**NAAN MUDHALVAN - PHASE 1 PROJECT SUBMISSION**

**PUBLIC TRANSPORTATION OPTIMIZATION**

**Team Members:**

Muhil J (2021504530)

Shakti A P (2021504541)

Shamitha G (2021504543)

Shreejan A (2020504544)

Sushmitha A (2021504551)

**Problem Definition:**

The primary goal of this project is to improve the effectiveness, dependability, and user satisfaction of public transportation by incorporating Internet of Things (IoT) technologies. With the utilization of intelligent devices and live data, the aim is to optimize different aspects of public transport systems such as route mapping, vehicle monitoring, passenger experience, and more.

**Detailed Explanation:**

* **Real-time Vehicle Tracking:** Integrating GPS and IoT sensors onto public transportation vehicles can furnish real-time location tracking data. This feature enables precise estimations of arrival and departure timings.
* **Dynamic Route Planning:** Leverage data analytics to enhance the effectiveness of public transportation routes by analyzing real-time traffic conditions, historical data, and user demand. This approach can significantly improve system efficiency and ultimately reduce travel time for commuters.
* **Passenger Information Systems:** Develop a system to provide passengers with real-time information about bus/train locations, expected arrival times, and any delays. This can be accessible through mobile apps, digital displays at stops, or other communication channels.
* **Condition Monitoring and Maintenance:** Implementing IoT sensors in vehicles can provide real-time monitoring of their condition. This enables proactive measures to predict and prevent breakdowns, optimize maintenance schedules, and enhance the longevity of the vehicles.
* **Occupancy Monitoring:** Real-time occupancy monitoring of vehicles using sensors can enable route optimization, resource allocation, and improved passenger experience.
* **Integration with Other Modes of Transport:** Create interfaces that can be used to seamlessly integrate public transport systems with other modes of transportation, such as ride-sharing services or bike-sharing programs. This integration will allow users to experience a fully interconnected travel experience that is both convenient and efficient.

**Design thinking:**

**Project objectives:**

* To reduce delays, improves route efficiency, and provides real-time information, collectively reducing the overall travel time for passengers.

**IoT sensor design:**

* Propose a design for a comprehensive system that encompasses various sensors such as IR sensors for detecting obstacles, level sensors for monitoring fluid levels, speed sensors, temperature, and humidity sensors for environmental monitoring, GPS module, Wi-Fi module, and an LCD interface. Construct a physical prototype on a breadboard by interconnecting the aforementioned sensors for a comprehensive monitoring and control system.

**Real time transit Information platform:**

* The objective of the web-based real-time transit information platform is to offer a thorough, easy to use, and safe experience for commuters. The platform is continuously updated through iterative testing and user feedback to ensure its responsiveness to evolving requirements and technological advancements.

**Integration approach:**

* Blynk is an IoT platform that facilitates the creation and management of IoT projects through a mobile application. It offers a straightforward approach to establish connectivity between different hardware devices, sensors, and microcontrollers with the internet, thereby enabling remote control of these devices.