

E2.08 – Elevator Control System

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Sercan Iscan

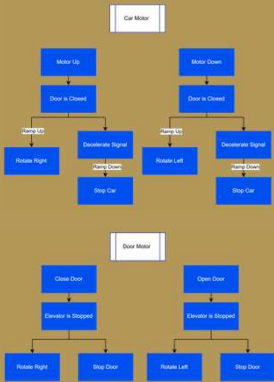


Original Requirements

- Safely manage the floor selection and prioritization between inside and outside elevator buttons
- Control the motor direction and stop at correct floors
- Automatically open and close the doors when arriving at floors
- Implement status feedback through indicators
- Design and simulate using OpenPLC

Motor Control

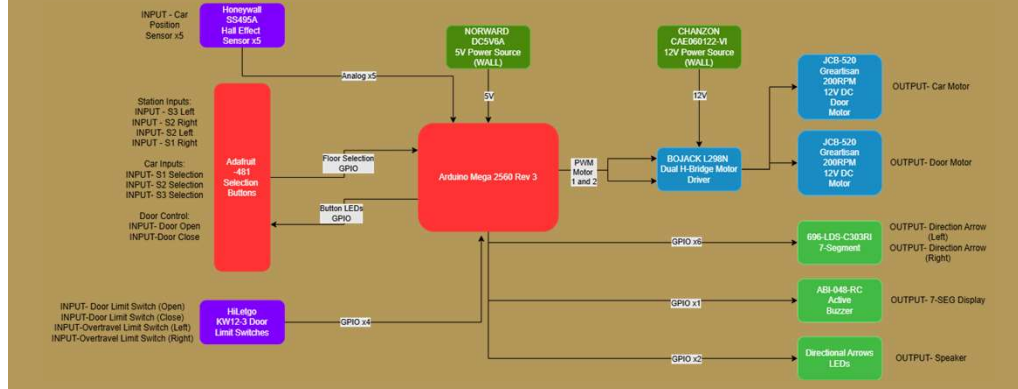
Inputs from Floor Prioritization and Safety/Door Operation. Control the direction movement for both Car and Door Motor. Decelerate signal from sensor subsystem triggers PWM ramp down for car motor.



Acknowledgments

- Sponsor: Sercan Iscan
- Advisor: Jeffrey Stevens
- Faculty Advisor: Mark Welker

Top Level Block Diagram



User Interface

Floor display, LED buttons, arrows, and audio tones provide clear, real-time elevator status feedback.



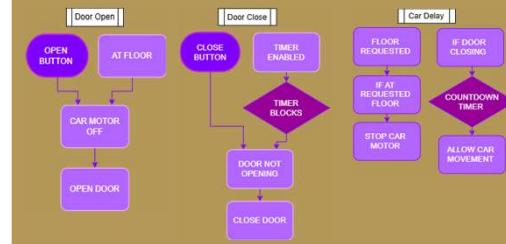
Elevator Model/Fabrication

A 3D-printed elevator car and pulley system was designed and implemented to demonstrate our OpenPLC control logic in an interactive and engaging way.



Door Operation

Door Operations sends open/close door signals based on buttons and car/door status.



Floor Prioritization

The prioritization logic selects the next floor based on active Up, Down, and Request signals.



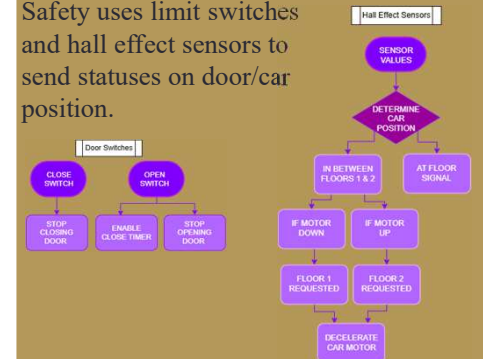
Meet the Team



Kaitlyn Chandler, Sarah Smith, Nathan Charles, Noah Pham

Safety and Emergency

Safety uses limit switches and hall effect sensors to send statuses on door/car position.



Testing Results

- Safety and Emergency
 - Floor Detection & Decel – Pass
 - Door Limit Switch Test – Pass
- Door Operations
 - Open/Close Operation - Pass
- User Interface
 - Seven-Segment Accuracy – Pass
 - Auditory Alert Tming - Pass
- Floor Prioritization
 - Request Queue Test – Pass
 - Directional Priority Test - Pass
- Motor Control
 - Car Motor Test – Pass
 - Door Motor Test – Pass