

Introduction to Programmable Logic Controllers Ex12_traffic

DTU 31343

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Task

The visualisation of the road traffic lights, the button, pedestrian button tracking data, and alarm functionality were all visualised as seen in Figure 1.

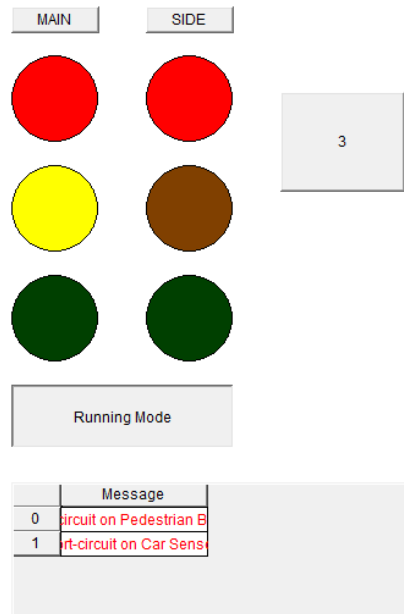


Figure 1: Visualisation created for the HMI of the traffic light system.

For the visualisation of the road traffic light to work in combination with the system, additional coils were added to the program in parallel to the lights of the traffic light system. This would allow the visualised traffic lights to function simultaneously with the system (see Figure 2).

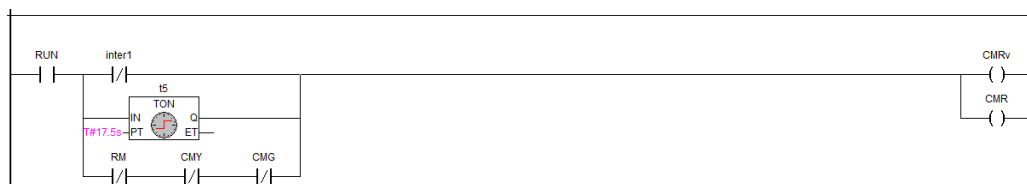


Figure 2: Allowing both the visualisation and traffic light system to work simultaneously.

To switch between running modes, the button that was added was chosen to function as a toggle. The button would cause the program to act in a manner where the normally sensor-oriented running mode, would switch to the continuous cycle. To achieve this, the system was altered to where the running mode button would cause the system to run as if the car sensor and the pedestrian button were operating in a continuously active state (see Figures 3 & 4).

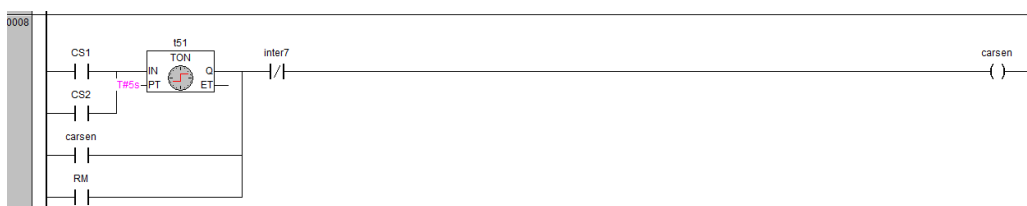


Figure 3: When RM is active, it works as if car were in front of the sensor continuously.

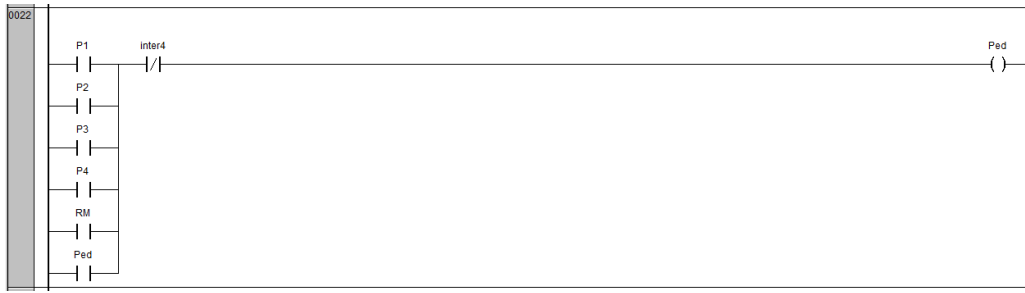


Figure 4: When RM is active, it works as if any of the pedestrian button were held down continuously.

Additionally, the program had to be altered to cope with the fact that these states were assumed (refer to the .pro file provided).

To visualise the tracking data, the integer count of the counter was displayed in the visualisation. However, the number would only update when the system was not in the continuous running mode. Then, to log this counting data to a file, a trend was set up like in Ex10_visualisations Task 2, that would log the trend of the counter data to a designated file (see Figure 5).

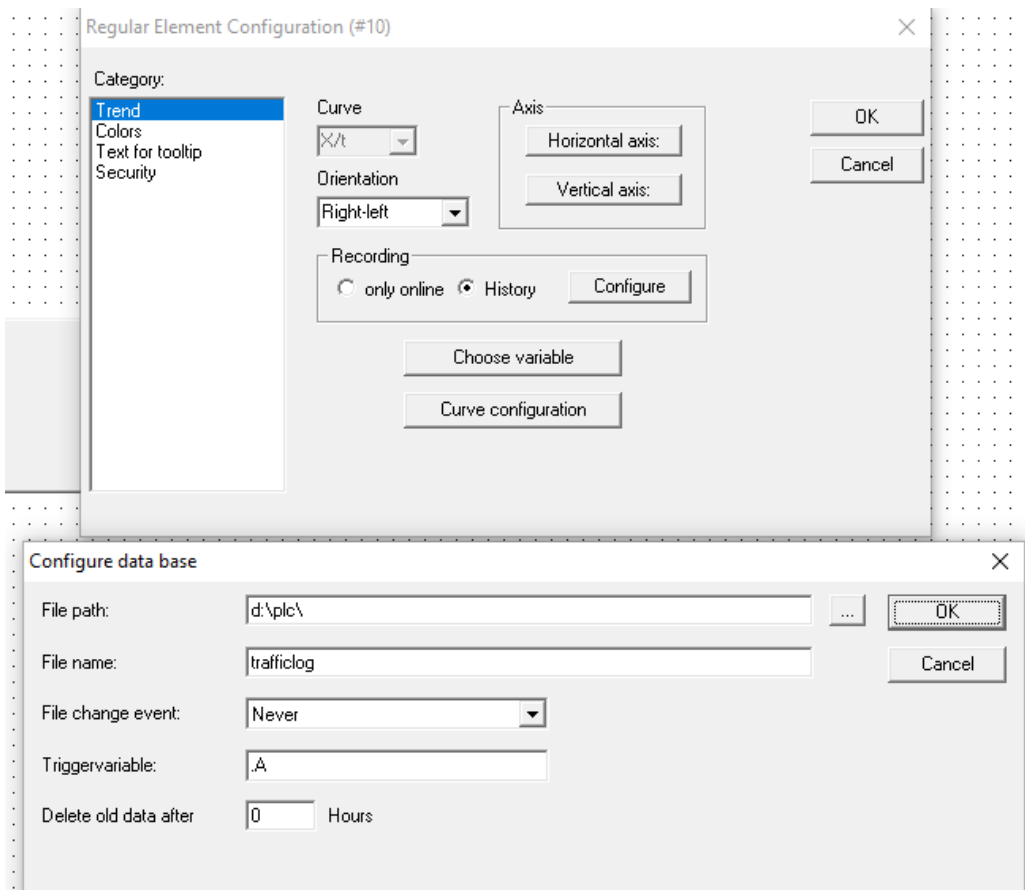


Figure 5: Configuring the trend element to log the counting data.

Finally, the alarm functionality was added by setting on-delay timers that would energise a designated alarm coil after a certain period of time. This is shown in Figure 6. The alarm would then be displayed in the visualisation, as shown in Figure 1.



Figure 6: Coils used for the short-circuit alarm that would energise when a sensor or button was active for more than 1000 s at a time.