Database	SQL <-->	Server (HUB) (IP Address)	WIFI <-->	Router (SSID, Password)	WIFI <-->	ESP8266	UART <-->	STM32

```
                                                                    Update memory      ←──   Update connection
                                                                                             info (if needed)
                                                                    ACK/NACK           ──→
```

```
                                              Return connection    ←──  Connect to network  ←──   Connect()
                                              status
                                                                   ──→   ACK/NACK        ──→
```

```
Return query result   ←──  Query database         Passthrough to IP address    Send GET request  ←──   if connected:
(table 1)                  Find item by device   ←──────────────────────────    to server              SEND request

Return query result   ←──  Query database
(table 2)                  Find config by item

                           Parse results          ──────────────────────────→   Send results      ──→   Update memory
                           Return item info                                      (or NACK on fail)
```

```
                                                                    Disconnect from    ←──   Disconnect
                                                                    network
                                                                    ACK/NACK           ──→
```

GET ITEM INFO
from server database

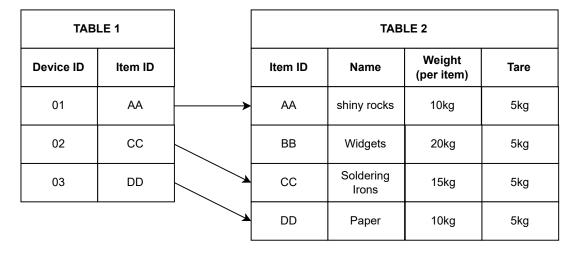| Table 1:
Link device ID
to item ID | Table 2:
Link Item ID
to item info
(name, weight, tare) | Table 3:
Link Device ID to
item stock |

| Database | SQL
<--> | Server (HUB)
(IP Address) | WIFI
<--> | Router
(SSID, Password) | WIFI
<--> | ESP8266 | UART
<--> | STM32 |

Calculate current stock by weight

Update memory — ACK/NACK ← Update connection info (if needed)

Update memory — ACK/NACK ← Update stock info on ESP8266

Return connection status ← Connect to network — ACK/NACK ← Connect()

Update table (table 3) & send confirmation ← Query database ← Send POST request to server ← if connected: Send request

Return success / fail → Return success/fail — ACK/NACK → Update status — Retry if necessary

Disconnect from network — ACK/NACK ← Disconnect

UPDATE STOCK

Triggered on timer by STM32

Table 1: Link device ID to item ID

TABLE 1	
Device ID	**Item ID**
01	AA
02	CC
03	DD

Table 2: Link Item ID to item info (name, weight, tare)

TABLE 2			
Item ID	**Name**	**Weight (per item)**	**Tare**
AA	shiny rocks	10kg	5kg
BB	Widgets	20kg	5kg
CC	Soldering Irons	15kg	5kg
DD	Paper	10kg	5kg

Table 3: Link Device ID to item stock

TABLE 3	
Device ID	**Stock**
01	11
02	42
03	28

Let's say that Device 2's configuration is updated in the database (i.e. we put a new item on it)

In Table 1, the row for device 02 (shown in green) gets updated from CC to BB.

The next time Device 02 checks its configuration, the server will respond with the info for Item BB (in the blue row).

TABLE 1	
Device ID	**Item ID**
01	AA
02	BB
03	DD

TABLE 2			
Item ID	**Name**	**Weight (per item)**	**Tare**
AA	shiny rocks	10kg	5kg
BB	Widgets	20kg	5kg
CC	Soldering Irons	15kg	5kg
DD	Paper	10kg	5kg

Even though CC isn't in stock anymore, it's still in Table 2 for the next time we stock it.