Traffic Light Control System – HDL iVERILOG PROJECT

Objective: To create a control system for a traffic light that effectively and efficiently manages traffic flow and reduces the risk of traffic accidents. The system should be reliable and easy to maintain, and should include features such as variable timing for each phase of the light and adaptive response to changing traffic conditions. It should also be able to detect and respond to emergency situations, and have a failsafe mechanism in case of power failure. The system should be cost-effective and should be able to interface with existing traffic control systems.

Background: Traffic lights are a common feature of modern roads and intersections, and they are used to regulate traffic flow and reduce the risk of traffic accidents. A traffic light control system is a computerized system that is responsible for controlling the timing and duration of the traffic signal phases. This system must be reliable and easy to maintain, and must include features such as variable timing for each phase of the light, adaptive response to changing traffic conditions, and the ability to detect and respond to emergency situations.

Requirements: The control system should have the following features:

1. Variable timing for each phase of the traffic light: The system should be able to adjust the timing of each phase of the traffic light, allowing for optimal traffic flow and reducing the risk of traffic accidents.

2. Adaptive response to changing traffic conditions: The system should be able to detect changes in traffic patterns and adjust the timing of the traffic light accordingly. This will reduce the risk of traffic congestion and improve overall traffic flow.

3. Emergency response: The system should be able to detect and respond to emergency situations, such as an ambulance or fire truck approaching an intersection. This will ensure that emergency vehicles can get through the intersection quickly and safely.