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Requirements Elicitation Report

The product that our company is responsible for producing is a software implementation for a traffic light intersection. This new software is intended to replace the old system that was in place. This new system includes new inputs and states for better flow of traffic. Our company will be responsible for creating and maintaining the software system. Beyond that, our company will also provide technical training and support in the form of user manual and consulting service. The requirements stated in this report was gathered by interviewing the software engineer, end user, and engineer involved in maintenance. Software to be developed should require minimal work after replacement of malfunctional light units. Program should start from a new state after pushing reset button after new installment.
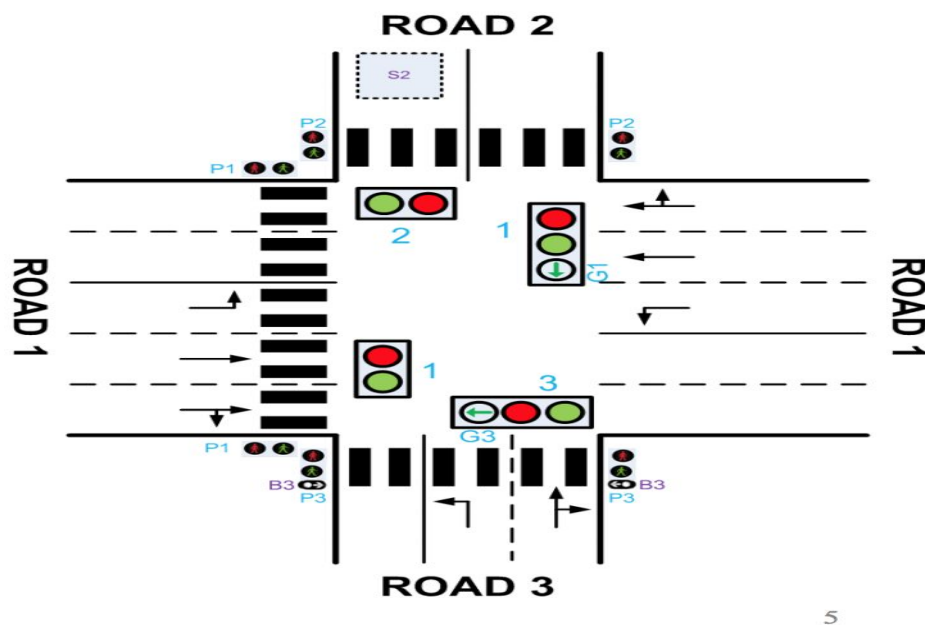
- L1: Road one, the main road
- L2 & L3: Road 2 and Road 3, secondary road
- P1 & P2 & P3: Pedestrian path on road 1,2,3

- B3: Button to activate pedestrian path on road 1
- G1 & G3: Left turn signal on road 1 and road 3 respectively

Traffic lights will start from default state, as specified below in table. Stage change will be triggered by either the timer finishing signal, pedestrian button or vehicle sensor. The traffic lights will change in stages. Each stage is triggered either by the timer T1 and T2, which are 30 seconds and 15 seconds respectively, finishing countdown, S2, or B3. The timers will reset after each stage change.

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In particular, the night stage occurs between 10:00 PM and 6:00 AM. If any malfunctions occur during the traffic lights' normal operations, sensor will detect the malfunction, and change the state to emergency state and a maintenance engineer will be notified. After fixing the problem, the worker presses a reset button that changes the state to default. To ensure the safety of pedestrians and drivers, after the state change, there will be a short interval before the lights change.

Table: 7 Stages and the Corresponding Light States

#	Stage	L1	L2	L3	P1	P2	P3	G1	G3	T1	T2	Mal
1	Default	G	R	R	R	G	R	R	R	ON	OFF	OFF
2	Green G1	R	R	R	G	R	R	G	R	OFF	ON	OFF
3	Green 3	R	R	G	R	R	R	R	G	OFF	ON	OFF
4	Green P3	G	R	R	R	G	G	R	R	OFF	ON	OFF
5	Green 2&3	R	G	G	R	R	R	R	R	OFF	ON	OFF
6	Night	BG	BR	BR	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
7	Emergency	BG	BR	BR	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

States Diagram:
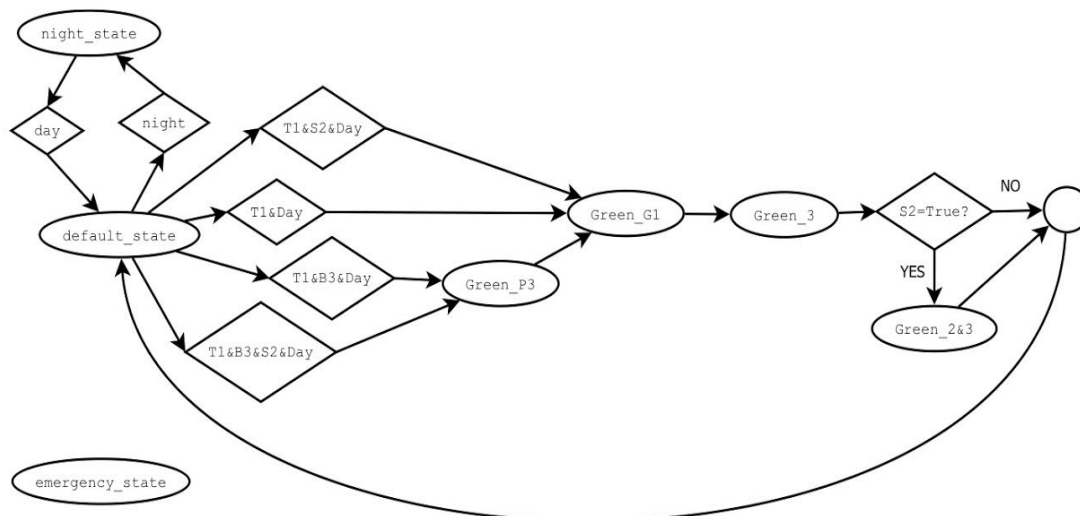
During the default stage, S2 and B3 are evaluated. Depending on which one is triggered, or if both are triggered, the state change deviates from the default cycle, and follows a different path, as shown in the above diagram.