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IOT-Barcode checker

Project report

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1. **Overview**

In collaboration with Bnai Zion Medical Center, we aim to address a common issue faced in hospital laboratories: the mismanagement of patient samples.

When samples are taken from patients, they are labeled with barcode stickers containing all relevant patient information (most commonly name and ID).

Upon arrival at the lab, these samples are checked against the patient's details in the computer system. However, problems arise when multiple samples from the same or different patients arrive simultaneously. Manual handling of the samples can lead to confusion and mix-ups. It is crucial to verify at every stage that the samples belong to the correct patient and are intended for the designated laboratory.

* 1. **Objective**

The goal of this project is to develop a compact and portable device that ensures all samples have barcodes that match the patient's name or ID. The device will feature a 2D barcode scanner capable of reading the barcodes on the samples. It will display on its screen and via sound whether the barcode matches the patient’s name or ID on the list and confirm if all samples are from the same patient. Additionally, Additionally, the device will connect to a computer via Wi-Fi to display a list of the scanning results.

# **2.inroduction**

For the objectives this project aims to achieve, we used a list of components to help with our design.

## **2.1 components**

### **2.1.1 ESP-32**

ESP32 is a series of lowcost, low-power system on a chip microcontrollers with integrated Wi-Fi and dual-mode Bluetooth.

Cost: 1$

### **2.1.2 Disply ILI9341**

3.2-inch display that is used to display

important information about the barcode matching.

Resolution : 320X240 pixels

Comm. Protocol : SPI

Cost: 6.5$

### A black square with blue and white lights Description automatically generated**2.1.3 Barcode scanner Grow Gm810**

5.6 cm wide barcode scanner, uses UART protocol.

Sacans the barcode and provide us with important information about it.

Cost: 18$

The overall cost of the components and sensor for the device sums up to about 25.5$ US Dollars, in addition to other components we will talk about and manufacturing cost, we can sum up to about 40$ US Dollars which is a noticeably a low price in comparison to other devices in the market.

## **2.2 Development Environments**

### **2.2.1 Arduino IDE**

Used to write and upload the code to ESP-32 control board.

### A close up of a logo Description automatically generated **2.2.1 OrCad**

Used for designing the electric schematic and it’s blocks.

### **2.2.1 GrebV**

Used for viewing the Greber files.