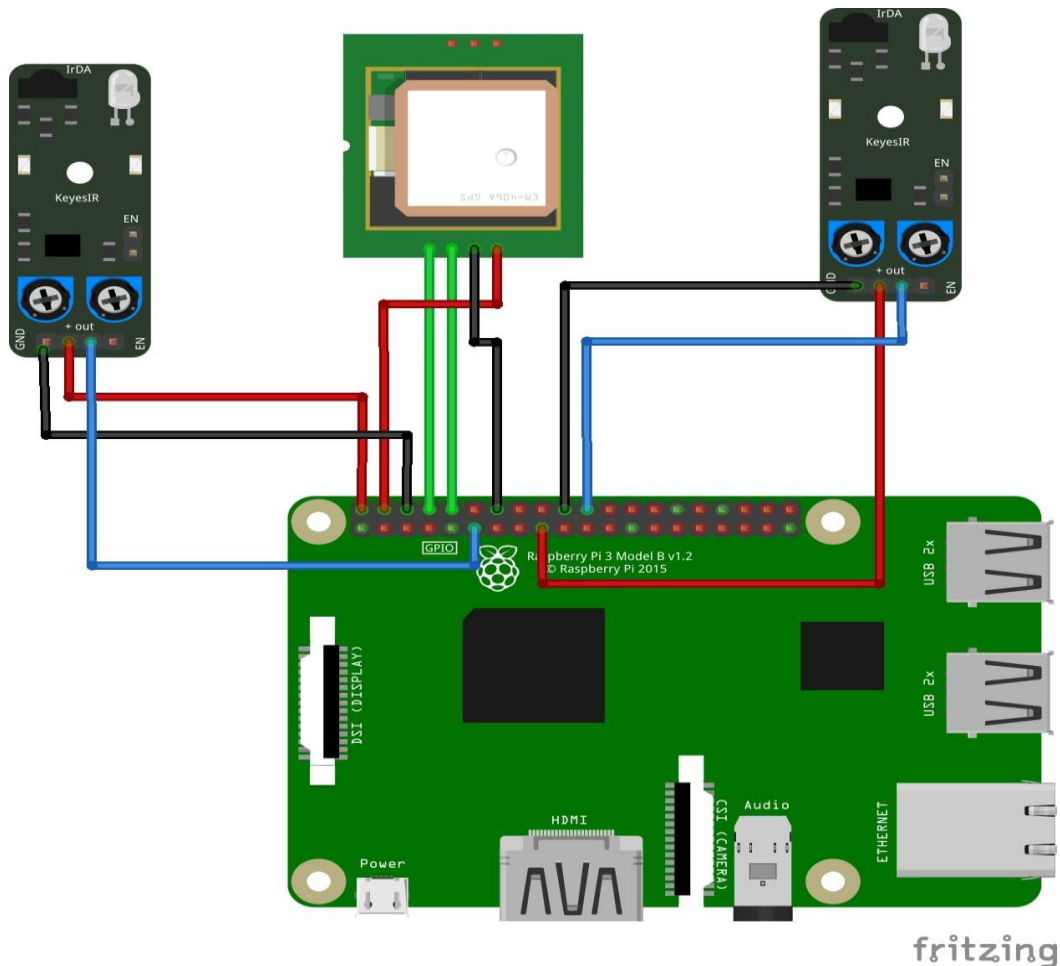


IOT Phase 3: DEVELOPMENT PART 1

Project 10: Traffic Management System

Hardware Setup:



Software Setup:

Python source code that simulates a smart traffic management system that uses IOT and data analytics to monitor traffic flow and congestion in real-time.

```
import random
import time
class TrafficSensor:
    def __init__(self, name):
        self.name = name
```

```

def get_traffic_flow(self):
    # Simulate traffic flow data
    traffic_flow = random.randint(0, 1000)
    return traffic_flow

def get_traffic_congestion(self):
    # Simulate traffic congestion data
    traffic_congestion = random.randint(0, 10)
    return traffic_congestion

class TrafficAnalyzer:
    def __init__(self):
        self.sensors = []

    def add_sensor(self, sensor):
        self.sensors.append(sensor)

    def analyze_traffic(self):
        traffic_data = {}
        for sensor in self.sensors:
            traffic_flow = sensor.get_traffic_flow()
            traffic_congestion = sensor.get_traffic_congestion()
            traffic_data[sensor.name] = (traffic_flow, traffic_congestion)
        return traffic_data

class MobileApp:
    def __init__(self, analyzer):
        self.analyzer = analyzer

    def display_traffic_info(self):
        while True:
            traffic_data = self.analyzer.analyze_traffic()
            print("Traffic Information:")
            for sensor_name, data in traffic_data.items():

```

```
        traffic_flow, traffic_congestion = data

        print(f"Sensor: {sensor_name}, Traffic Flow: {traffic_flow}, Congestion Level:
{traffic_congestion}")

        print("\n")

        time.sleep(5) # Update every 5 seconds

# Create traffic sensors
sensor1 = TrafficSensor("Sensor 1")
sensor2 = TrafficSensor("Sensor 2")
sensor3 = TrafficSensor("Sensor 3")

# Create traffic analyzer
analyzer = TrafficAnalyzer()
analyzer.add_sensor(sensor1)
analyzer.add_sensor(sensor2)
analyzer.add_sensor(sensor3)

# Create mobile app
mobile_app = MobileApp(analyzer)

# Display traffic information on mobile app
mobile_app.display_traffic_info()
```