**This is about my work on Gishushu traffic lights state diagram**

**[\*] (Initial State):**

The **[\*]** symbol represents the **initial state**. The state machine starts here. In the case of traffic lights, the initial state is typically **Green**, which is the state when the system is first powered on or reset.

**State Actions (Behavior):**

Each state might perform some specific actions or operations:

* **GreenState**: Vehicles are allowed to proceed through the intersection.
* **YellowState**: The system signals caution, telling drivers to slow down and prepare to stop.
* **RedState**: The system ensures that all vehicles stop at the intersection.
* **BlinkingRedState**: If this special state occurs, the traffic light flashes red, signaling a malfunction or manual override.

**Explanation of Transitions:**

1. **Green → Yellow**: After the predefined duration of the Green light expires, the system moves to the Yellow light. The **Timeout** event causes this transition.
2. **Yellow → Red**: Similarly, after the Yellow light has been on for its set duration, the light transitions to Red. This ensures vehicles are given enough time to stop safely.
3. **Red → Green**: After the Red light's set duration has passed, the system transitions back to Green, allowing traffic to proceed again.
4. **Green → BlinkingRed**: If a malfunction or manual override occurs during the Green light, the system transitions to the BlinkingRed state. This might be the case when there is a manual override or emergency situation requiring immediate attention, such as flashing red lights indicating a hazardous condition.
5. **Yellow → BlinkingRed**: Similarly, if a malfunction occurs during the Yellow light, the system transitions to **BlinkingRed**.
6. **Red → BlinkingRed**: If a malfunction happens during the Red light (for instance, if the traffic light is not functioning properly or is being manually overridden), the system will switch to **BlinkingRed**.

**Practical Example:**

Imagine the traffic light operates with the following timeline:

1. The **Green** light is on for 60 seconds.
2. After 60 seconds, the light transitions to **Yellow** for 5 seconds.
3. The **Yellow** light then transitions to **Red** for 60 seconds.
4. After 60 seconds, the light transitions back to **Green**.

However, if during any of these states, there is a malfunction (e.g., an electrical issue or system override), the light could enter the **BlinkingRed** state. In this state, vehicles would treat the intersection like a stop sign and proceed with caution.