# Practical-5

**AIM: Design a computational circuit of basic traffic signal system using logisim**

**Theory: A basic traffic signal system typically involves a sequential control of red, yellow, and green lights at an intersection. The core components of such a system include:**

**Components:**

* **Power Supply: Provides necessary voltage for the circuit.**
* **Timers: Control the duration of each light phase (red, yellow, green).**
* **Logic Gates: For sequence control and timing.**
* **Relays: To switch the high current required for traffic lights.**
* **LEDs or Bulbs: Represent the traffic signals (red, yellow, green).**

**Basic Operation:**

1. **Power On: The system starts with the red light illuminated.**
2. **Timer Activation: A timer starts counting down for the red light duration.**
3. **Yellow Light: After the red light timer expires, the yellow light turns on for a predetermined time.**
4. **Green Light: Following the yellow phase, the green light illuminates for a set duration.**
5. **Sequence Repetition: The cycle repeats with red, yellow, and green lights in sequence.**

**Common Implementation Methods:**

* **555 Timer: Often used for simple traffic light systems due to its versatility in generating time delays.**
* **Microcontrollers: Provide more flexibility and control over the traffic light sequence, allowing for additional features like pedestrian signals, countdown timers, and traffic sensors.**

**Additional Considerations:**

* **Pedestrian Signals: Can be added using additional timers and relays.**
* **Traffic Sensors: Detect vehicle presence to adjust signal timings.**
* **Microprocessor Control: For complex intersections and traffic management.**
* **Safety Features: Emergency override systems, backup power supply.**

**Note: This is a simplified overview. Real-world traffic signal systems are much more complex and involve various advanced features and considerations.**

BLOCK DAIGRAM:-

|  |
| --- |
| **RED LIGHT :-**    **YELLOW LIGHT:-**    **GREEN LIGHT:-** |