```cpp
// IoT-Based Smart Traffic Light System using ESP8266 & IR Sensors

#include <ESP8266WiFi.h>

#include <FirebaseESP8266.h>


// WiFi & Firebase Credentials

#define WIFI_SSID "Your_WiFi_SSID"

#define WIFI_PASSWORD "Your_WiFi_Password"

#define FIREBASE_HOST "Your_Firebase_Host"

#define FIREBASE_AUTH "Your_Firebase_Auth_Key"


// Firebase Setup

FirebaseData firebaseData;


// Sensor & LED Pins

#define IR_SENSOR_1 D1  // Lane 1

#define IR_SENSOR_2 D2  // Lane 2

#define GREEN_LED D5

#define YELLOW_LED D6

#define RED_LED D7


void setup() {

  Serial.begin(115200);

  pinMode(IR_SENSOR_1, INPUT);

  pinMode(IR_SENSOR_2, INPUT);

  pinMode(GREEN_LED, OUTPUT);

  pinMode(YELLOW_LED, OUTPUT);

  pinMode(RED_LED, OUTPUT);


  // Connect to WiFi

  WiFi.begin(WIFI_SSID, WIFI_PASSWORD);
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    Serial.print("Connecting to WiFi...");

    while (WiFi.status() != WL_CONNECTED) {

        delay(1000);

        Serial.print(".");

    }

    Serial.println("Connected to WiFi!");


    // Connect to Firebase

    Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);

    Firebase.reconnectWiFi(true);

}


void loop() {

    int traffic_lane1 = digitalRead(IR_SENSOR_1);

    int traffic_lane2 = digitalRead(IR_SENSOR_2);


    int total_traffic = traffic_lane1 + traffic_lane2; // Count traffic

    Firebase.setInt(firebaseData, "/Traffic/Current", total_traffic);


    if (total_traffic > 1) {

        // Heavy traffic detected - Green Light ON longer

        digitalWrite(GREEN_LED, HIGH);

        digitalWrite(YELLOW_LED, LOW);

        digitalWrite(RED_LED, LOW);

        delay(10000);

    } else {

        // Normal traffic - Regular cycle

        digitalWrite(GREEN_LED, HIGH);

        delay(5000);

        digitalWrite(GREEN_LED, LOW);

        digitalWrite(YELLOW_LED, HIGH);
```

```
    delay(2000);

    digitalWrite(YELLOW_LED, LOW);

    digitalWrite(RED_LED, HIGH);

    delay(5000);

    digitalWrite(RED_LED, LOW);
  }
}
```