To solve the problem of chaotic traffic signals, Alex uses a simple LED Traffic Light System. Here's how the solution works:

- **Component Setup:**
  - Use three LEDs: Red, Yellow, and Green.
  - Each LED is connected to a separate pin on the Arduino (or any microcontroller) through resistors to protect them from damage.
- **Programming the Sequence:**
  - The red LED will light up to signal "Stop."
  - The yellow LED will light up for a short time to signal "Caution."
  - The green LED will light up to signal "Go."
  - Each LED will turn on for a specific duration, imitating the real-life behavior of a traffic light.
- **Using Tinkercad:**
  - Alex can simulate the entire circuit and code in Tinkercad, without needing physical components.
  - In the simulation, Alex sets up the LEDs, resistors, and writes the code to control the sequence of lights. This way, the project can be tested and refined before implementation.
- **Result:**
  - The traffic light system operates in a continuous loop: Red for stop, Green for go, and Yellow for caution. This ensures safe and organized traffic flow, solving the problem of malfunctioning signals and improving road safety.

By using Tinkercad to design and test the system, Alex efficiently builds a traffic light project that helps bring order to the chaotic city streets.

- **Code:**

```cpp
// Define pins for the LEDs
int redLED = 13;    // Pin for the red LED
int yellowLED = 12; // Pin for the yellow LED
int greenLED = 11;  // Pin for the green LED

void setup() {
  // Set the LED pins as OUTPUT
  pinMode(redLED, OUTPUT);
  pinMode(yellowLED, OUTPUT);
  pinMode(greenLED, OUTPUT);
}

void loop() {
  // Turn on the red LED (Stop)
  digitalWrite(redLED, HIGH);
  digitalWrite(yellowLED, LOW);
  digitalWrite(greenLED, LOW);
  delay(5000); // Keep the red LED on for 5 seconds

  // Turn on the yellow LED (Caution)
  digitalWrite(redLED, LOW);
  digitalWrite(yellowLED, HIGH);
  digitalWrite(greenLED, LOW);
  delay(2000); // Keep the yellow LED on for 2 seconds

  // Turn on the green LED (Go)
  digitalWrite(redLED, LOW);
  digitalWrite(yellowLED, LOW);
  digitalWrite(greenLED, HIGH);
  delay(5000); // Keep the green LED on for 5 seconds
}
```

- **Connection & Simulation:**

   Tinkercad Link