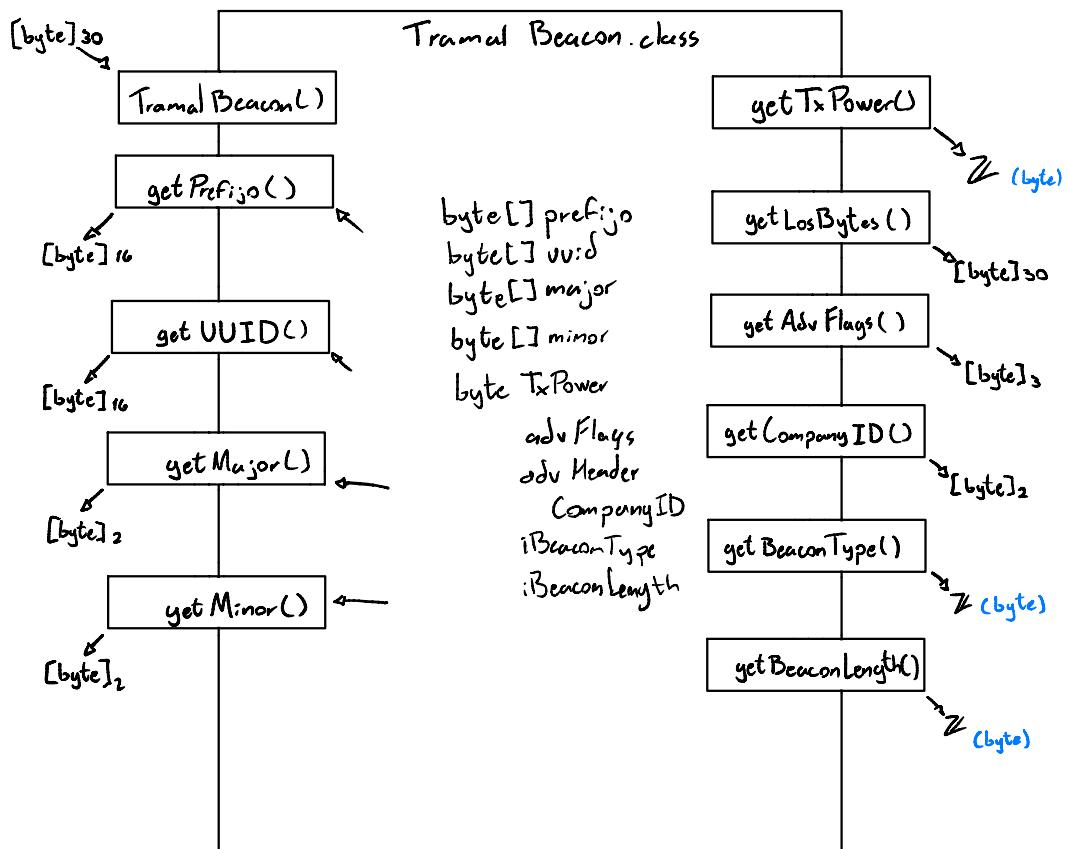


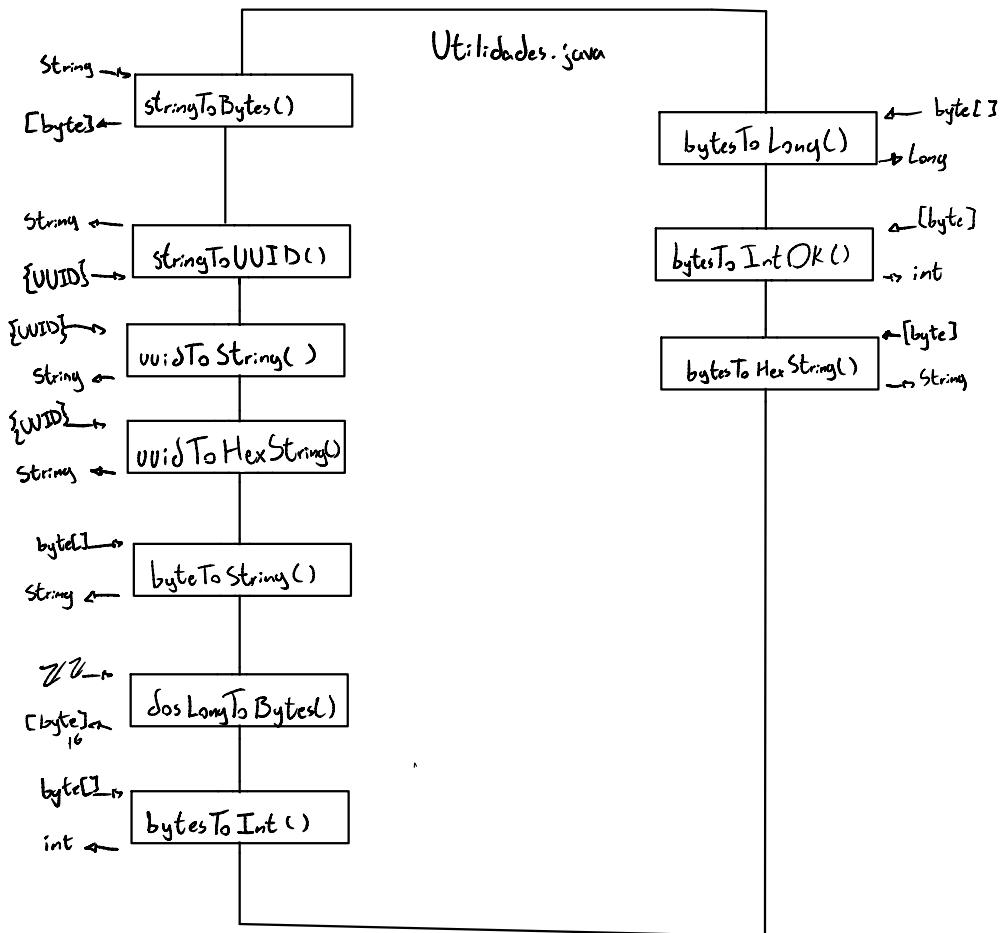
Código Android

- Clases Java
 - Main Activity
 - Trama Beacon
 - Utilidades
- Trama Beacon, Representa una trama Beacon a partir de un array de bytes. El Beacon envia su informacion en una trama asi:

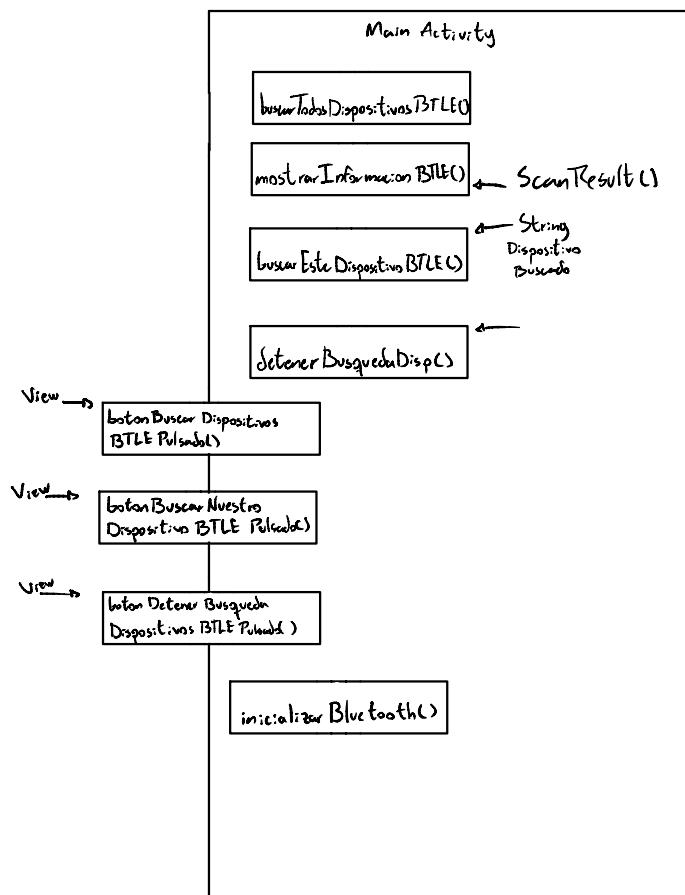
[Prefijo (9 bytes) | UUID (16 bytes) | Major (2 bytes) | Minor (2 bytes) | TxPower (1 byte)]



Utilidades

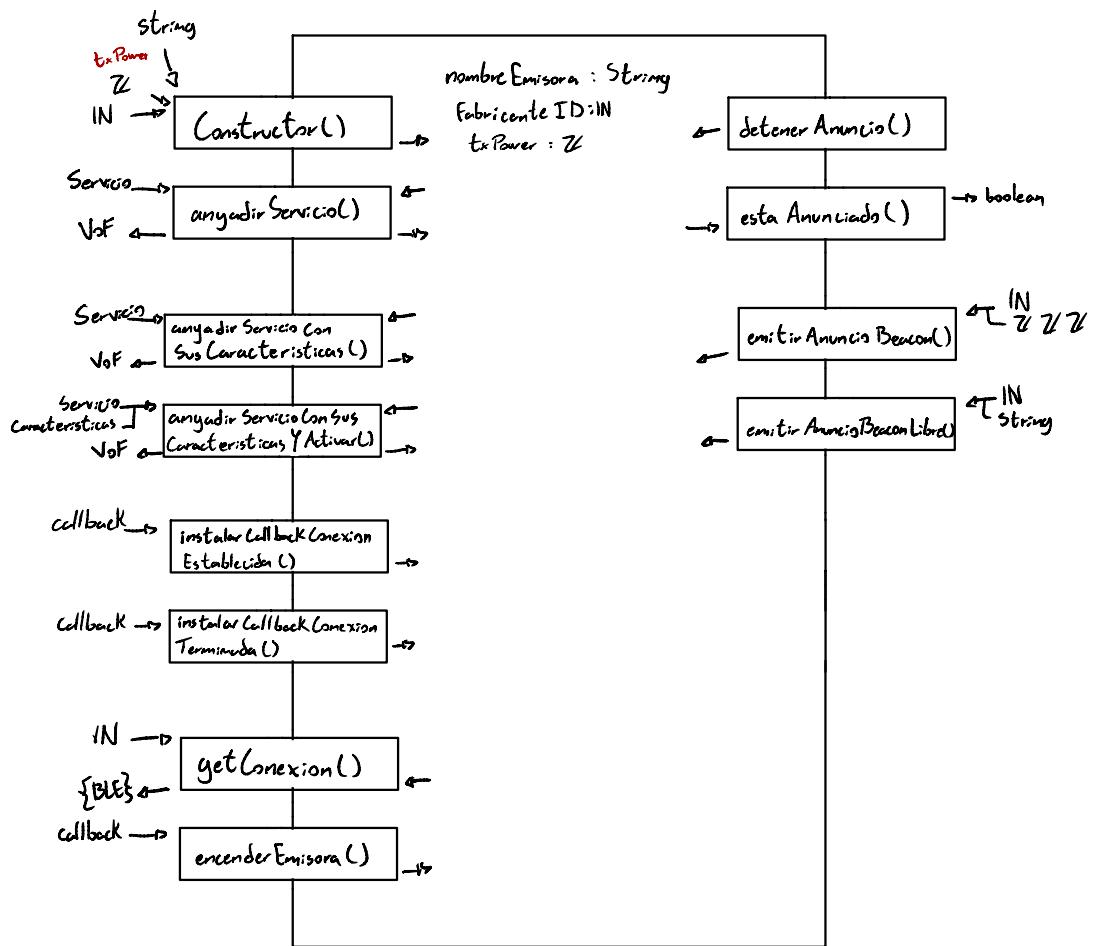


Main Activity

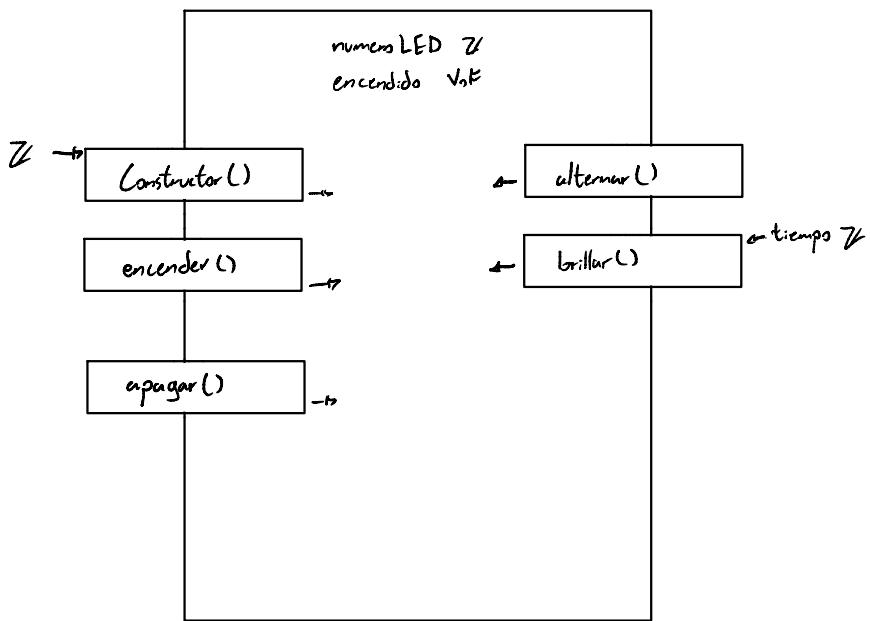


Arduino

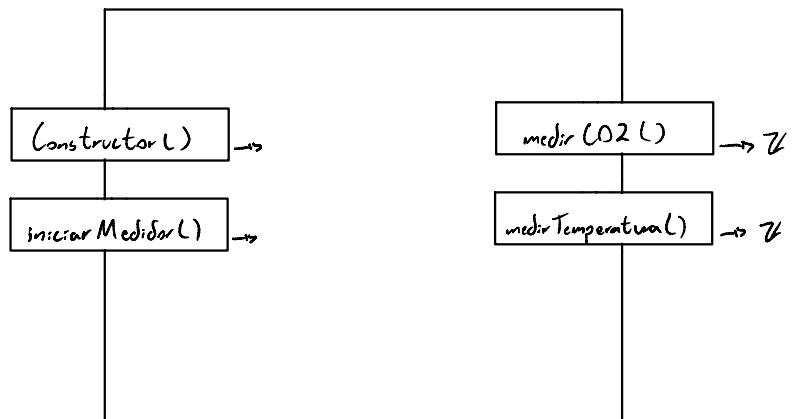
Emisora BLE



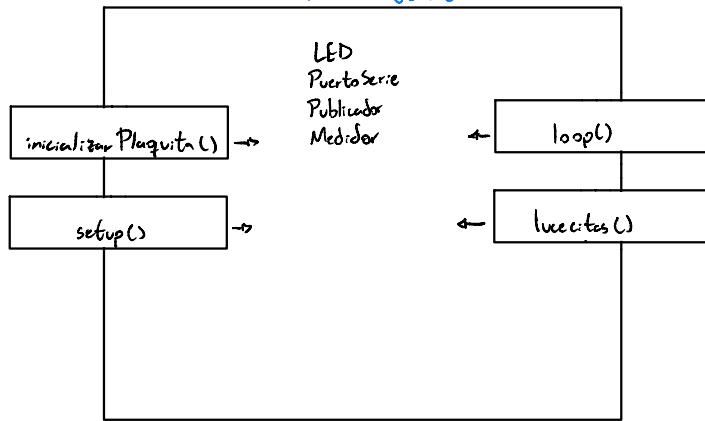
LED



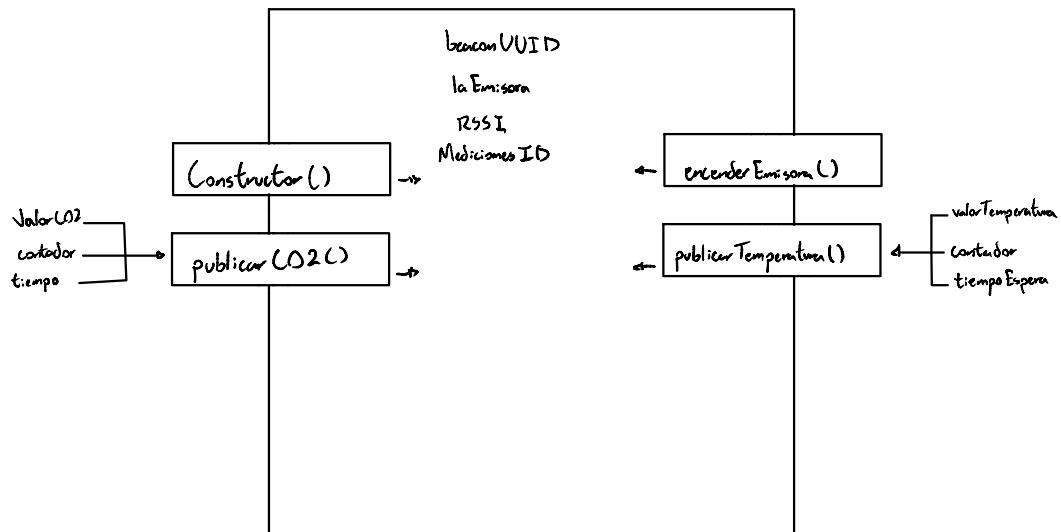
Medidor



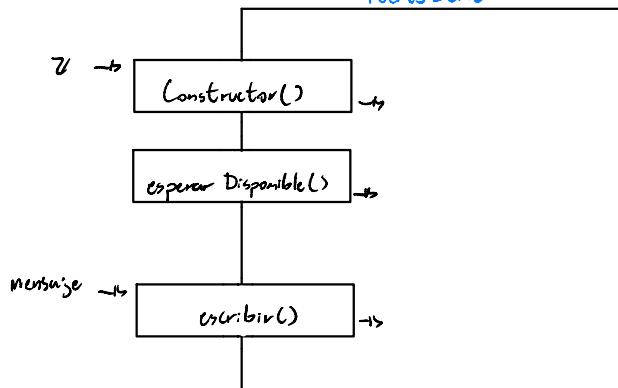
Hola Mundo Beacon

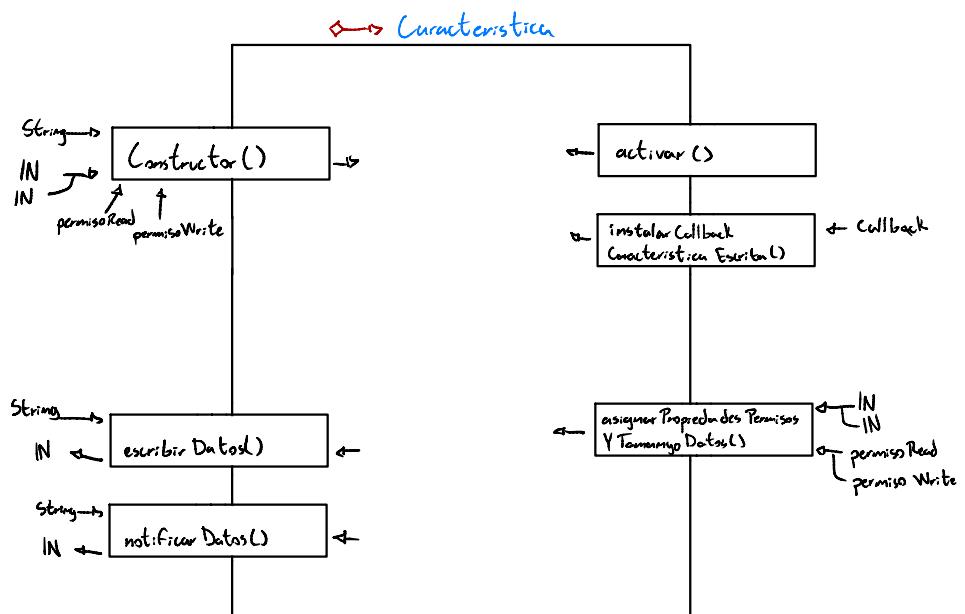
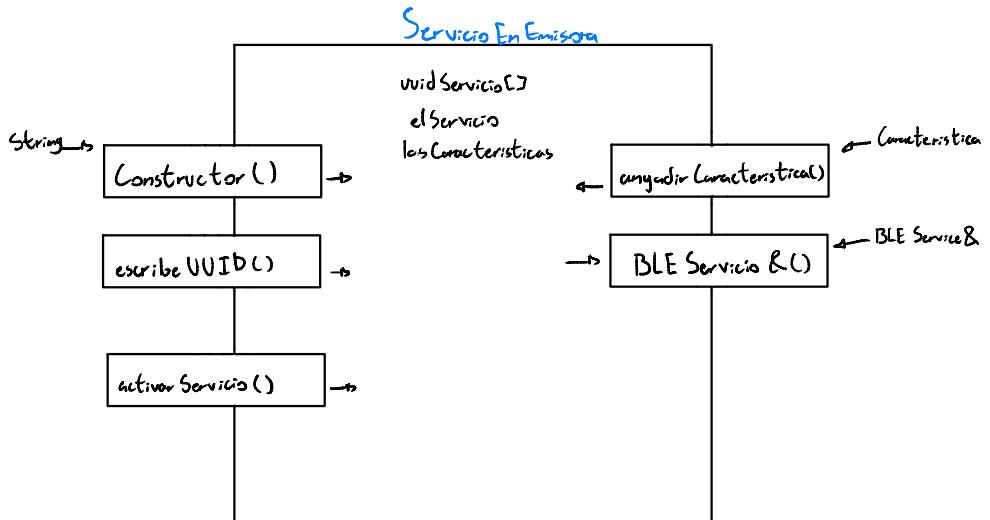


Publicador



Puerto Serie





Base de Datos

Campo	Tipo de dato	Clave	Descripción
ID	INTEGER	AutoIncrement PK	Identificador único de la fila.
codigo	TEXTO		Dato enviado por el beacon. "1234"
timestamp	DATETIME		Fecha y hora en la que se guarda el dato

- Ejemplo en SQL

```
CREATE TABLE beacons (
    id INTEGER PRIMARY KEY AUTOINCREMENT,
    codigo TEXT NOT NULL,
    timestamp DATETIME DEFAULT CURRENT_TIMESTAMP
```

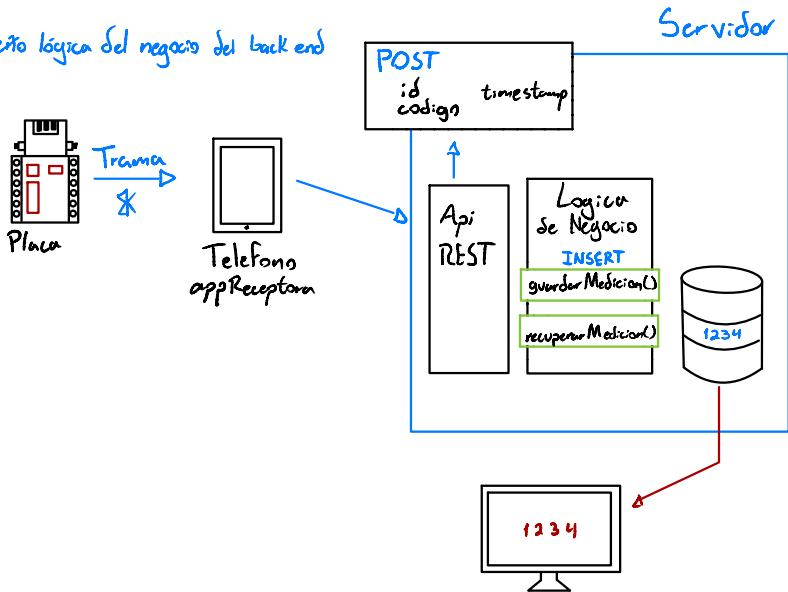
- Ejemplo de inserción de un dato

```
INSERT INTO beacons (codigo) VALUES ('1234')
```

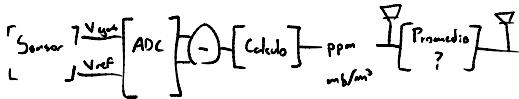
Se guardaría así:

id	codigo	timestamp
1	1234	2025-09-20 13:30:20

Diagrama lógico del negocio del back end



No conectable, no escanciable, indirecto
contador en el mayor y menor (+)



Concentración gas

$$\text{Caso } \frac{1}{m} \cdot (V_{\text{gas}} - V_{\text{gas}_0})$$

Sensor Calibration Value

$$M(V_{\text{ref}}) = \text{Sensitivity Code (mV/ppm)} \times \text{TIA Gain (mV/A)} \times 10^{-3} (\text{A}/\text{mA}) \times 10^3 (\text{V}/\text{kV})$$

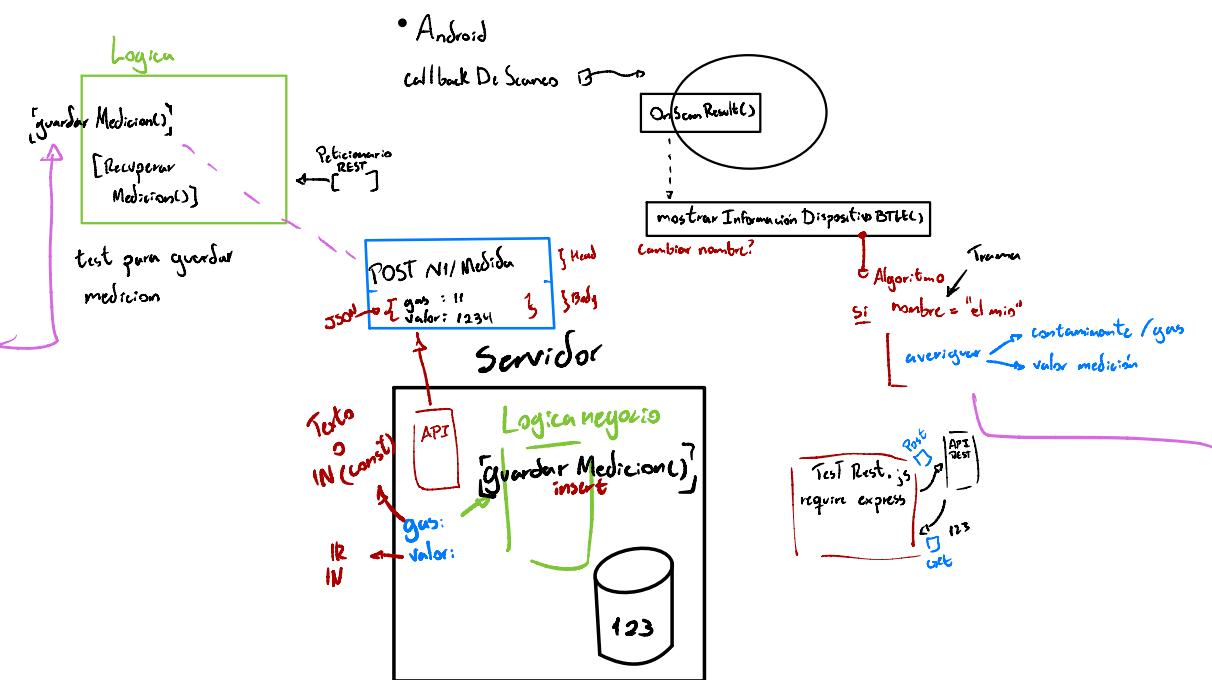
= 23.69

* formas normales y Transacciones BBDD

* Design patterns

? temp / CO₂

• byte más del mayor pone la ID de la medida



26/05

1, 2, 3 \rightarrow ent analógicas

6 \rightarrow masa

8 \rightarrow 3.3V

Software

1) Medir $V_{gas}, V_{ref} \rightarrow \frac{(V_{gas} - V_{ref})}{M} \rightarrow 5 \times 499 \times 10^{-6}$

\downarrow "44,26"

2) Promediar? Precision \rightarrow Medida de error aleatorio

$$\sqrt{\frac{E_a}{n}}$$

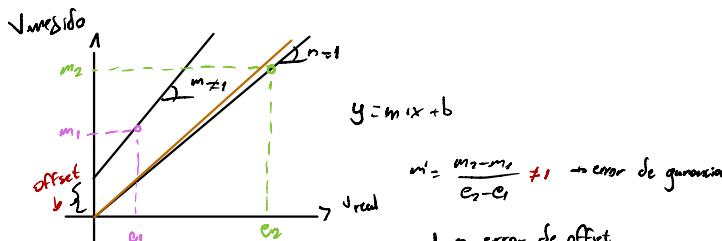
3) Enviar al móvil brechas

\rightarrow Major \rightarrow ppm
 \rightarrow Minor \rightarrow Temp

$B_{0,1} > 180 \mu\text{g/m}^3$ $1 \text{ ppm} = 19994 \mu\text{g/m}^3$

19994 ppm
 $180 \mu\text{g/m}^3$

24/10!!



$$\frac{(m_2 - b)}{m'} \leftarrow \text{Corrección}$$

