**TRAFFIC MANAGEMENT SYSTEM**

**HARDWARE SETUP:**

IoT devices (e.g., Raspberry Pi, Arduino) with sensors (e.g., cameras, ultrasonic sensors) at traffic intersections.Network connectivity (Wi-Fi, cellular) for data transmission.

**DATA COLLECTION:**

Capture and process data from sensors, including vehicle detection, traffic light status, and environmental conditions.

**DATA PROCESSING:**

Analyze the sensor data to make decisions about traffic light control and traffic flow management.

**COMMUNICATION:**

Establish a communication protocol (e.g., MQTT, HTTP) to send and receive data between IoT devices and a central server.

**SERVER SIDE:**

* Develop a central server to manage traffic data and control traffic lights.

Use a framework like Flask or Django for the server.

* Implement database storage (e.g., SQLite, PostgreSQL) for historical data.

**TRAFFIC LIGHT CONTROL:**

Implement logic to control traffic lights based on traffic data.Use a state machine or finite state machine to manage the traffic light states.

**USER INTERFACE:**

Create a web-based or mobile app interface for administrators to monitor and configure the system.

**DATA ANALYSIS AND VISULIZATION:**

Use data analysis tools and libraries (e.g., Pandas, Matplotlib) to generate reports and visualize traffic data.

**SECURITY:**

Implement security measures to protect the system from cyber threats and unauthorized access.

**MACHINE LEARNING:**

Utilize machine learning algorithms for traffic prediction and optimization.

**TESTING AND DEPLOYMENT:**

Thoroughly test the system in a controlled environment before deployment.

Deploy the system at traffic intersections.

**CODE:**

# Define traffic light states

GREEN = 1

YELLOW = 2

RED = 3

# Initialize the traffic light state

current\_state = GREEN

while True:

if current\_state == GREEN:

print("Green Light - Go")

time.sleep(10) # Green light duration

current\_state = YELLOW

elif current\_state == YELLOW:

print("Yellow Light - Prepare to Stop")

time.sleep(2) # Yellow light duration

current\_state = RED

else:

print("Red Light - Stop")

time.sleep(10) # Red light duration

current\_state = GREEN

Building a real traffic management system involves a lot more complexity, safety considerations, and integration with hardware and data analysis systems.