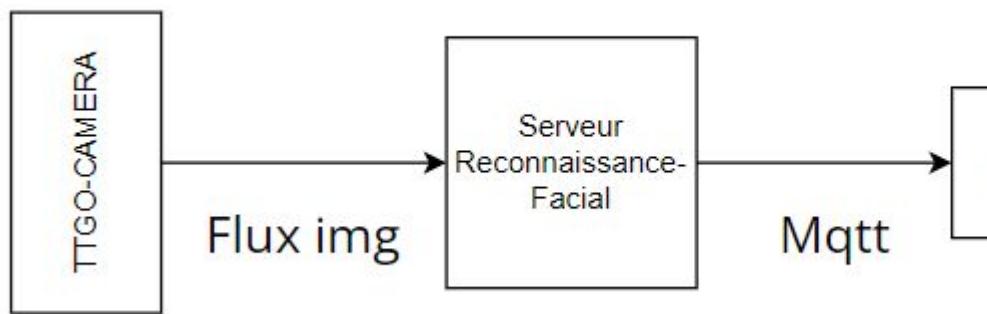
- ▷ Récupère le flux de la caméra et check si il y a un visage et s'il est autorisé
- ▷ Ajouter des visages autorisés
- ▷ Notifie en MQTT



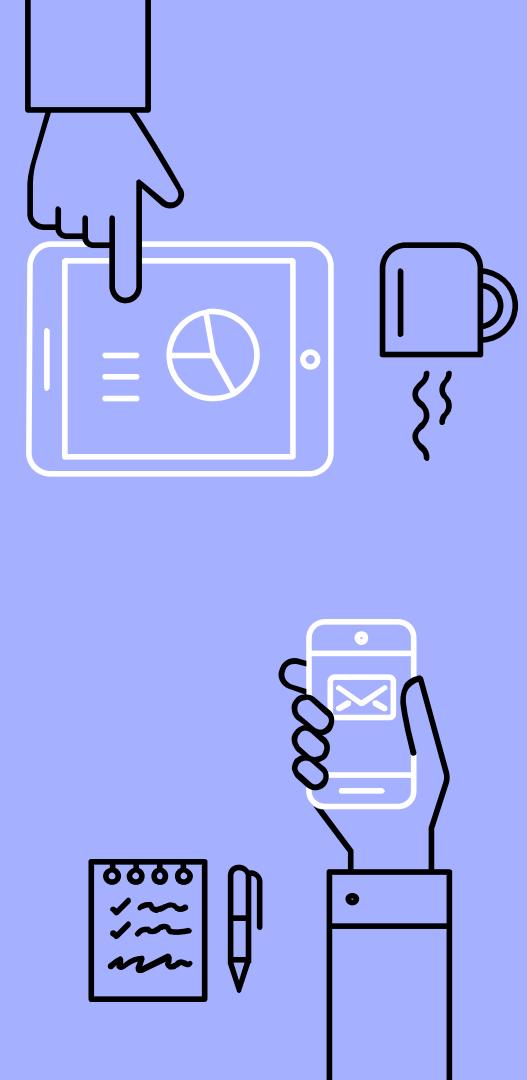
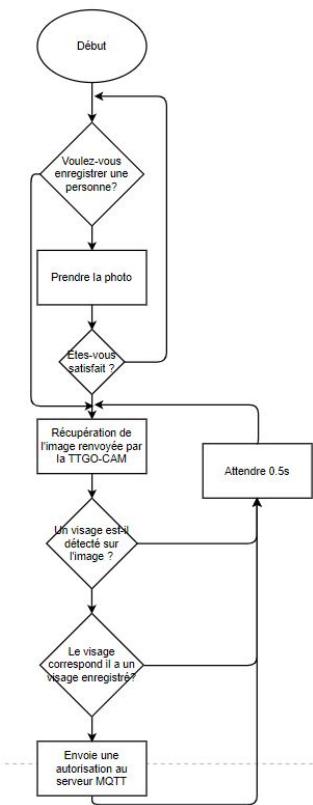
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IOT - Reconnaissance Faciale



IOT - Reconnaissance Faciale



IOT - Module Verrou

Servomoteur

Contrôle du servomoteur grâce à un signal PWM.

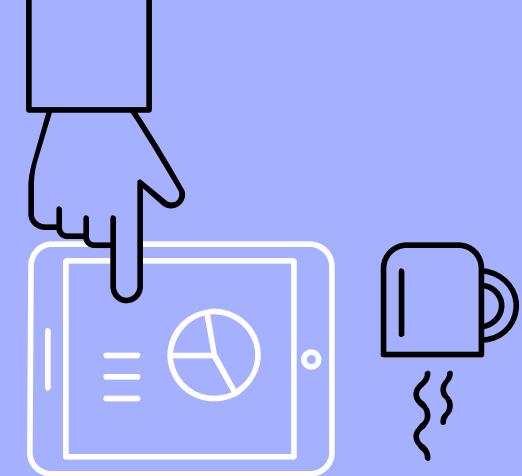
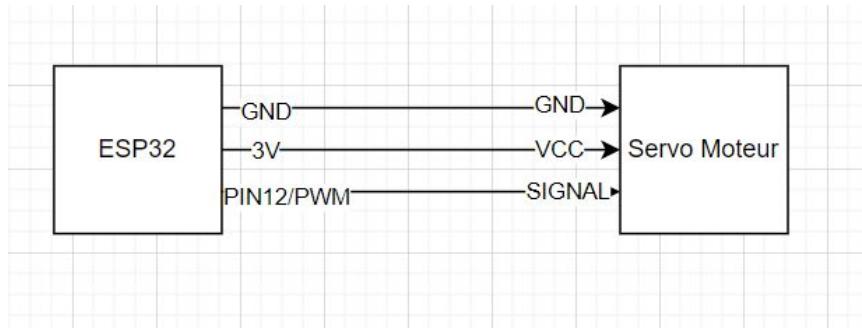
MQTT

Publish et subscribe :

- ▷ Un topic pour acquitter
- ▷ Un topic pour écouter les ordres.

Ecran

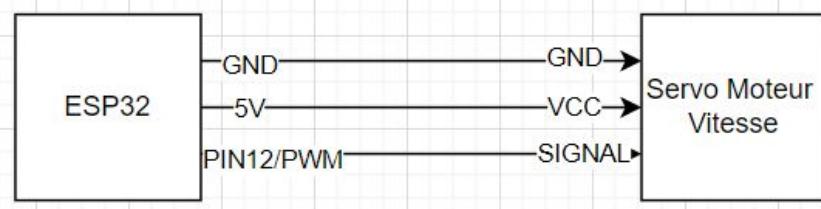
Affichage sur l'écran du statut de la connection au Wifi + MQTT ainsi que l'état du verrou.



IOT - Module VMC

Servomoteur

Contrôle du servomoteur grâce à un signal PWM.



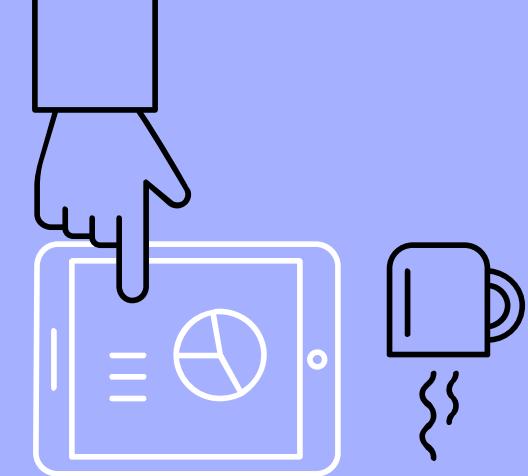
MQTT

Publish et subscribe :

- ▷ Un topic pour acquitter
- ▷ Un topic pour écouter les ordres.

Ecran

Affichage sur l'écran du statut de la connection au Wifi + MQTT ainsi que l'état de la VMC.



IOT - Module Chauffage

resistance

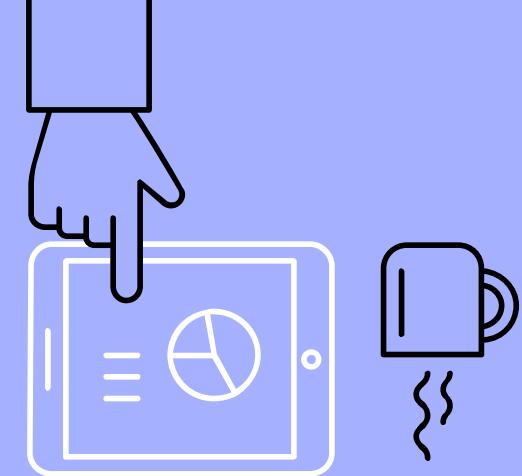
Contrôle du chauffage grâce à une résistance.

MQTT

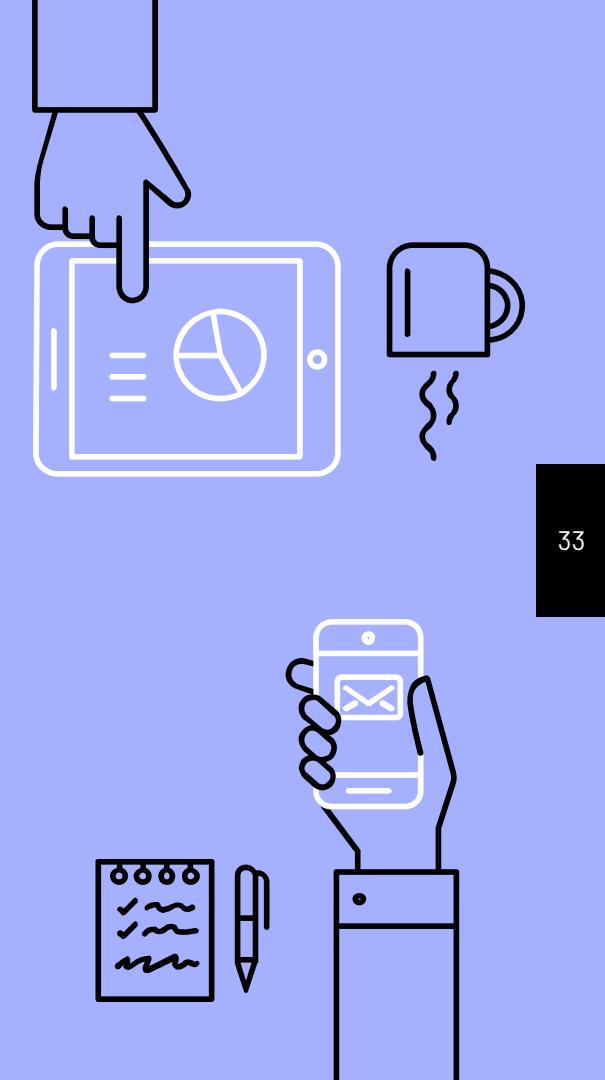
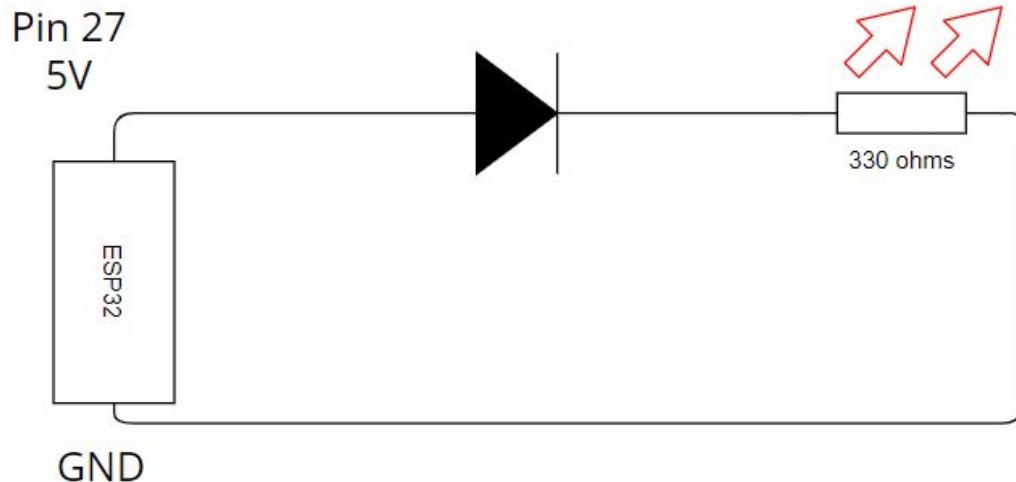
- Publish et subscribe :
- ▷ Un topic pour acquitter
 - ▷ Un topic pour écouter les ordres.

Ecran

Affichage sur l'écran du statut de la connection au Wifi + MQTT ainsi que l'état du chauffage.



IOT - Module Chauffage



IOT - Module Lumière

Led

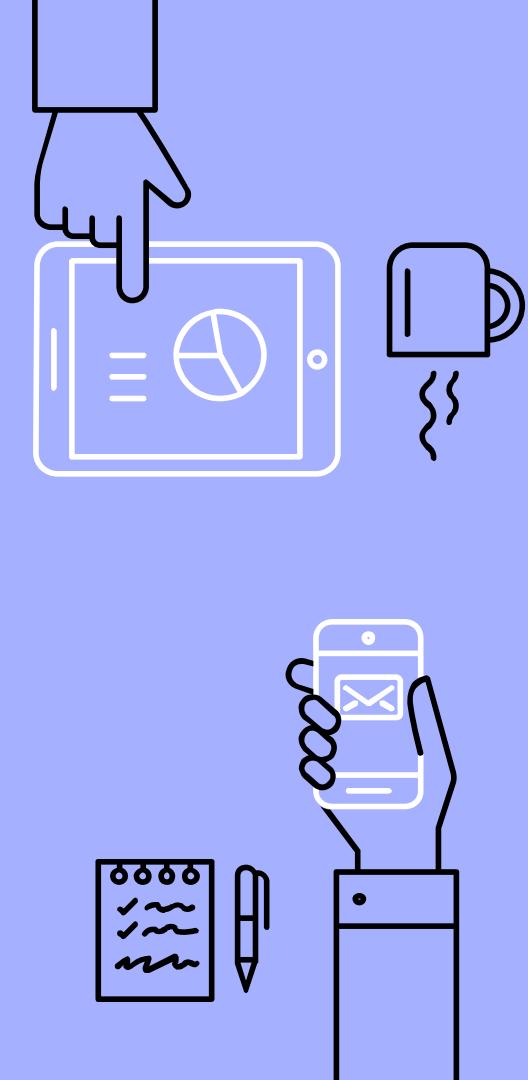
Contrôle de l'éclairage ambiant grâce à une plusieurs led.

MQTT

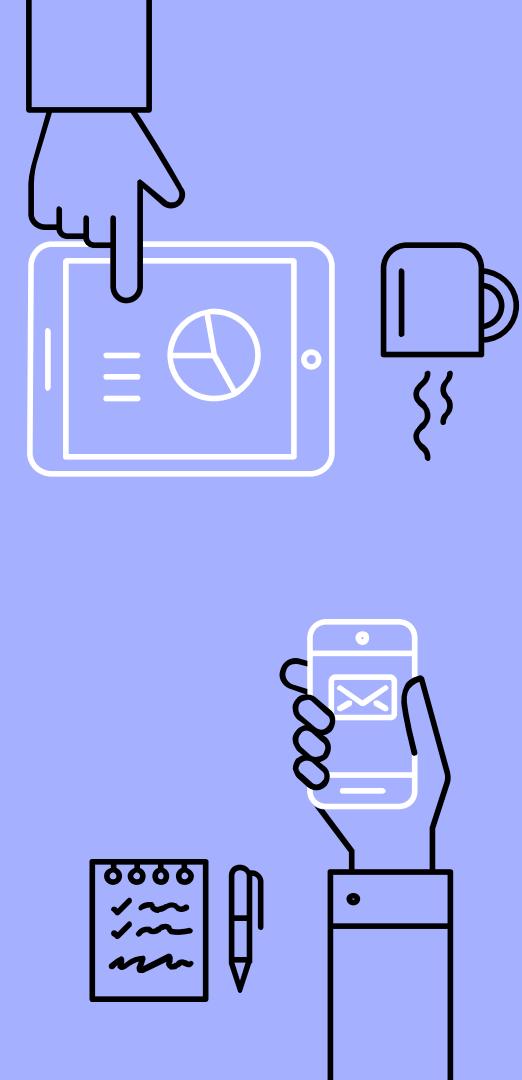
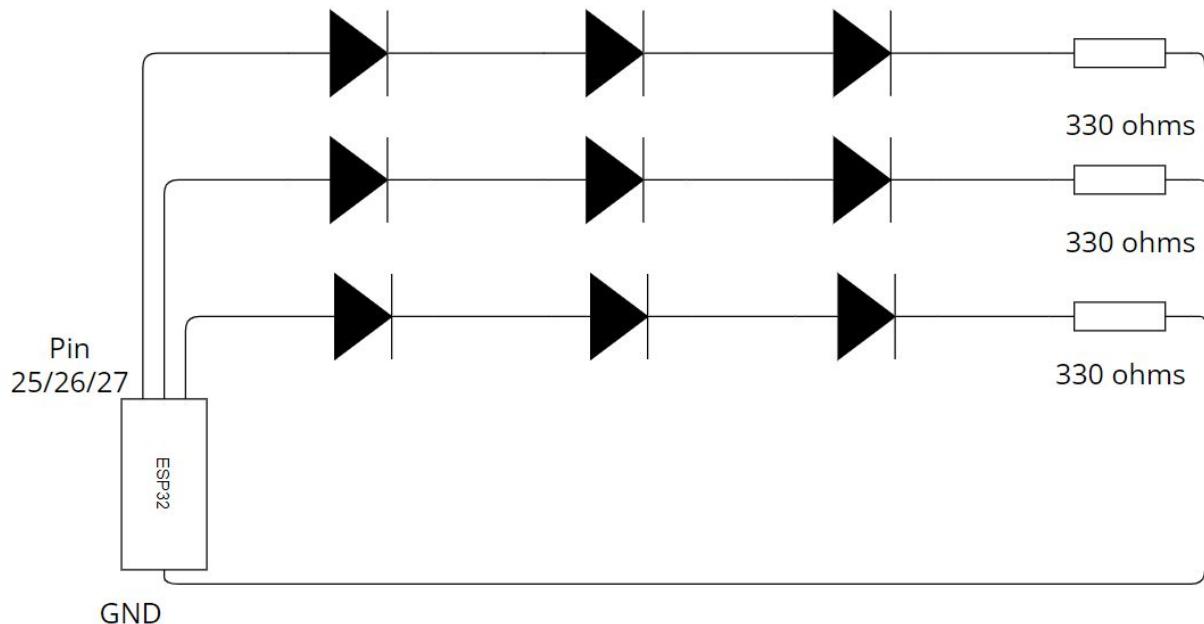
- Publish et subscribe :
- ▷ Un topic pour acquitter
 - ▷ Un topic pour écouter les ordres.

Ecran

Affichage sur l'écran du statut de la connection au Wifi + MQTT ainsi que le mode de lumière sélectionné.



IOT - Module Lumière



IOT - Capteur Temp/Humi

Objectif :

Mesurer la température et l'humidité ambiante

Communication :

Par Wifi et Mqtt avec le serveur central

Matériel :

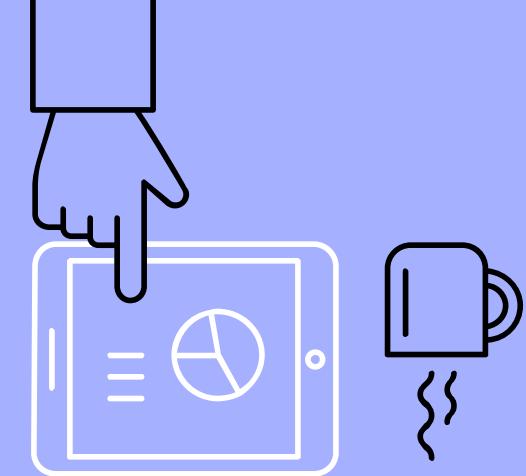
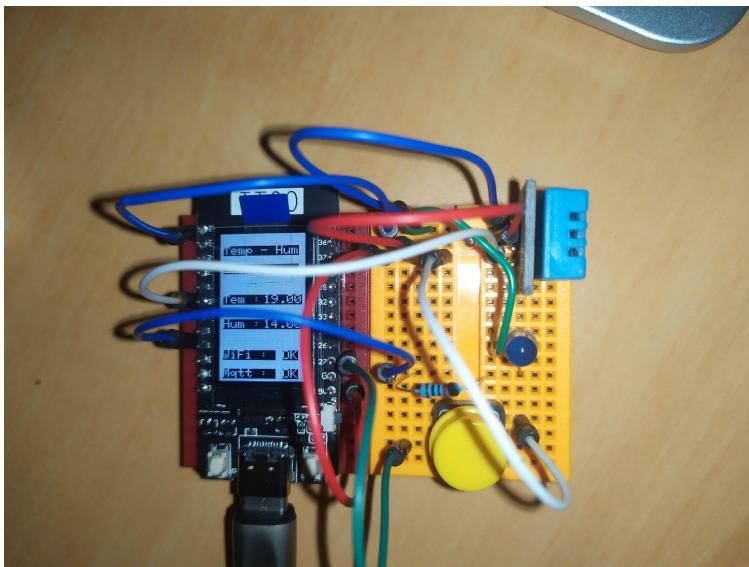
ESP32

Module DHT 11

Boutons poussoirs

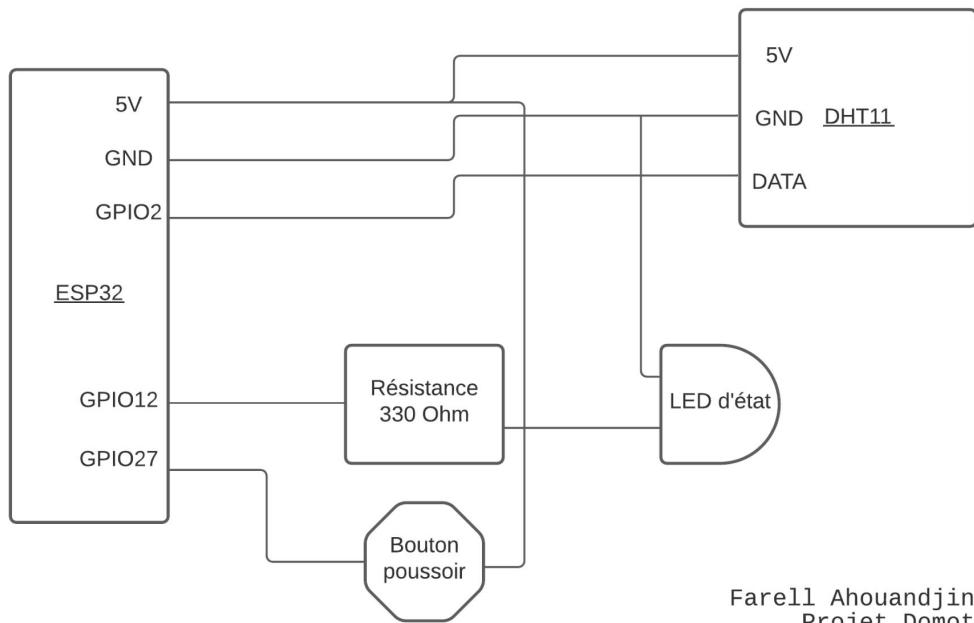
Résistance (330 Ohms)

Led

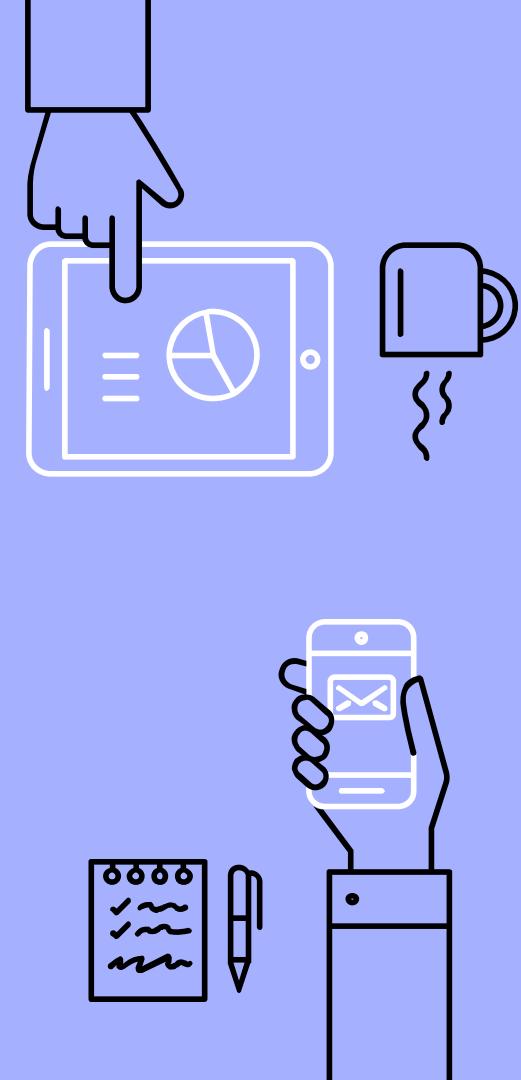


IOT - Capteur Temp/Humi

Schema du capteur
Temperature/Humidité



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IOT - Capteur de luminosité

Objectif :

Mesurer la luminosité
ambiante

Communication :

Par Wifi et MQTT avec
le serveur central

Matériel :

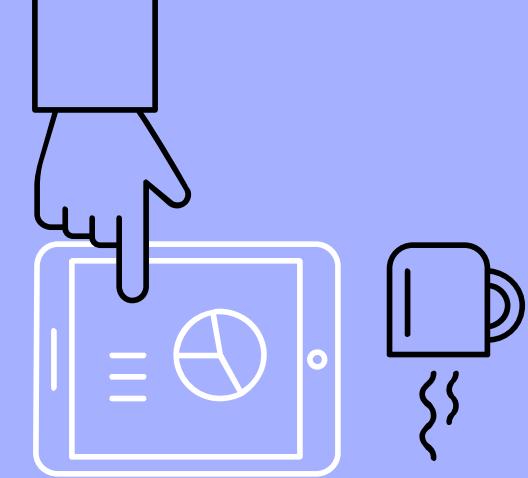
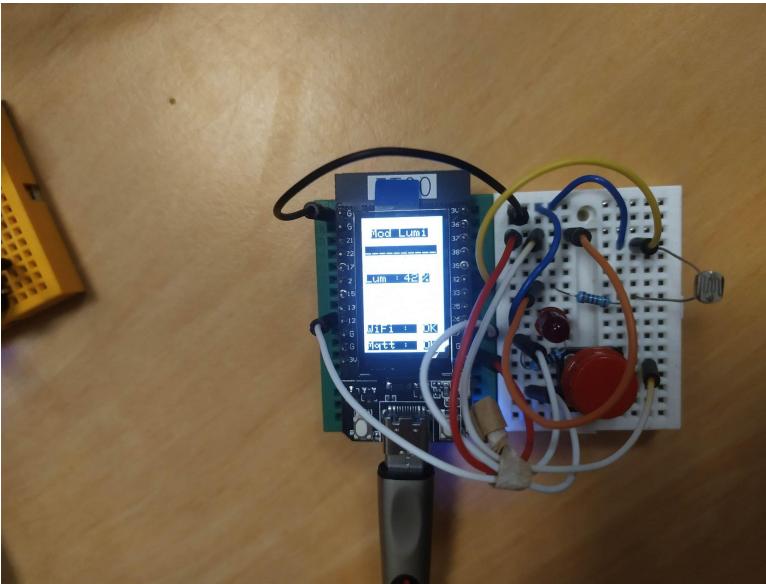
ESP32

Photorésistances

Boutons poussoirs

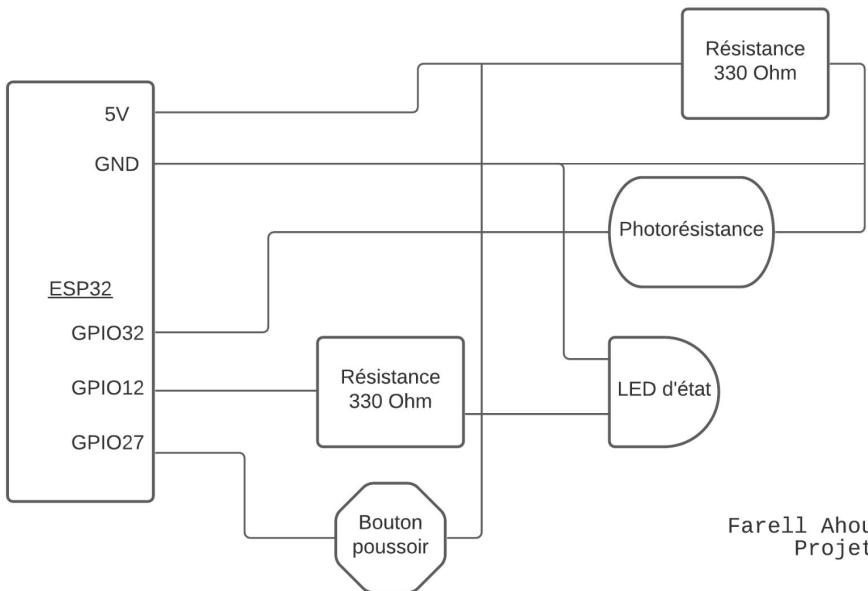
Résistance (330 Ohms)

Led

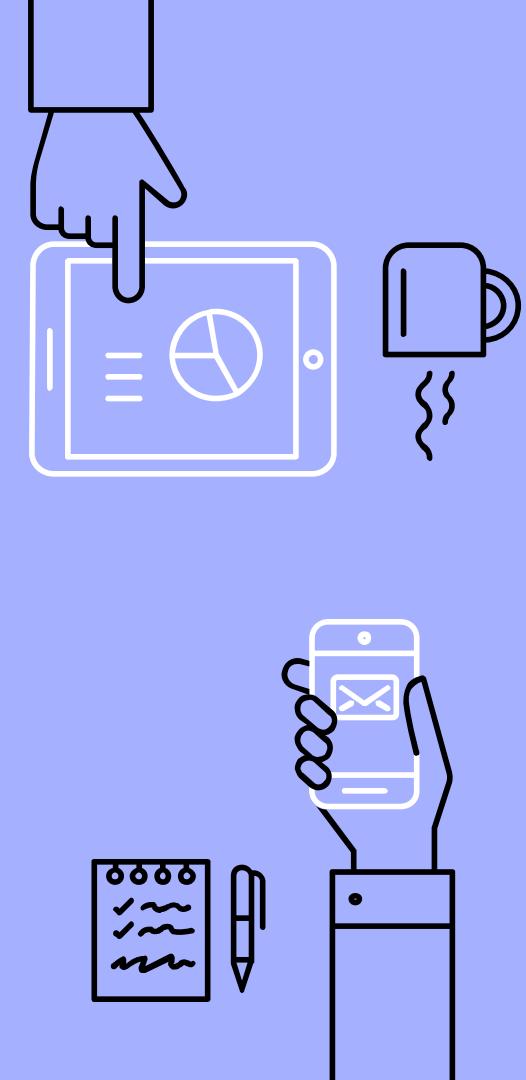


IOT - Module Luminosité

Schema du capteur de luminosité



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IOT - Module Digicode

Objectif :

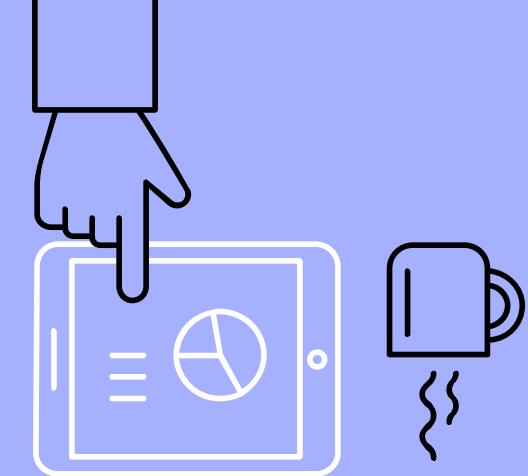
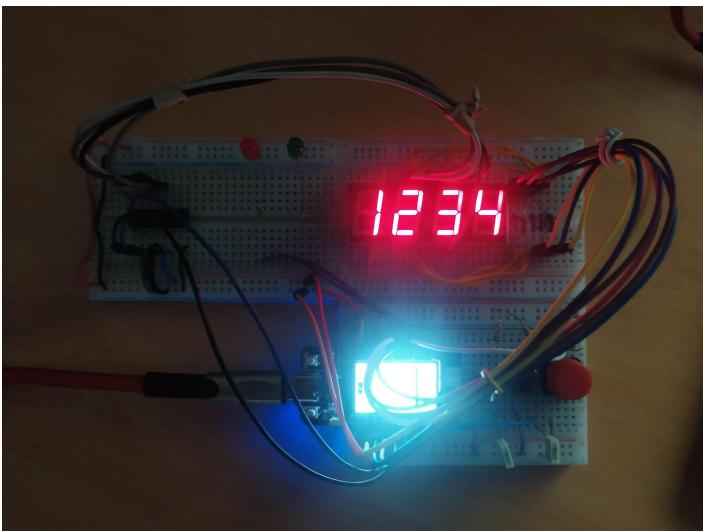
Permettre d'entrer un code à 4 chiffre avec validation

Communication :

Par Wifi et MQTT avec le serveur central
Bluetooth avec le module Verrou

Matériel :

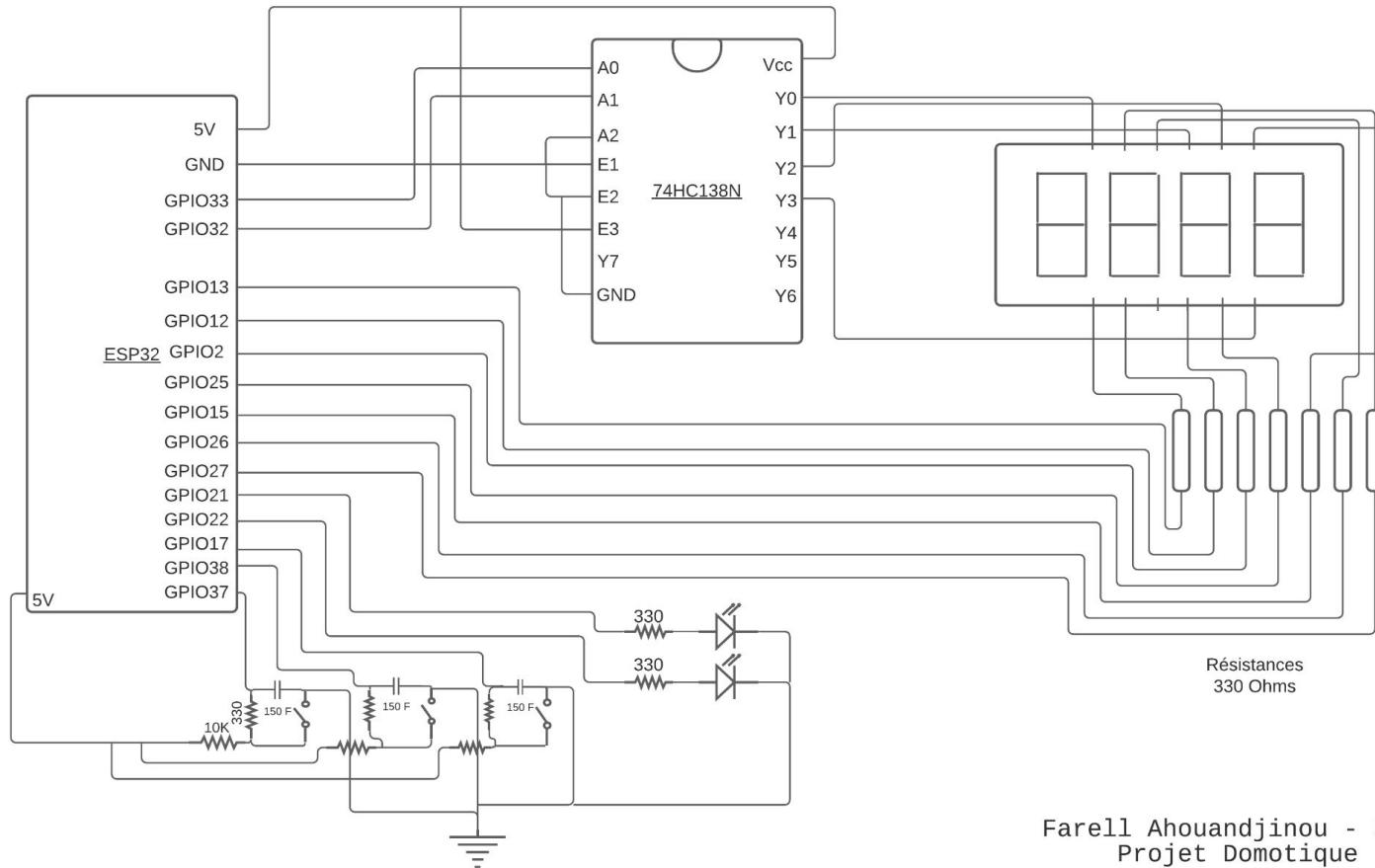
ESP32
Démultiplexeur 3 vers 8
Afficheur 4*7 Segments
Boutons poussoirs
Condensateur (150 nf)
Résistances (10k, 330 Ohms)
Led



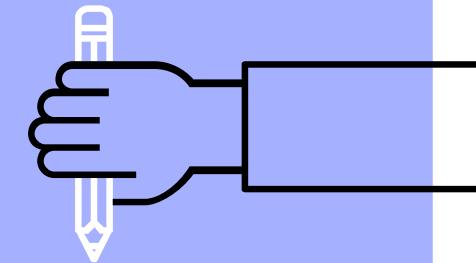
40



Schema du DigiCode

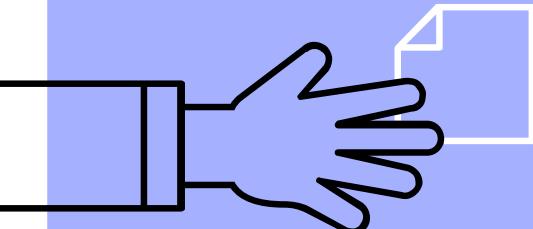


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2.

Activités réalisées



PowerBI

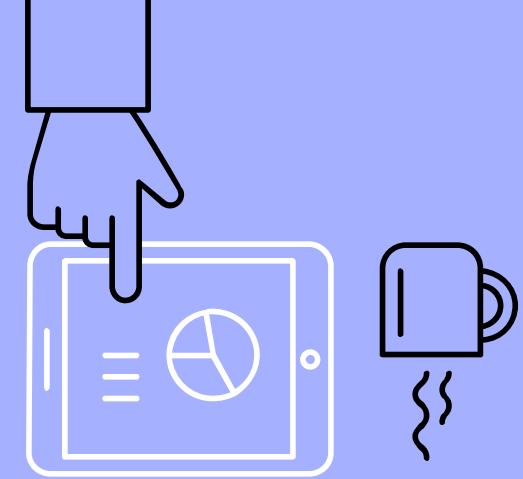
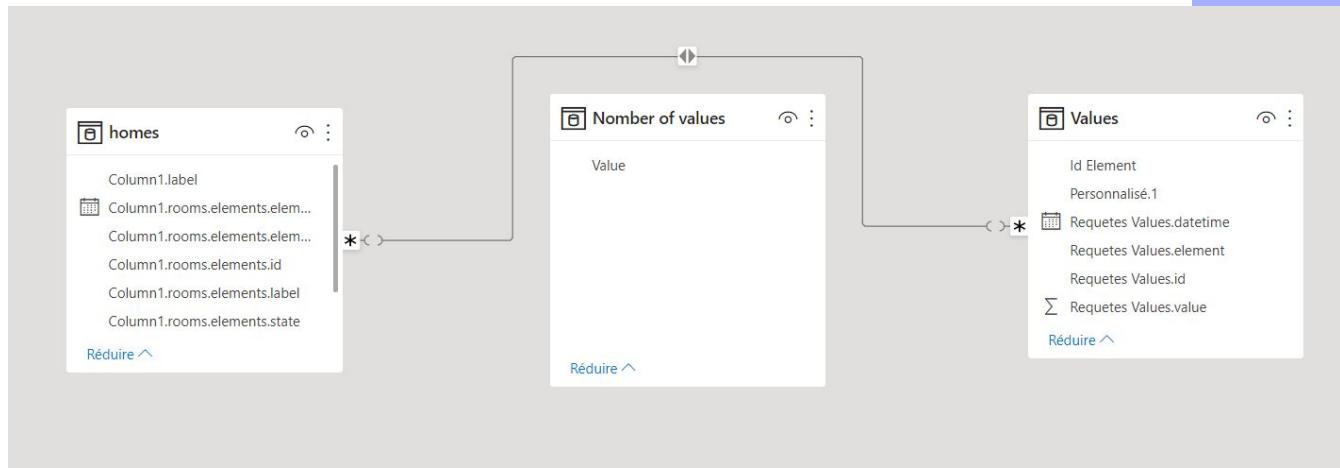
Dashboard- Power BI

Homes:

```
Json.Document(Web.Contents("https://work.lucien-brd.com/api/homes",
[Headers=[Accept="application/json"]]))
```

Values:

```
Json.Document(Web.Contents("https://work.lucien-brd.com/api/values?page=
& Text.From(Page) &","",[Headers=[Accept="application/json"]]))
```



Dashboard- Power BI

Pages 1:

Maison

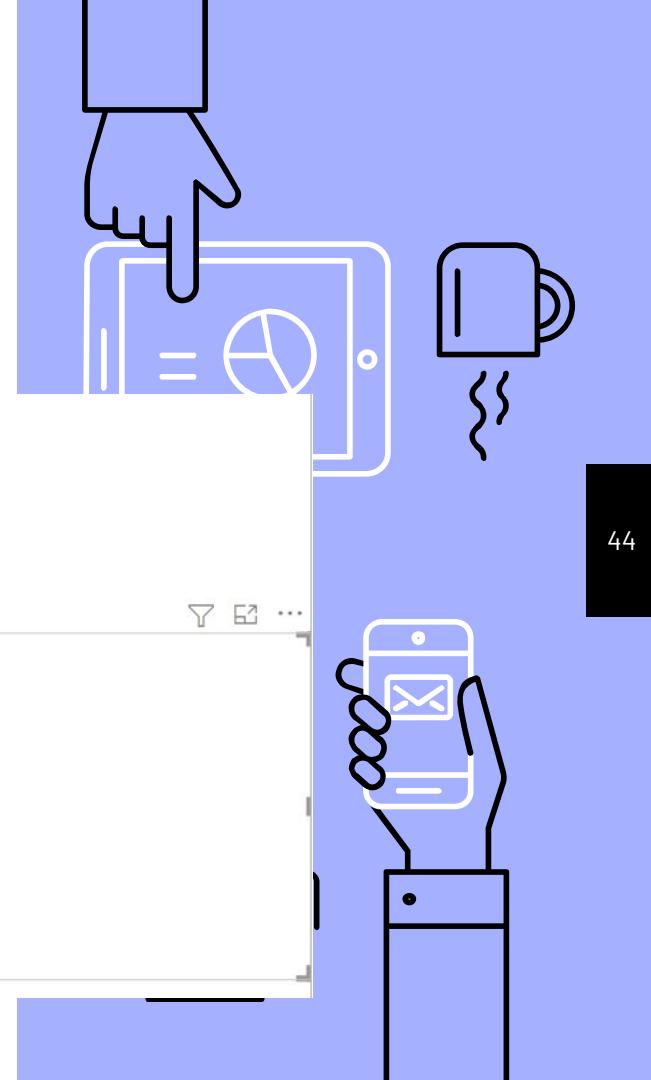
Piece

Type Element

Element

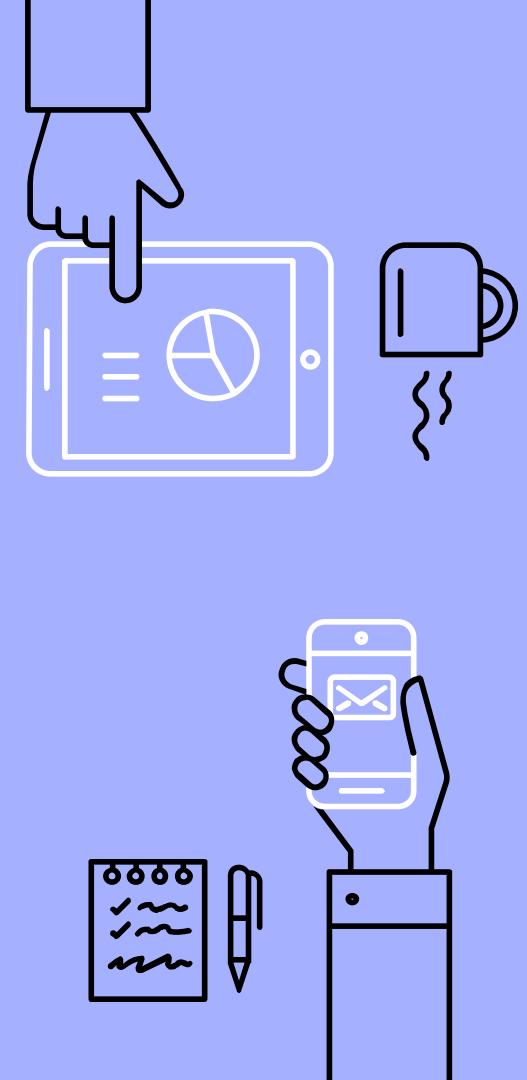
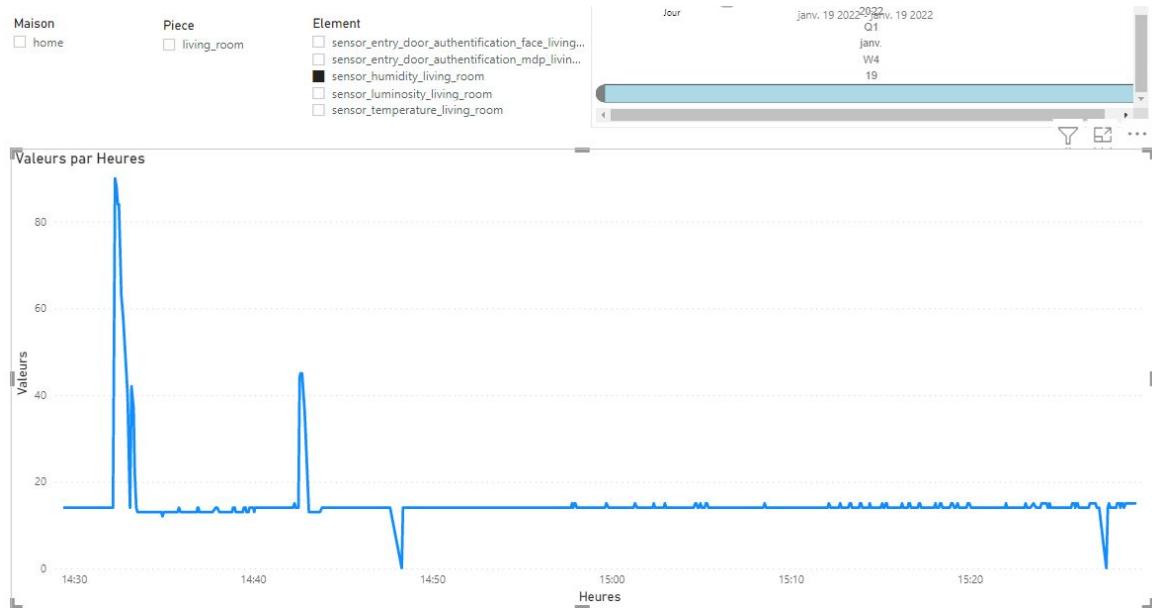
- (Vide)
- actuator_entry_door_living_room
- actuator_heating_living_room
- actuator_lum_living_room
- actuator_shutter_living_room
- actuator_vmc_living_room
- sensor_entry_door_authentication_face_living...
- sensor_entry_door_authentication_mdp_living...

Element	Date	Valeur	Column1.rooms.elements.state
actuator_entry_door_living_room			FALSE
actuator_heating_living_room			FALSE
actuator_lum_living_room			TRUE
actuator_shutter_living_room			FALSE
actuator_vmc_living_room			FALSE
sensor_entry_door_authentication_face_living_room			FALSE
sensor_entry_door_authentication_mdp_living_room			FALSE
sensor_humidity_living_room	19/01/2022 15:29:09	15.0	FALSE
sensor_luminosity_living_room	19/01/2022 15:29:11	26.0	FALSE
sensor_temperature_living_room	19/01/2022 15:29:06	21.0	FALSE

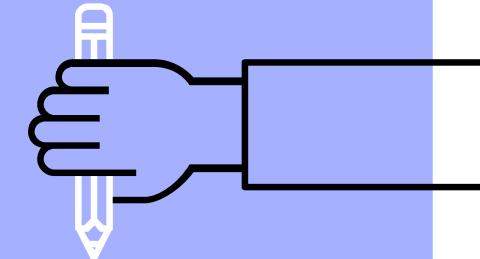
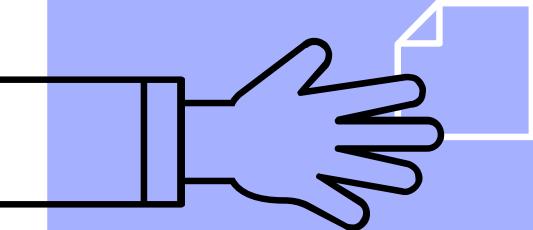


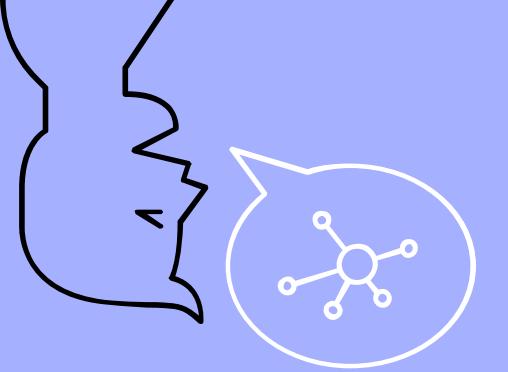
Dashboard- Power BI

Pages 2 :



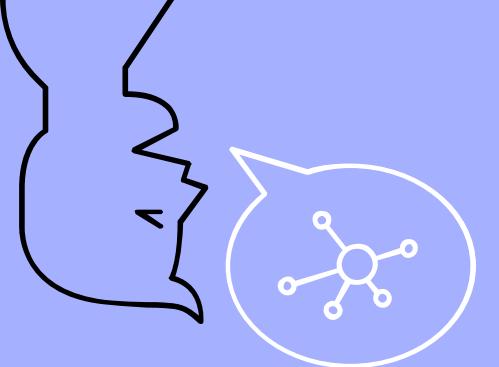
4. Conclusion





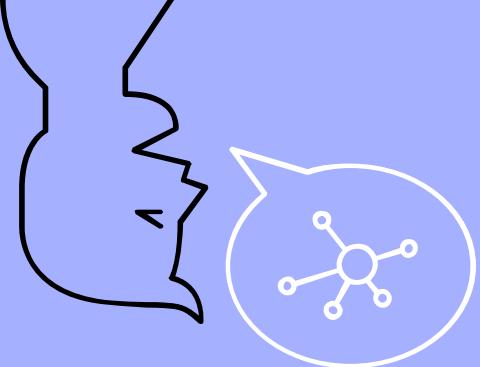
Fonctionnalités de base

- ▷ Gestion de la température de chaque pièce
Jalon 1
- ▷ Gestion de la luminosité de chaque pièce
Jalon 1
- ▷ Contrôle de l'ouverture de la porte d'entrée par détection faciale **Jalon 2**
- ▷ Consultation en temps réel de l'état des équipements connectés **Jalon 1**
- ▷ Gestion de la maison via Pepper **Jalon 1**



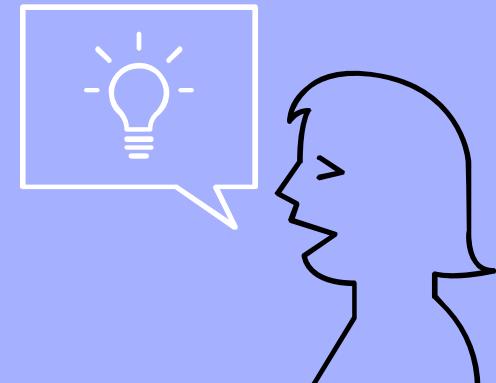
Liste des éléments de base de la pièce

- ▷ VMC Jalon 1
- ▷ Température Jalon 1
- ▷ Humidité Jalon 1
- ▷ Volet Évolution Future
- ▷ Porte Jalon 1
- ▷ Prise Évolution Future
- ▷ Luminosité Jalon 2
- ▷ Chauffage Jalon 2



Évolutions possibles

- ▷ Mode préprogrammé
 - Surveillance : détecte les mouvements dans la maison et effectue une notification **Jalon 2**
 - Fête : met de la musique et les lumières de la pièce clignotent. **Jalon 2**
- ▷ Application Android de gestion **Évolution Future**
- ▷ Dashboard de visualisation **Jalon 2**
- ▷ Intégration Google Home **Évolution Future**
- ▷ Ajout de code de vérification/confirmation pour l'ouverture de la porte d'entrée **Jalon 2**
- ▷ Cryptage des données / Sécurisation du serveur **Évolution Future**
- ▷ Contrôle des prises de la maison **Évolution Future**
- ▷ Intégration d'un capteur luminosité **Jalon 2**
- ▷ Dashboard PowerBi **Jalon 2**



Merci

Des questions?

