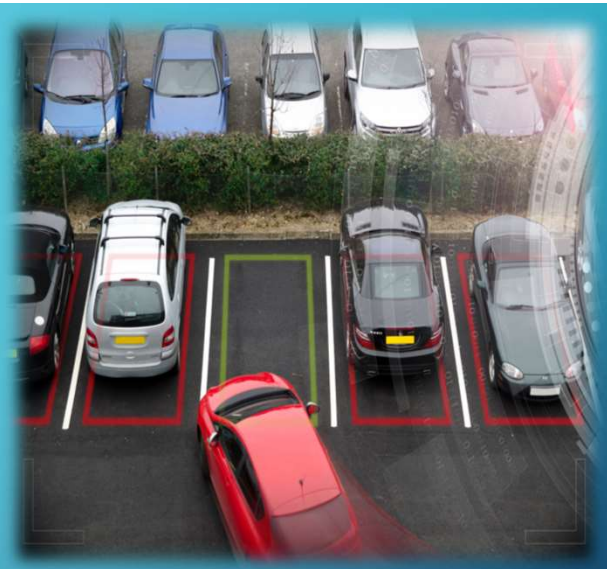
SMART PARKING



GROUP MEMBERS

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Definition

- The project involves integrating IoT sensors into public transportation vehicles to monitor ridership, track locations, and predict arrival times. The goal is to provide real-time transit information to the public through a public platform, enhancing the efficiency and quality of public transportation services. This project includes defining objectives, designing the IoT sensor system, developing the real-time transit information platform, and integrating them using IoT technology and Python.

OBJECTIVES:

1. **Real-time Parking Space Monitoring:**

Develop a system that monitors parking spaces in real-time using IoT sensors to detect occupancy and vacancy accurately.

1. **Mobile App Integration:**

Create a user-friendly mobile application that allows drivers to access real-time parking availability information, make reservations, and navigate to available parking spots conveniently.

1. **Efficient Parking Guidance:**

Implement a smart parking guidance system that directs drivers to available parking spaces through clear signage, mobile app notifications, and guidance within the parking facility.

IOT SENSOR DESIGNS:

1.Sensor Requirements:

- Determine the specific requirements for your IoT sensors, including the type of sensor (ultrasonic, infrared, magnetic) and the level of accuracy needed.

2. Sensor Placement:

- Identify optimal locations for sensor placement within parking spaces. Consider factors such as visibility, protection from weather, and accessibility for maintenance.

3. Power Source:

- Decide on the power source for the sensors. Options include battery-powered sensors, solar-powered sensors, or wired sensors with a reliable power supply.

4. Connectivity:

- Choose the communication technology for the sensors. Common options include Wi-Fi, Bluetooth, LoRaWAN, or cellular connectivity.

5. Sensor Calibration:

- Calibrate the sensors to accurately detect the presence or absence of vehicles in parking spaces. Test the sensors to ensure they provide reliable data.

6. Data Transmission:

- Establish a data transmission mechanism from the sensors to a central control system or a cloud-based platform. Ensure that data is transmitted securely and in real-time.

REAL-TIME TRANSIT INFORMATION PLATFORM:

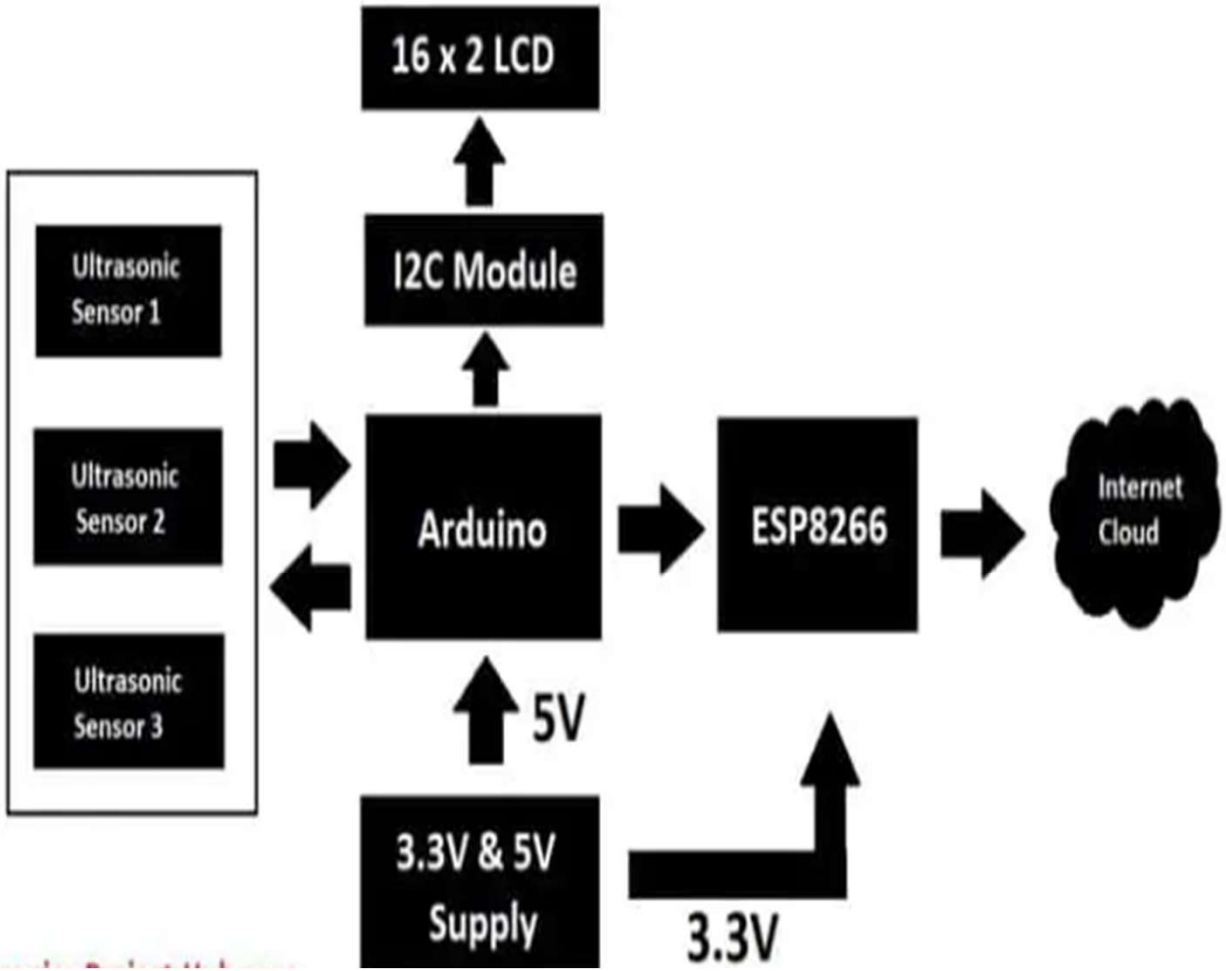
Wireframing and Prototyping:

- Begin with wireframing and prototyping to create a basic layout and structure of the app. Use tools like tinkercat,wokewi

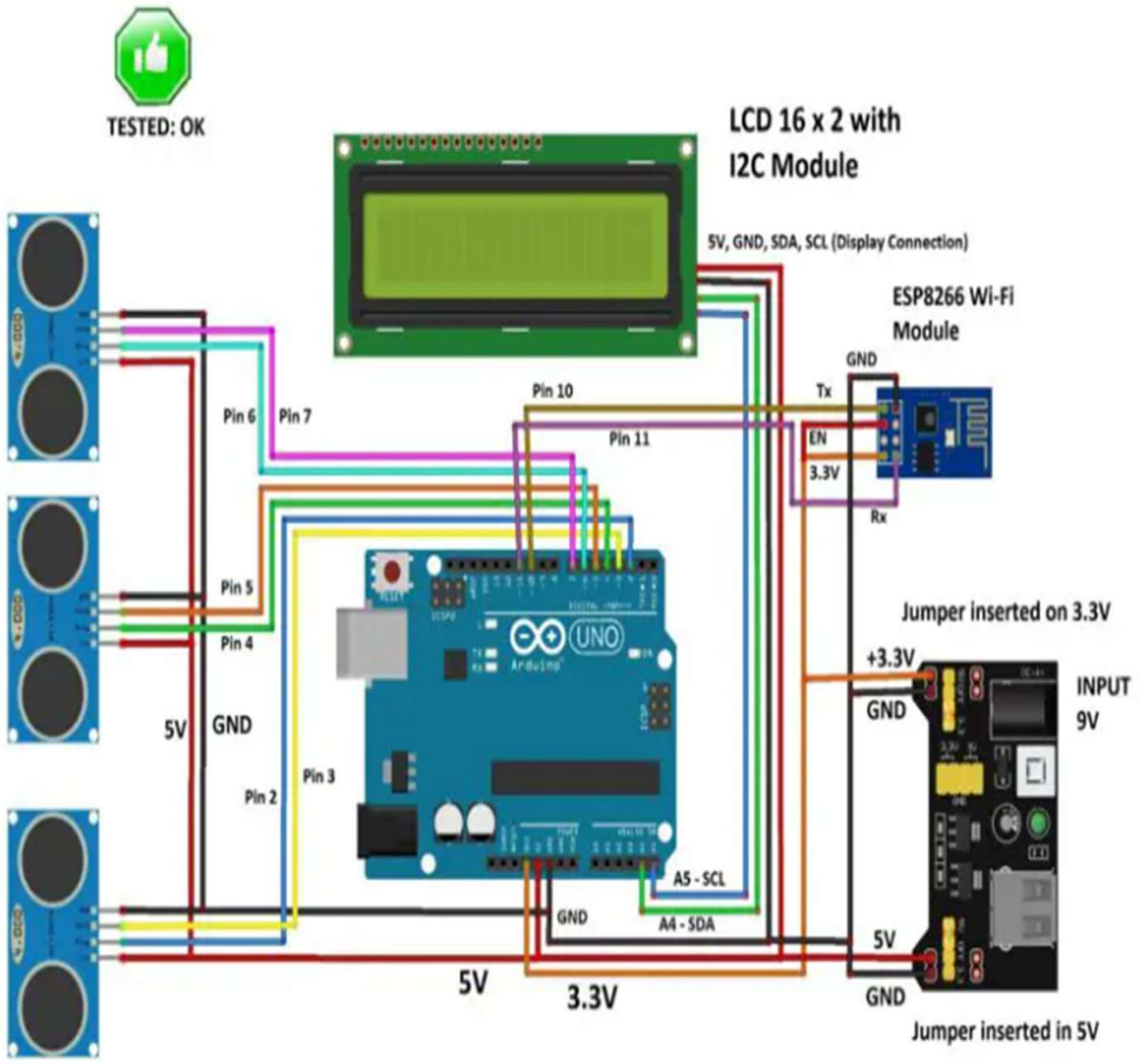
Map Integration:

- Integrate a map feature to display parking locations and availability. Use a mapping service like Google Maps or Mapbox to provide accurate and up-to-date information.

Block Diagram:



CIRCUIT DIAGRAM :



Real-Time Data Display:

- Implement a real-time data feed from IoT sensors to display parking space availability. Ensure that the data is updated frequently to reflect the current status.

Search and Filter Options:

- Include search and filter options to allow users to specify criteria such as location, price range, parking type (e.g., covered, open-air), and accessibility features (e.g., disabled parking).

Notifications and Alerts:

Implement push notifications and alerts to inform users about available parking spots, reservation confirmations, and reminders.

INTEGRATION APPROACH:

- **Sensor Connectivity:**
- Ensure that the IoT sensors are correctly installed and connected to the Raspberry Pi. Sensors may use various communication protocols, such as GPIO, UART, I2C, or SPI, depending on the sensor type.

Raspberry Pi Configuration:

- Set up the Raspberry Pi with the necessary operating system and software libraries. Ensure that the Raspberry Pi has internet connectivity via Wi-Fi or Ethernet.

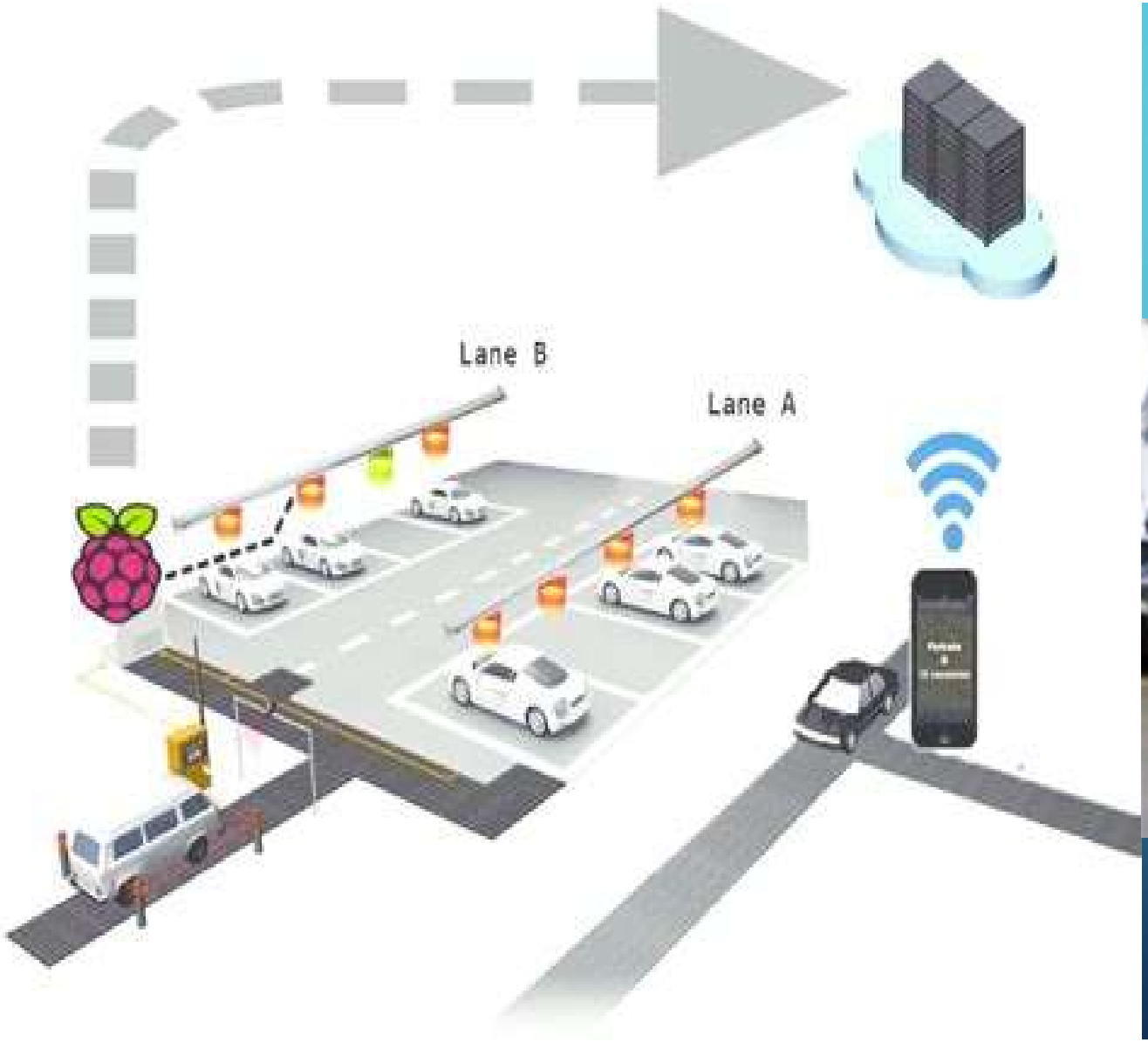
Data Transmission:

Establish a data transmission mechanism to send the processed sensor data to a central server or cloud platform. You can use protocols like HTTP, MQTT, or WebSocket for this purpose.

Real-Time Updates to Mobile App:

Ensure that the mobile app can periodically request and receive real-time parking availability updates from the server or cloud platform.

Mobile is developed using python.


Lane B
Lane A


DASHBOARD
Smart Car
Application
PARK

CONCLUSION

- In conclusion, smart parking is not merely a convenience; it represents a transformative approach to urban mobility and city planning. Throughout this presentation, we've explored the various aspects and benefits of smart parking systems, from real-time occupancy monitoring to mobile app integration and efficient parking guidance.

Thank you!