TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES
TAGUIG CAMPUS

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Title: Arduino-Based Car Parking System

RATING

Submitted By: **Date:**

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Submitted To:

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Materials:

-Arduino ESP 32
-Two IR sensors
-Servo motor
-Jumper wires and a breadboard
-16×2 LCD and an I2C module
-USB cable for uploading the code
-RFID reader
- Accelerometer Sensors
-Speaker
-Resistors
-LED lights

Inputs:
1.Accelerometer Sensors: These sensors can detect movements, potentially indicating if a vehicle is being tampered with or if an unauthorized attempt is made to move it.
2. IR sensors to monitor the entry and exit of vehicles.
3.RFID reader for user authentication and access control.
4. Ultrasonic Sensors provides a non-contact and accurate measurement of distance, speed, presence, or other parameters in various applications.

Outputs:
1. LCD display for showing available parking spots and user instructions.
2. Buzzer indicator of entering and exiting the parking lot.
3. Servo motors for automated barrier control at entry and exit points.
4. LED Lights provide feedback and status indication to enhance user interaction and aesthetic appeal. Outputs red if the vehicle is over speeding otherwise blue.

Description:
- Our Arduino-Based Car Parking System uses accelerometer sensors to detect unauthorized movements or tampering attempts on vehicles within the facility.
- IR sensors are deployed to monitor the entry and exit of vehicles, enabling precise control of traffic flow and efficient utilization of parking spaces.
- User authentication is managed through an RFID reader.
- User payment is managed through an RFID reader.

- An LCD display provides real-time information on available parking spots and clear instructions for drivers, enhancing the overall user experience.
- Audible indicators through a buzzer system offer instant notifications of vehicle movements, promoting safety and awareness within the parking facility.
- Automated barrier control is facilitated by servo motors, ensuring effortless operation at entry and exit points for authorized vehicles.
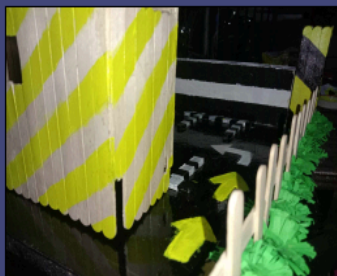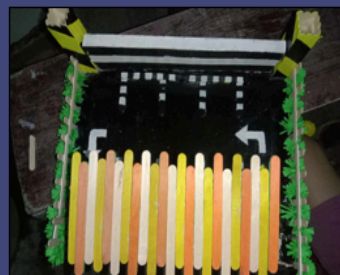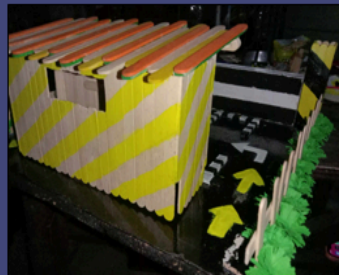
The price range for parking spaces can be customized based on factors such as location, demand, and duration of parking. Bluetooth connectivity enables real-time information between the parking system and users' mobile device, and relevant notifications. Notification as hours interval between entry and exiting and how much is the payment of parking. Wi-Fi connectivity, connects the Arduino board to a Wi-Fi network using the provided SSID and password. Once connected, it displays the local IP address to the serial LCD.
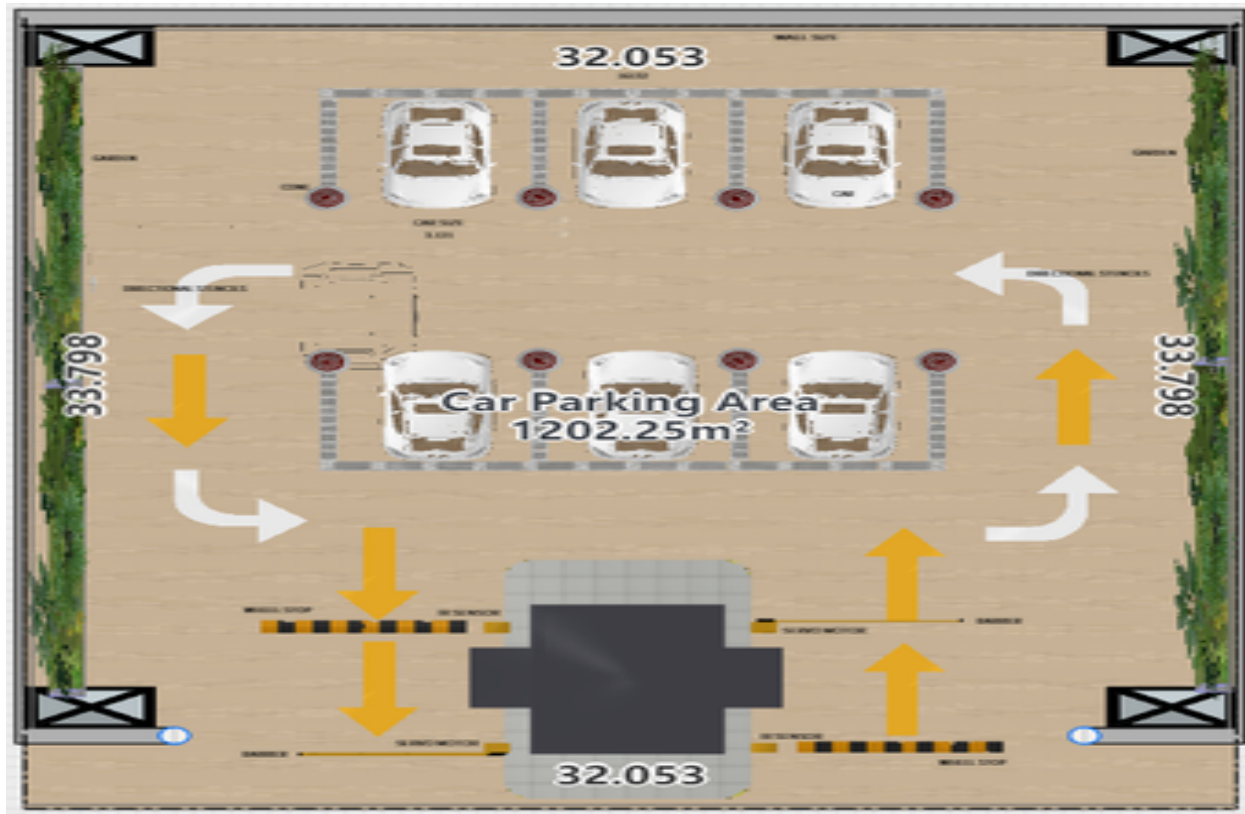
Price range:
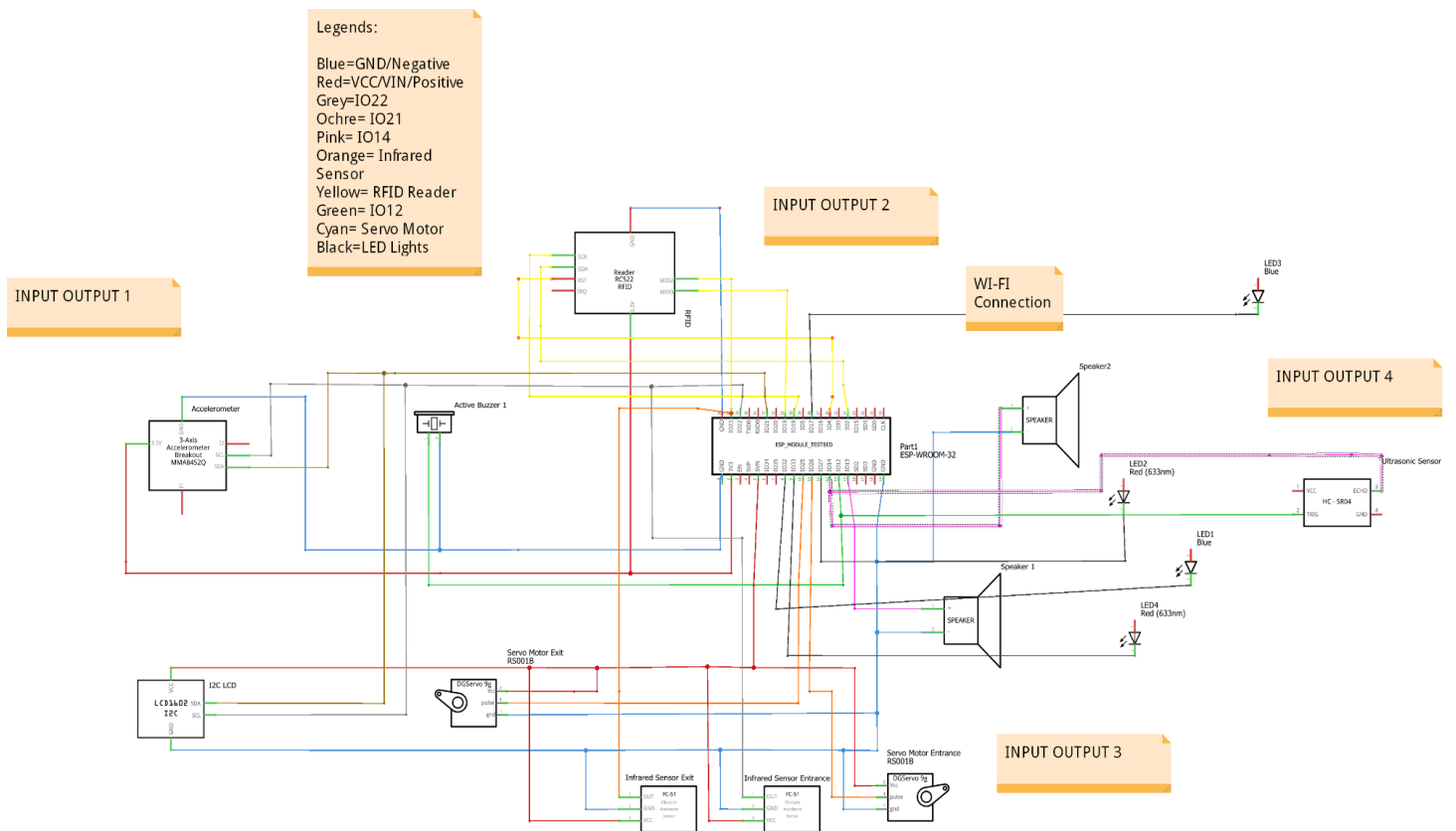1st 3 hours- Php 50.00
Exceeding hour - Add Php 20.00

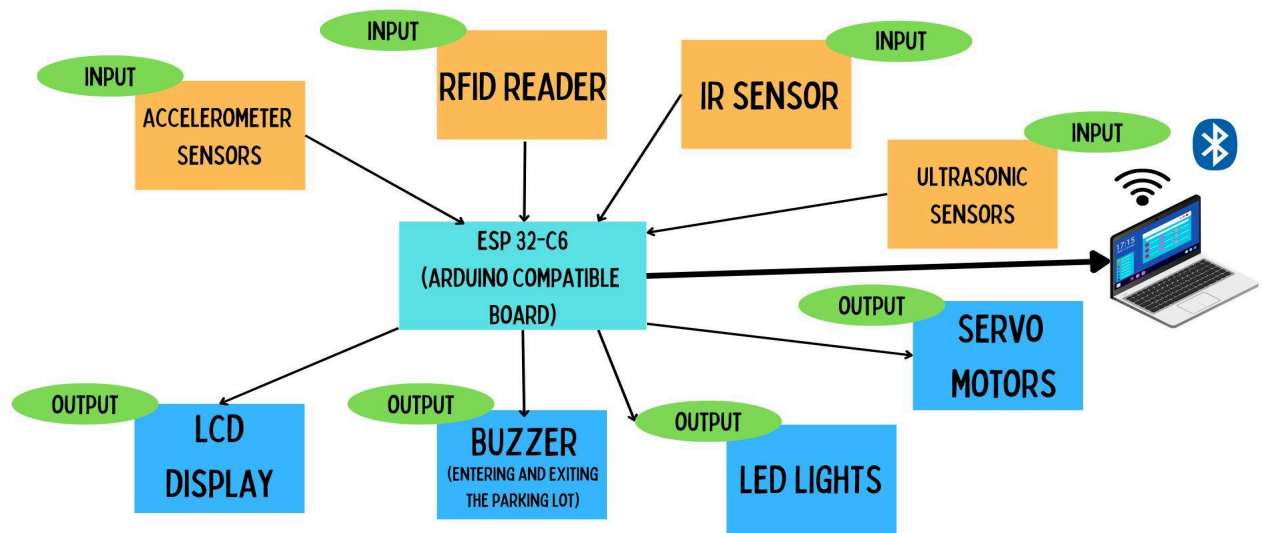

PROTOTYPE AND PROJECT DOCUMENTATION

BLUEPRINT

WIRING DIAGRAM

Legends:

Blue=GND/Negative
Red=VCC/VIN/Positive
Grey=IO22
Ochre= IO21
Pink= IO14
Orange= Infrared Sensor
Yellow= RFID Reader
Green= IO12
Cyan= Servo Motor
Black=LED Lights

INPUT OUTPUT 1

INPUT OUTPUT 2

INPUT OUTPUT 3

INPUT OUTPUT 4

WI-FI Connection

BLOCK DIAGRAM

REFERENCE:
https://techatronic.com/automatic-car-parking-system-project-using-arduino/