FINAL'S PROJECT

TRAFFIC LIGHTS SYSTEM

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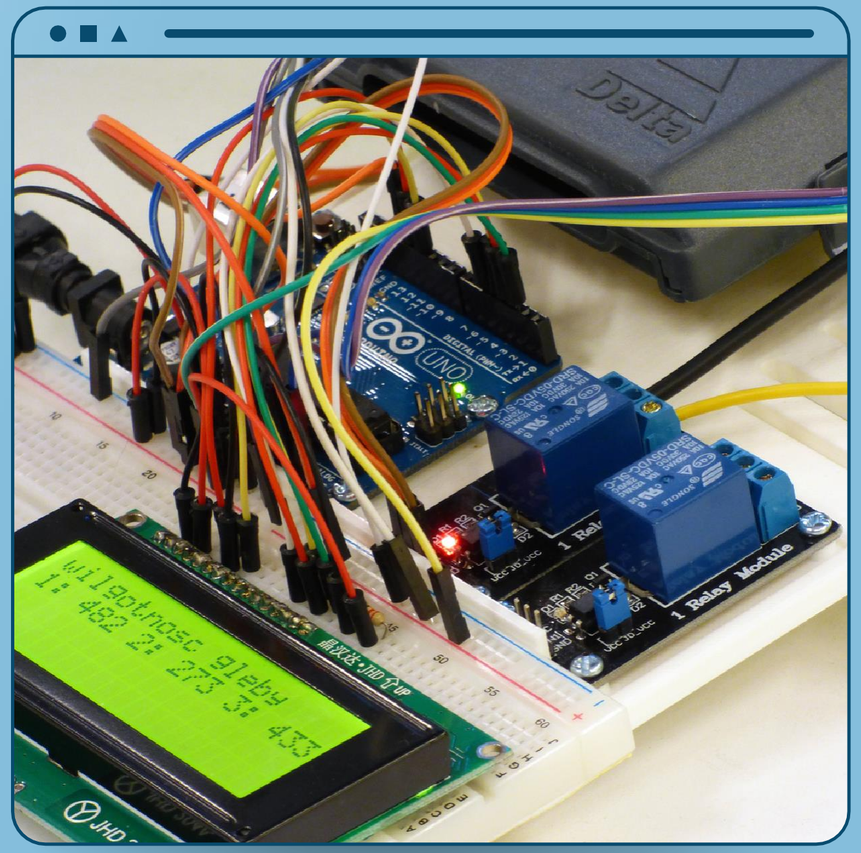
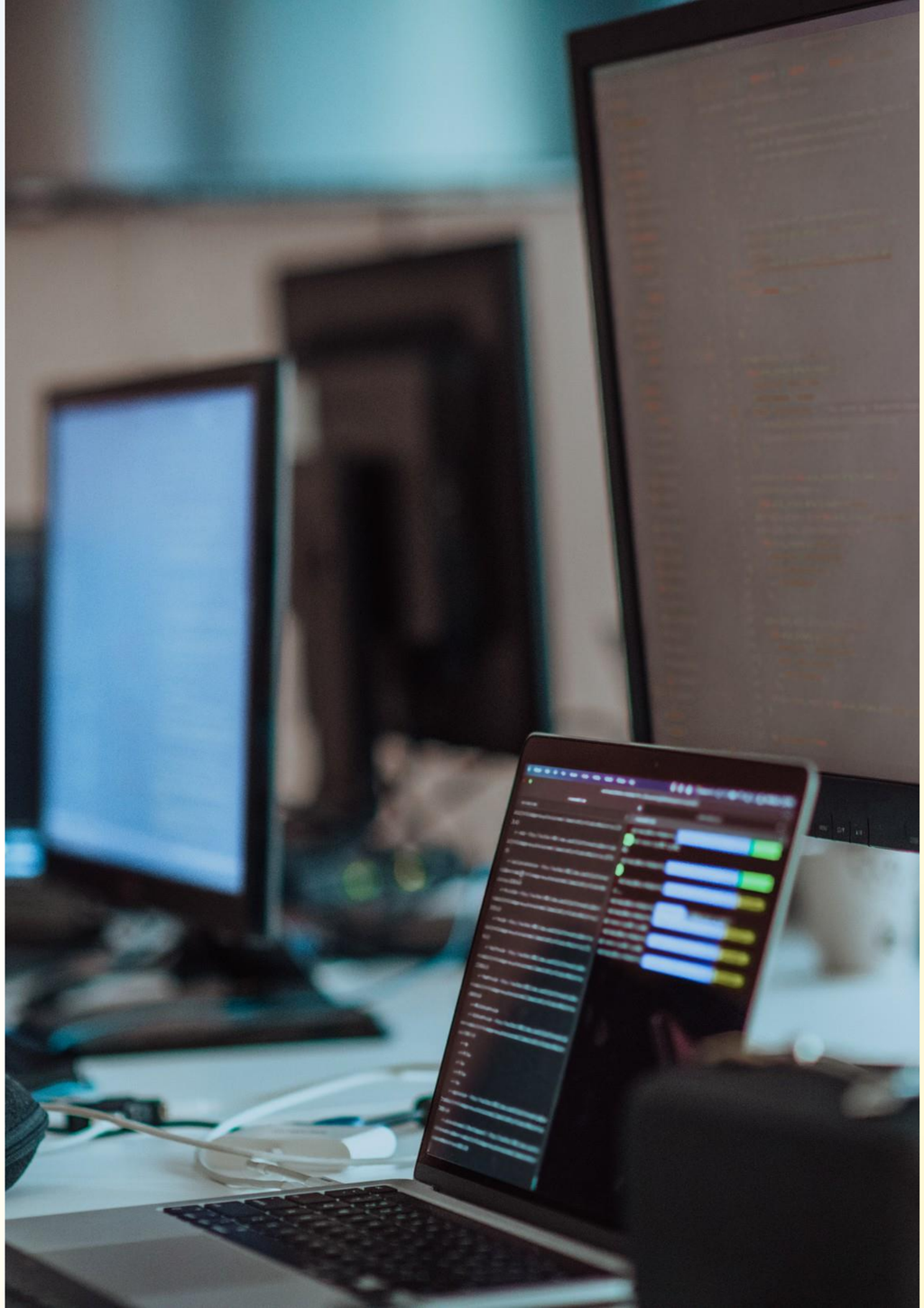


MEMBER

- Trần Nguyễn Nhựt Tâm

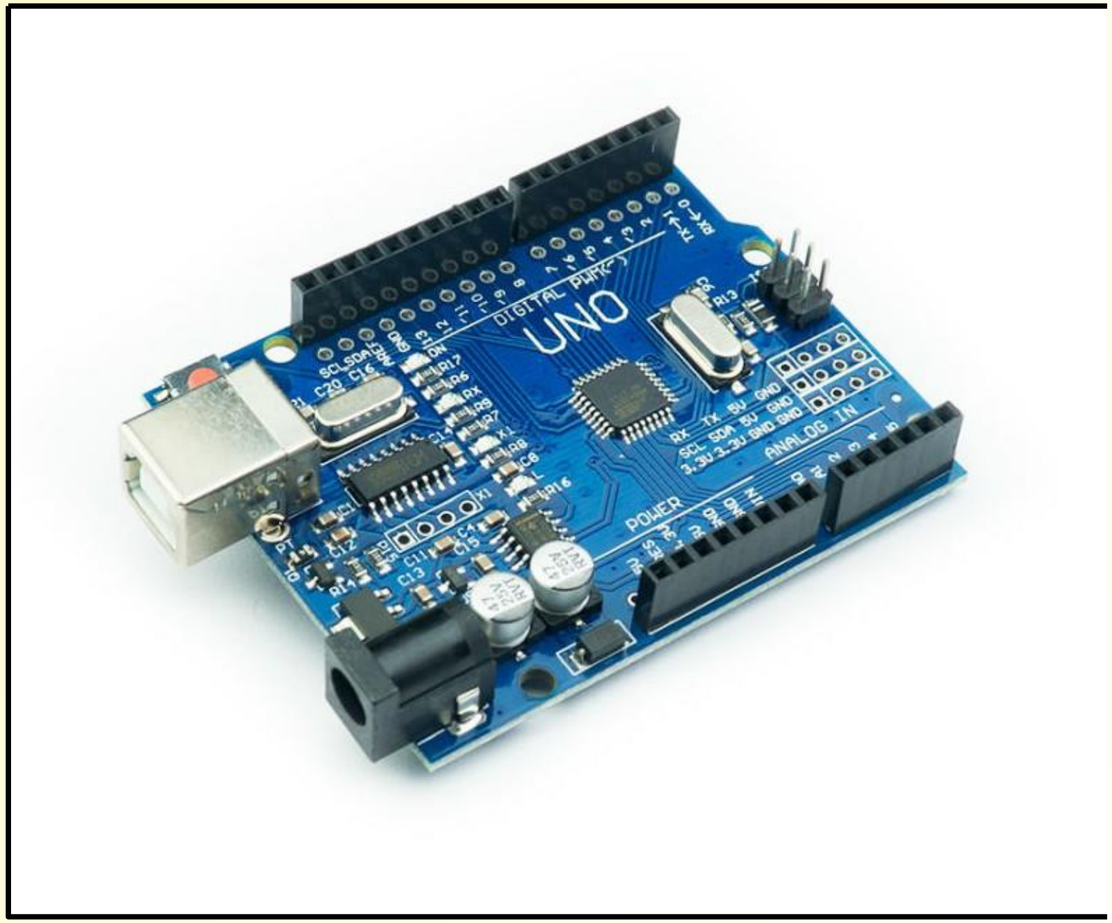


OVERVIEW

The Traffic Lights System is our project aimed at enhancing traffic control and tackling increasing congestion. Using dynamic mode-changing, it optimizes traffic flow at intersections, reducing delays and improving road safety. This initiative redefines traditional traffic management for more effective solutions in modern urban transportation.

COMPONENTS

Arduino Uno R3

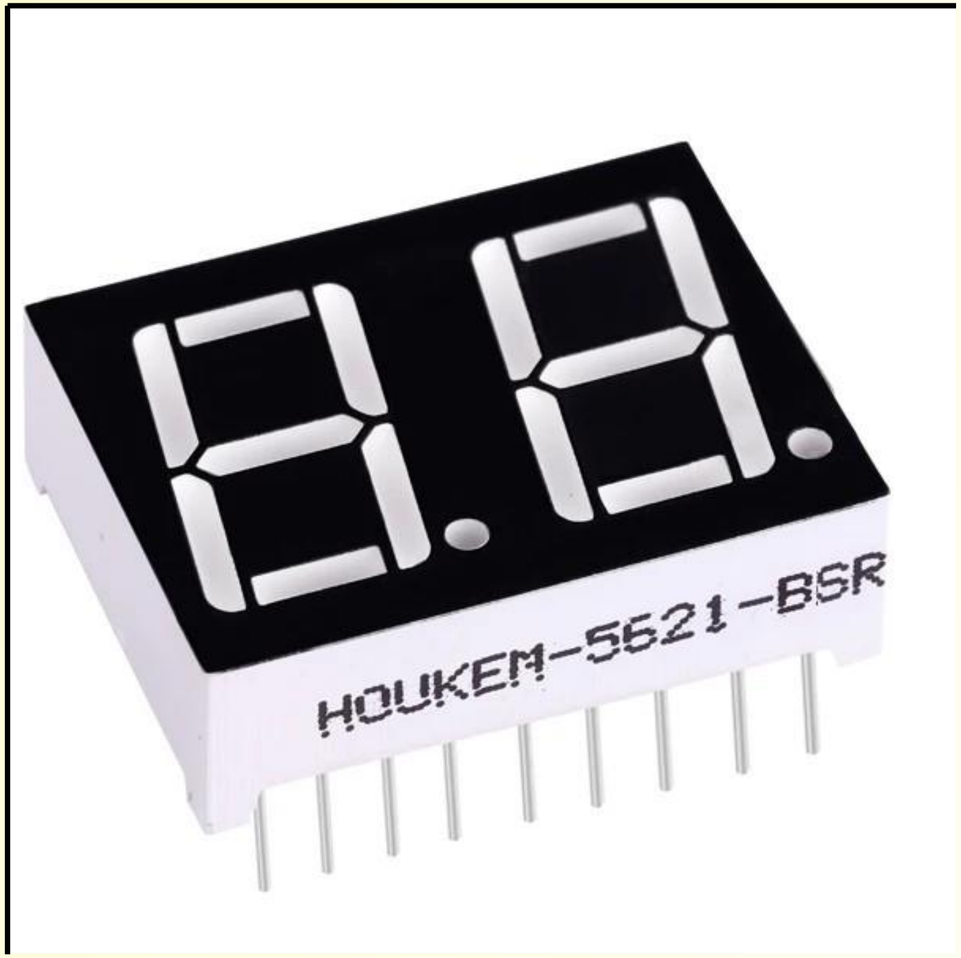


COMPONENTS

RGB LED

COMPONENTS

2 digit 7-segment display

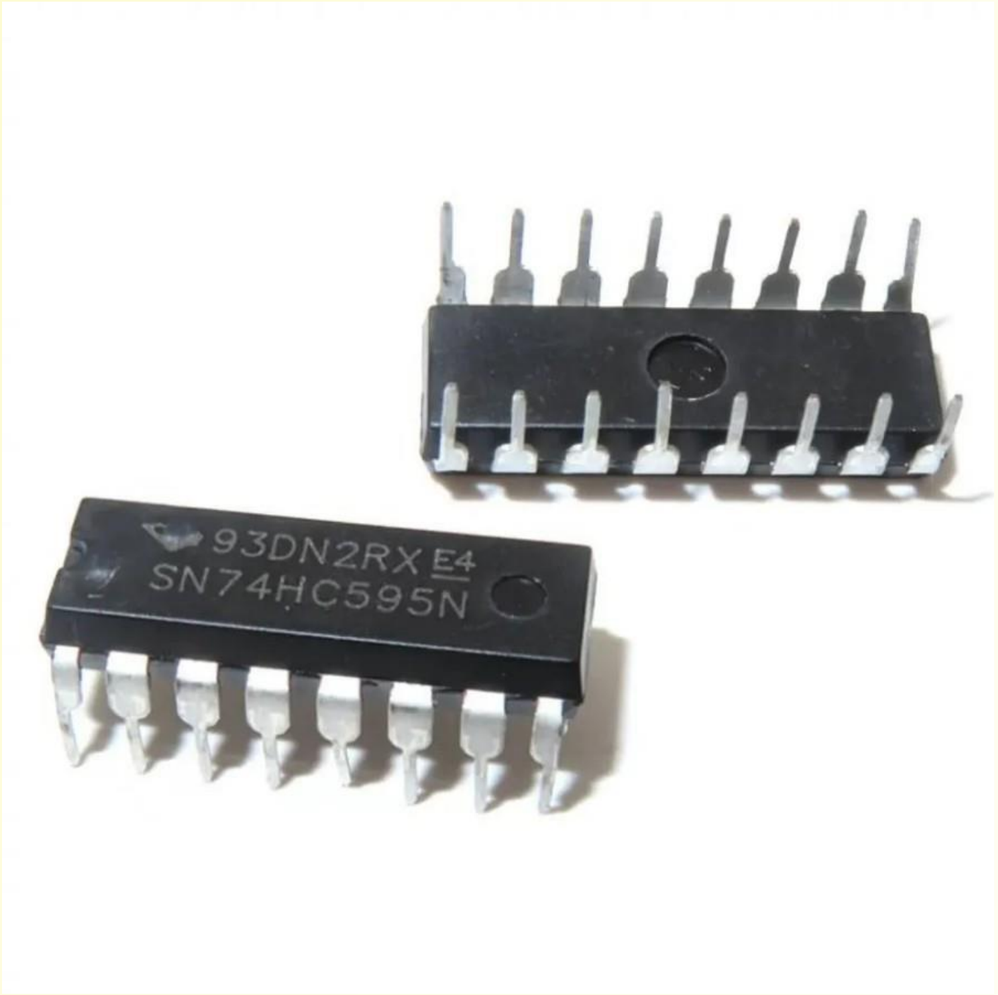


COMPONENTS

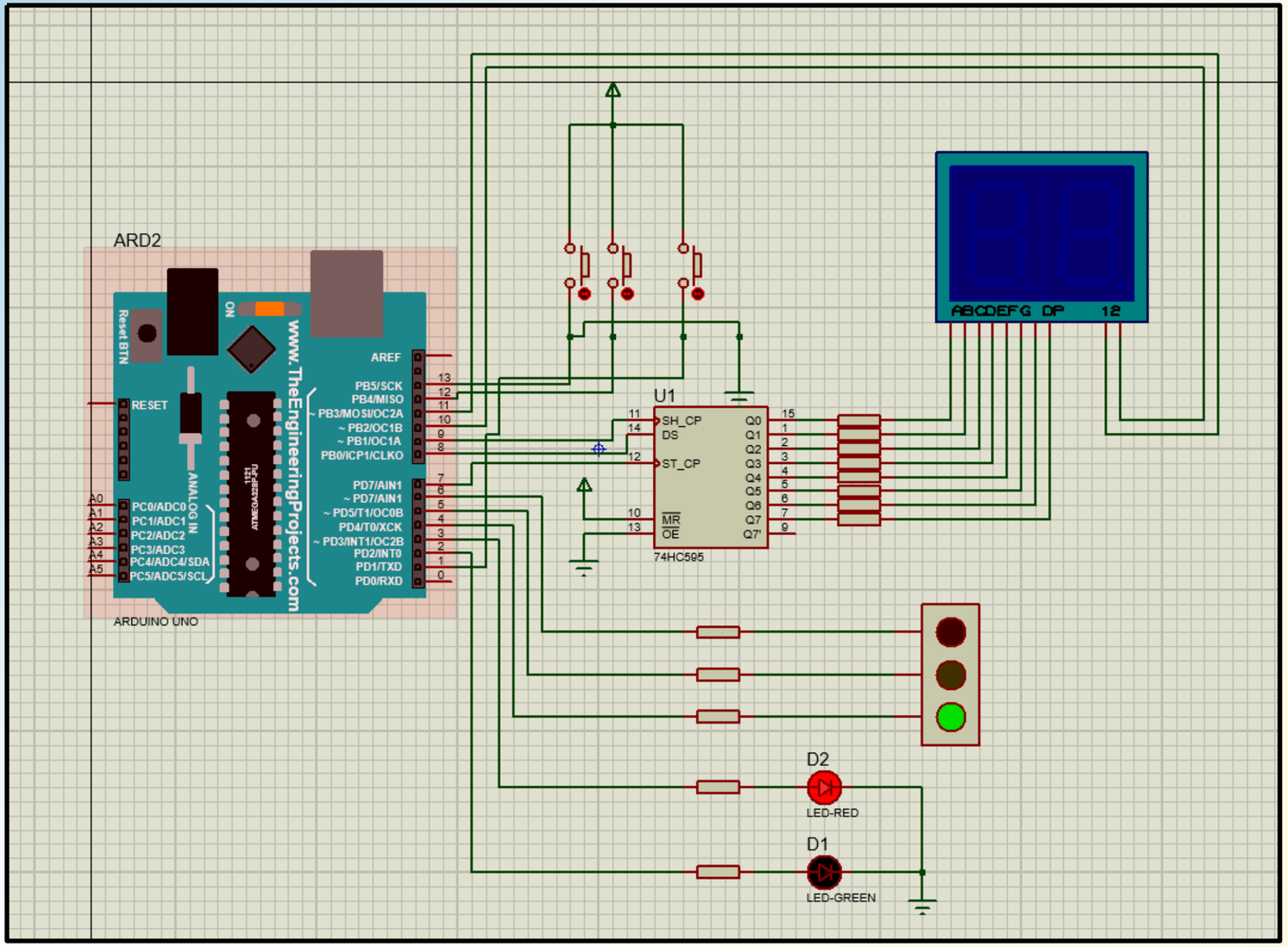
Buttons

COMPONENTS

74HC595 shift register

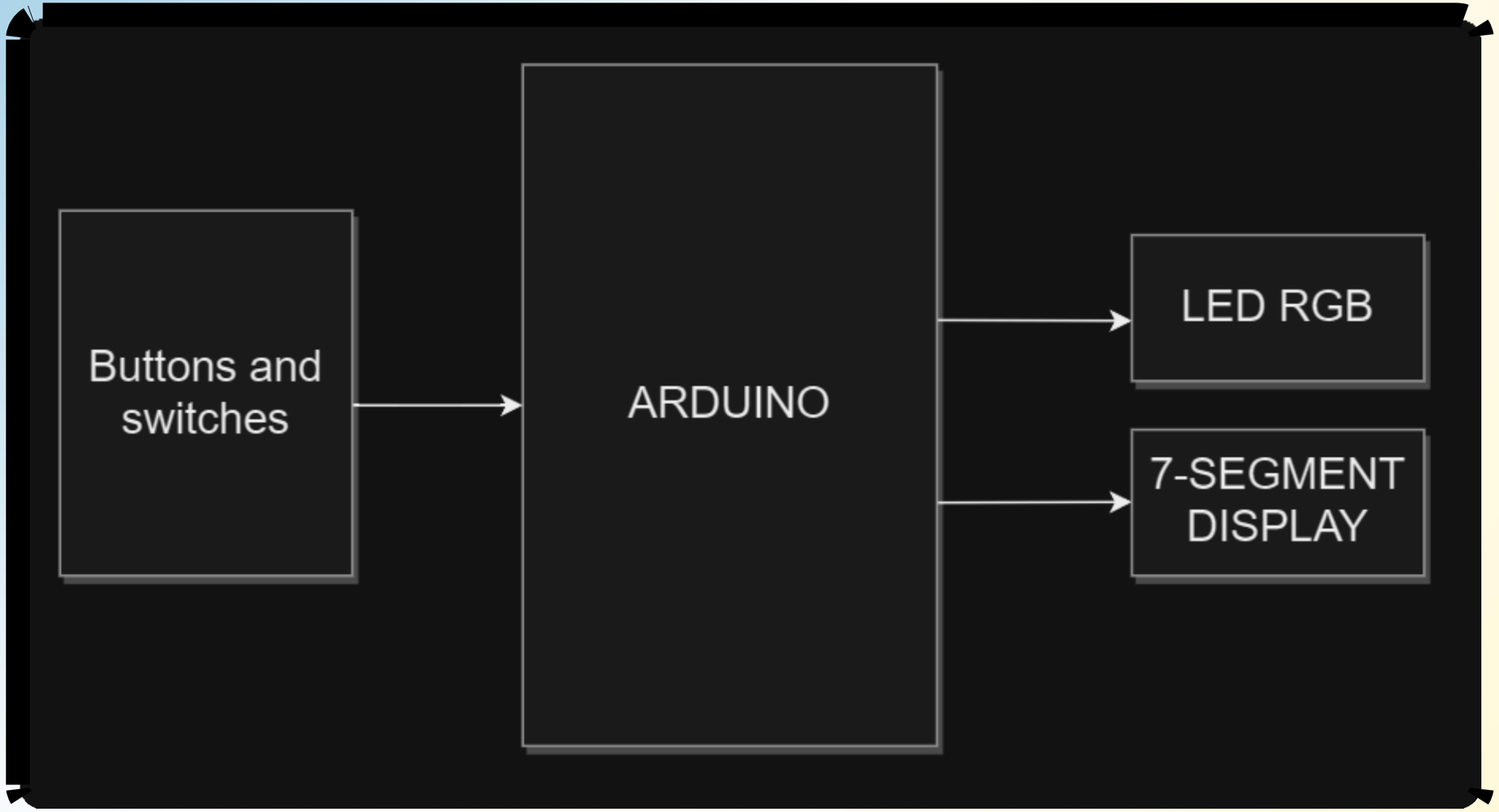


SYSTEM OVERALL DESIGN



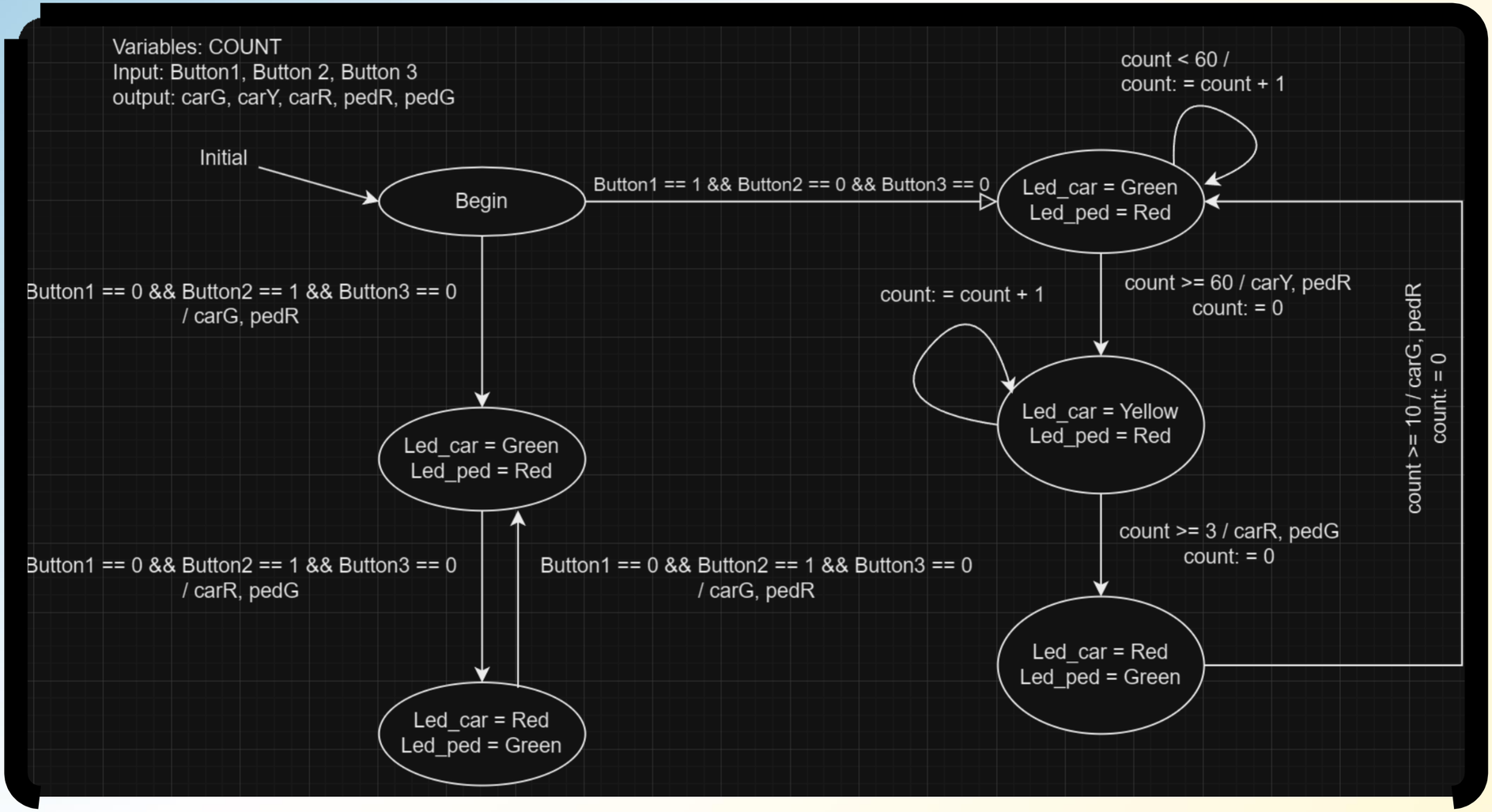
SYSTEM OVERALL DESIGN

BLOCK DIAGRAM



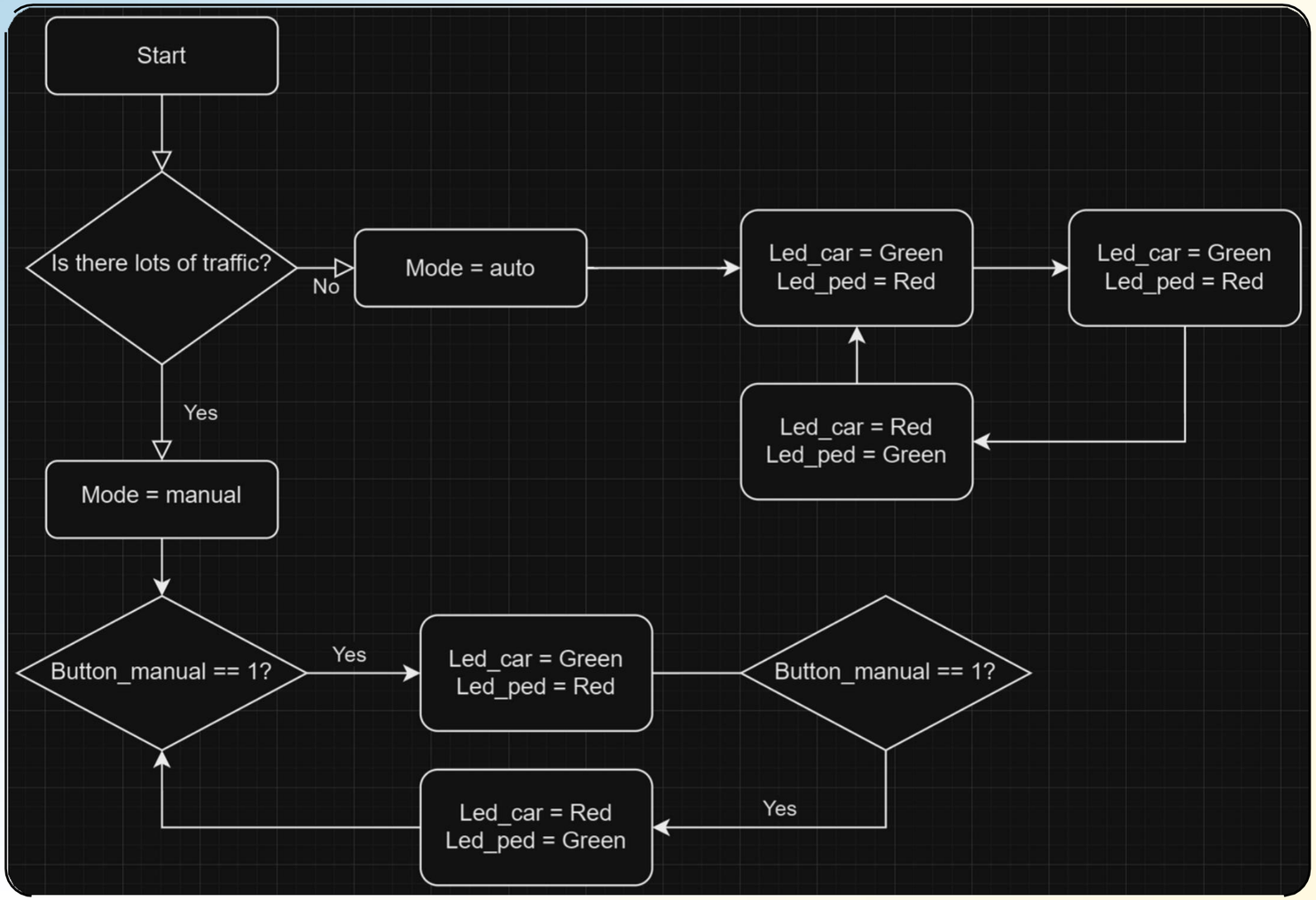
SYSTEM OVERALL DESIGN

FSM



SYSTEM OVERALL DESIGN

FLOWCHART



ADVANTAGES

- Optimizes traffic patterns, leading to smoother and more efficient movement of vehicles through intersections.
- Reduces accidents and enhancing overall road safety
- Minimizes delays for commuters and improving the overall efficiency of transportation networks.
- By optimizing signal timings, the project can contribute to energy conservation, as traffic flows more smoothly, reducing unnecessary stops and starts.

DRAWBACKS

- May face challenges in adapting to sudden changes or unexpected events, potentially causing disruptions in traffic management.
- In some cases, drivers may seek alternative routes to avoid regulated intersections, leading to unintended traffic patterns and potential issues in other areas.

FUTURE DEVELOPMENTS

- AI and machine learning: trains and predicts traffic congestions, dynamically adjusts timings
- Directly communicate to vehicles to optimize routes and enhance safety
- Responds to weather conditions to adjust modes and timings

THANK YOU!