# QR Code Handling
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Main Idea

The QR code Handling is a big part of the project. The way is work is the following. The ESP32-CAM scan the QR Code present on the box, send the id number of the box to the computer which has a .csv file with all the data that corresponds to the box, then send the placement of the box to the ESP8266 that can after move appropriately given the information that was in the .csv file. The ESP8266 is also responsible for telling the ESP32-CAM to start scanning QR code.
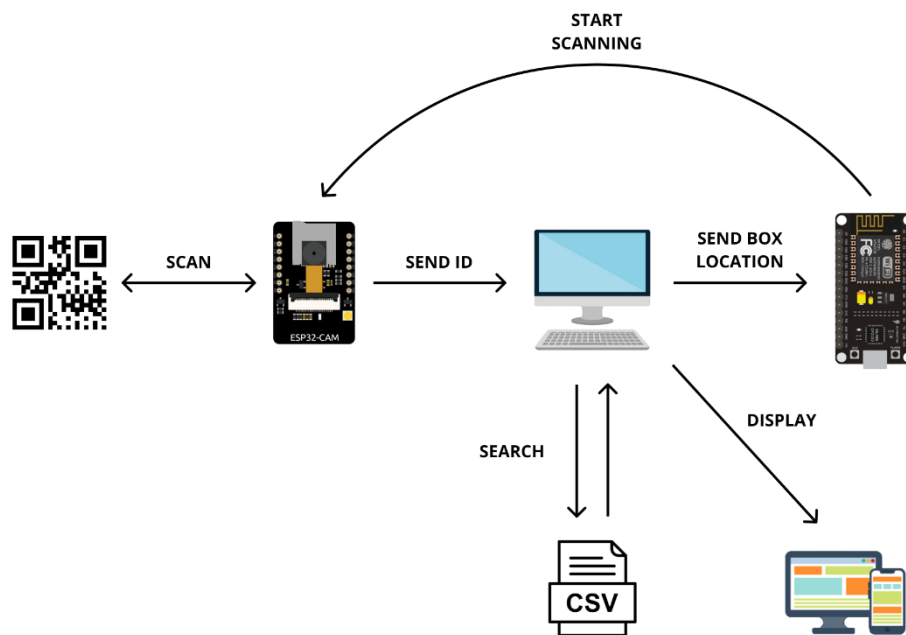
Implementation

There is 3 files : QR_CODE_CSV_2.ino, data.csv, server.js

Arduino File

In the Arduino file There is multiple section.

The first section is the configuration of the server of the ESP32, the connection to the server of the computer, the initialisation of camera and the handling of HTTP request coming from the ESP8266.

The second one is the handling of the QR code scan. In this section the scanning will begin only if the ESP8266 want a scan. If so it will search for a QR code and if it finds one, it send the id found by an HTTP request to the server running on the computer. If there is no error a flash will be done to have a visual confirmation that the id was correctly sent.

The third part is where the server, the client, the camera are all setup correctly to handle all situation.

CSV File

This file contains a table of 3 columns : id, type and description. The id is used to know what box it is and where it is going, the type and the description are for the display on the webpage to know what is inside.

JavaScript File

This is where the local server on the computer is setup. When it received an http request with the id, it will scan each row of the csv file to get all the information needed to send to ESP8266

Documentation

All my research are in the folder Documentation. This include previous version of the code, algorithm test for QR code and so on.

Problems encountered

The main problem that I have encountered is the scanning of the QR Code. I spent a lot of time finding and understanding the libraries for scanning. There were many of them so I have to tried many to find the best. In this project we wanted to scan quick, also the main question was : "What do I put in my QR Code ?". At first I tried to put a JSON text but the camera detect it very slowly so I tried to find some compression algorithms like "shoco" which compress little string but not efficient. Finally I found a way to have only a little information on the QR, an id, and all the rest on a csv file on the computer. But to do this I have to learn JavaScript and how to create a server, with Node in my case.

Another problem was the voltage of the ESP32-CAM. This one randomly give an infinite loop of error misunderstanding. At first I was thinking it was my code, so I spent few days to recode all. After a deep search I found that this ESP32-CAM needs 5V and not 3V when it used a lot of resources, like QR Code scanning. But I was using my ESP8266 to send, and decode code so it was relies with the 3V of the ESP8266.

I wrote these line for you to know where I spent my time and to help others students in the future to not spending weeks and weeks to debug.