

PUBLIC TRANSPORT OPTIMIZATION

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INNOVATION

- A public transport optimization project focuses on improving the efficiency and effectiveness of public transportation systems. It involves using innovative technologies and strategies to enhance routes, schedules, and overall operations. The goal is to provide passengers with a more convenient and reliable transportation experience while reducing congestion and environmental impact.
- Real-time Data Collection: Use IoT sensors and devices to collect real-time data on factors like passenger loads, vehicle locations, traffic conditions, and weather.

PROJECT OBJECTIVES

- Real-time Tracking: Develop a system to track the location and status of public transport vehicles in real-time.
- Passenger Information: Provide passengers with real-time information about bus/train schedules, delays, and estimated arrival times.
- Route Optimization: Optimize routes and schedules based on traffic conditions, passenger demand, and weather data to reduce travel times and improve efficiency.
- Energy Efficiency: Implement energy-efficient practices, such as optimizing vehicle routes and reducing unnecessary idling, to minimize fuel consumption and environmental impact.

PROJECT REQUIREMENTS

Sensors and IoT Devices: Select and deploy appropriate sensors and IoT devices for data collection and transmission.

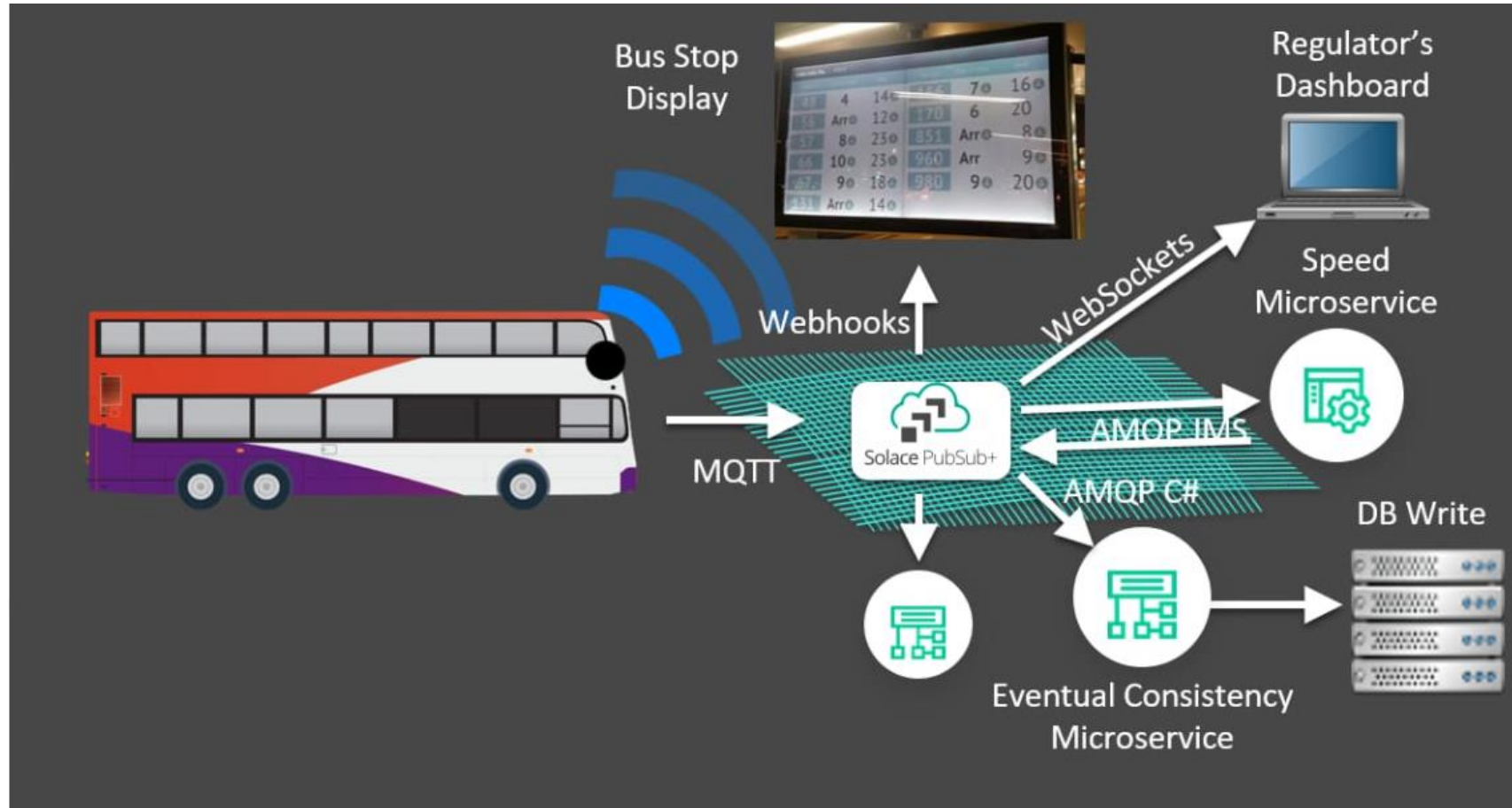
Connectivity: Ensure reliable and fast connectivity, such as 4G/5G, Wi-Fi, or LPWAN, for data transmission.

Data Storage: Set up a robust database or cloud platform to store and manage the collected data securely.

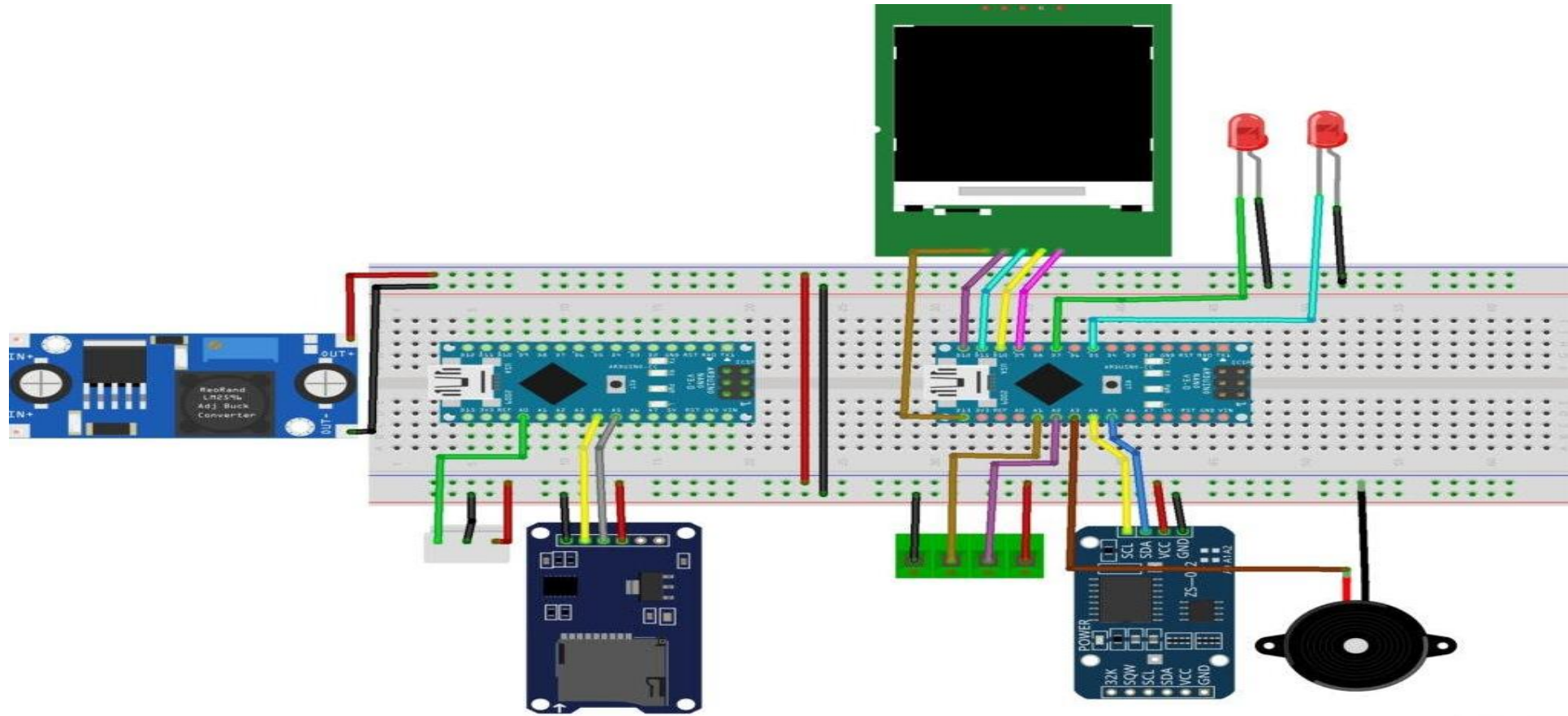
Route Optimization: Develop algorithms for optimizing routes based on real-time traffic, passenger demand, and vehicle availability.

Predictive Maintenance: Implement predictive maintenance for vehicles by monitoring their condition using IoT sensors.

INTEGRATION



ARDUINO INTEGRATION



CODE IMPLEMENTATION

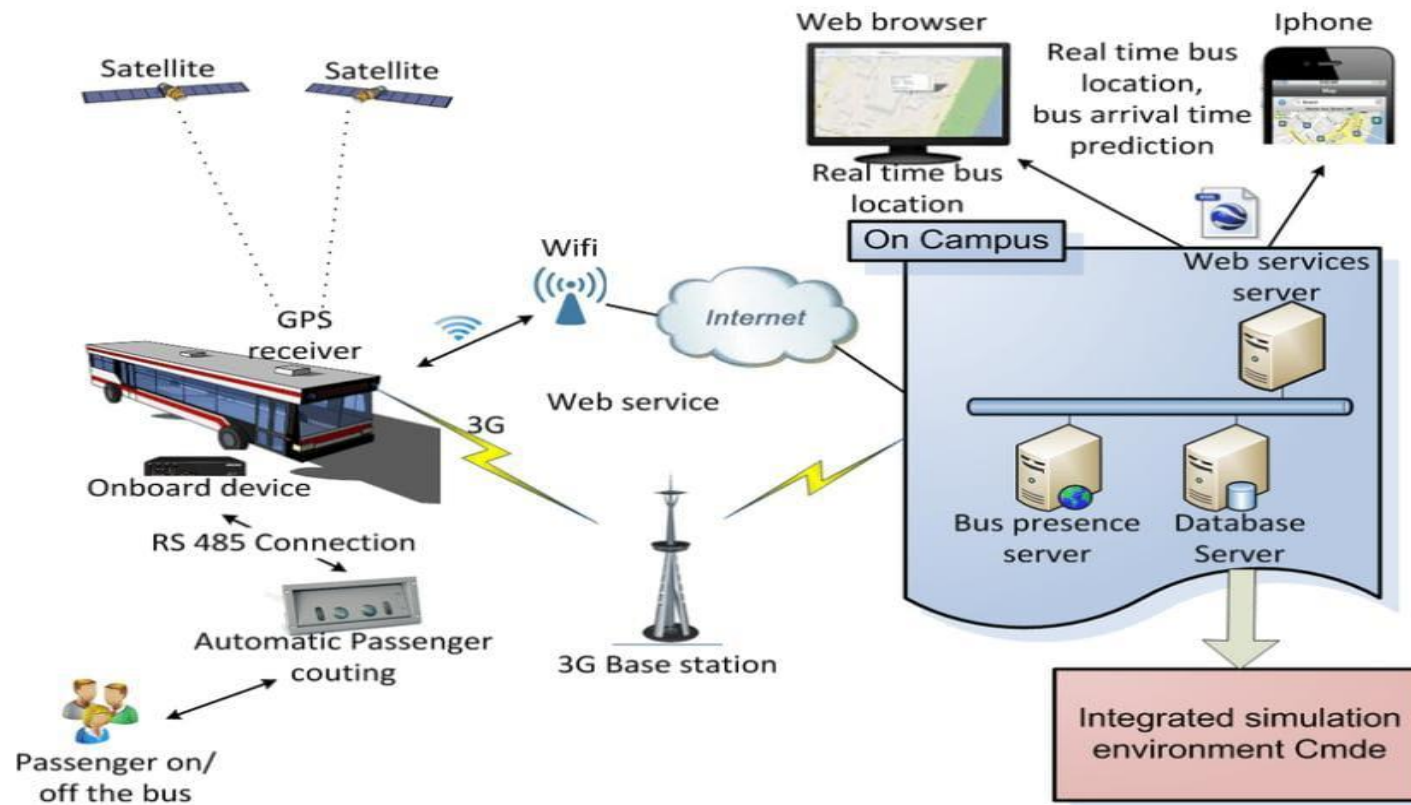
```
import paho.mqtt.client as mqtt
# MQTT Broker Configuration
broker_address = "mqtt.example.com"
topic = "public_transport/gps"
def on_connect(client, userdata, flags, rc):
    print("Connected with result code " + str(rc))
    client.subscribe(topic)
def on_message(client, userdata, msg):
    # Process GPS data here
    gps_data = msg.payload.decode()
    print("Received GPS data: " + gps_data)
client = mqtt.Client()
client.on_connect = on_connect
client.on_message = on_message
client.connect(broker_address, 1883, 60)
client.loop_forever()
```

This code subscribes to an MQTT topic and can be extended to handle GPS data and publish it to a database or perform other actions based on your requirements. Please note that this is just a basic example, and the implementation can be much more complex based on your specific needs and the IoT devices you are using.

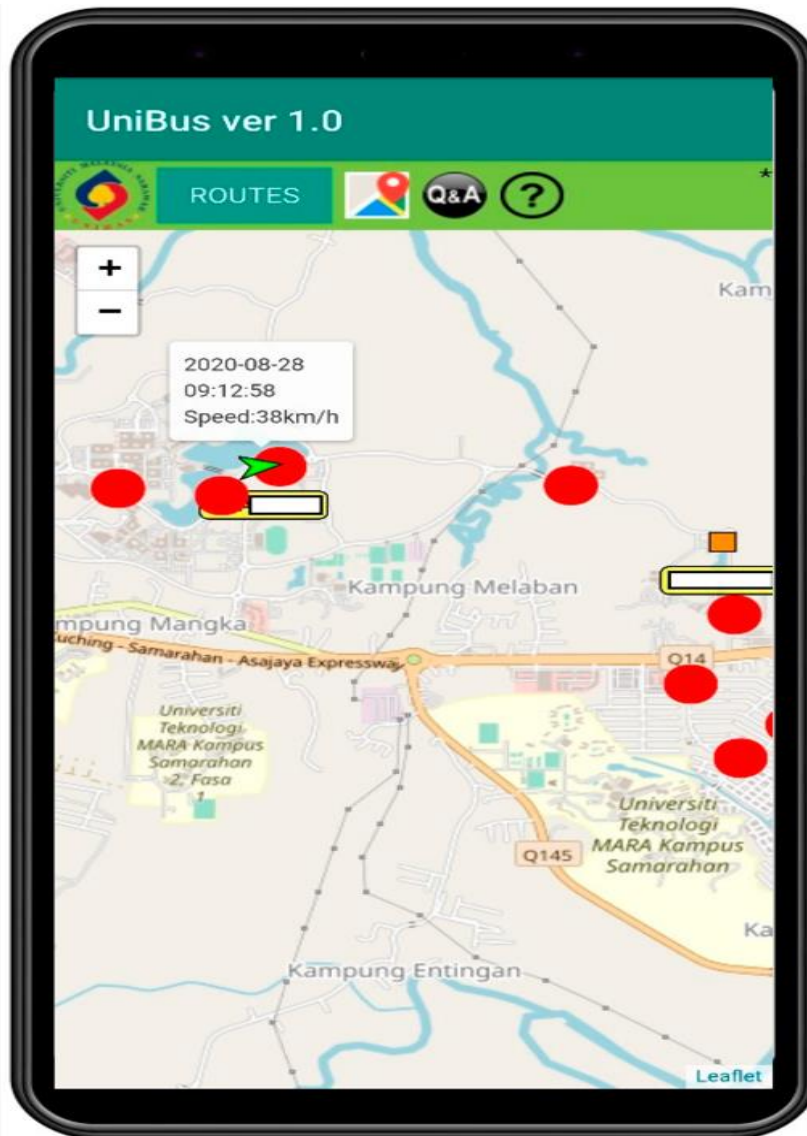
MOBILE APP DEVELOPMENT

- **Market Research*:** Identify your target audience and study existing apps to understand user needs and competition.
- **Conceptualization*:** Define the core features of your app, such as route planning, real-time updates, ticketing, and user profiles.
- **Design*:** Create a user-friendly interface with intuitive navigation. Consider the app's branding and visual identity.
- **Development*:** Choose the right technology stack (e.g., native or cross-platform development), and build the app's front-end and back-end. Implement features for route planning, real-time tracking, and payment processing.
- **Data Integration*:** Collaborate with transportation authorities to access real-time data for routes, schedules, and delays. Integrate mapping services for accurate directions.
- **User Accounts*:** Develop a user account system for saving preferences, history, and payment information.

IMPLEMENTATION AND SIMULATION



REAL-TIME WEBSITE



THANK YOU