

# Elevator Controller System

Course: Digital Design Fundamentals

Tool Used: Logisim

B.E (CST)

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# Project Overview

- FSM-based elevator control system
- Simulated using Logisim
- Operates between three floors (0, 1, 2)
- Fully clock-synchronized design



# System Inputs & Outputs

## Inputs

- Floor request buttons
- Enable signal
- Clock signal

## Outputs

- 7-segment floor display
- Status LEDs (Up, Down, Ready, Busy, Usable)

# FSM-Based Operation

- Elevator modeled as a Finite State Machine
- States represent floor position & motion
- State transitions controlled by clock
- Uses D Flip-Flops for state storage

## Subcircuit 1: 7-Segment Decoder

- Takes one-hot floor signals (0,1,2)
- Implemented using AND, OR, NOT gates
- SOP-based combinational logic
- Displays current floor number

## Subcircuit 2: Decision Logic Block

- Pure combinational logic
- Uses current state & request inputs
- Generates:
  - Up / Down signals
  - Door control
  - Cabin position indicators
  - No memory stored in this block

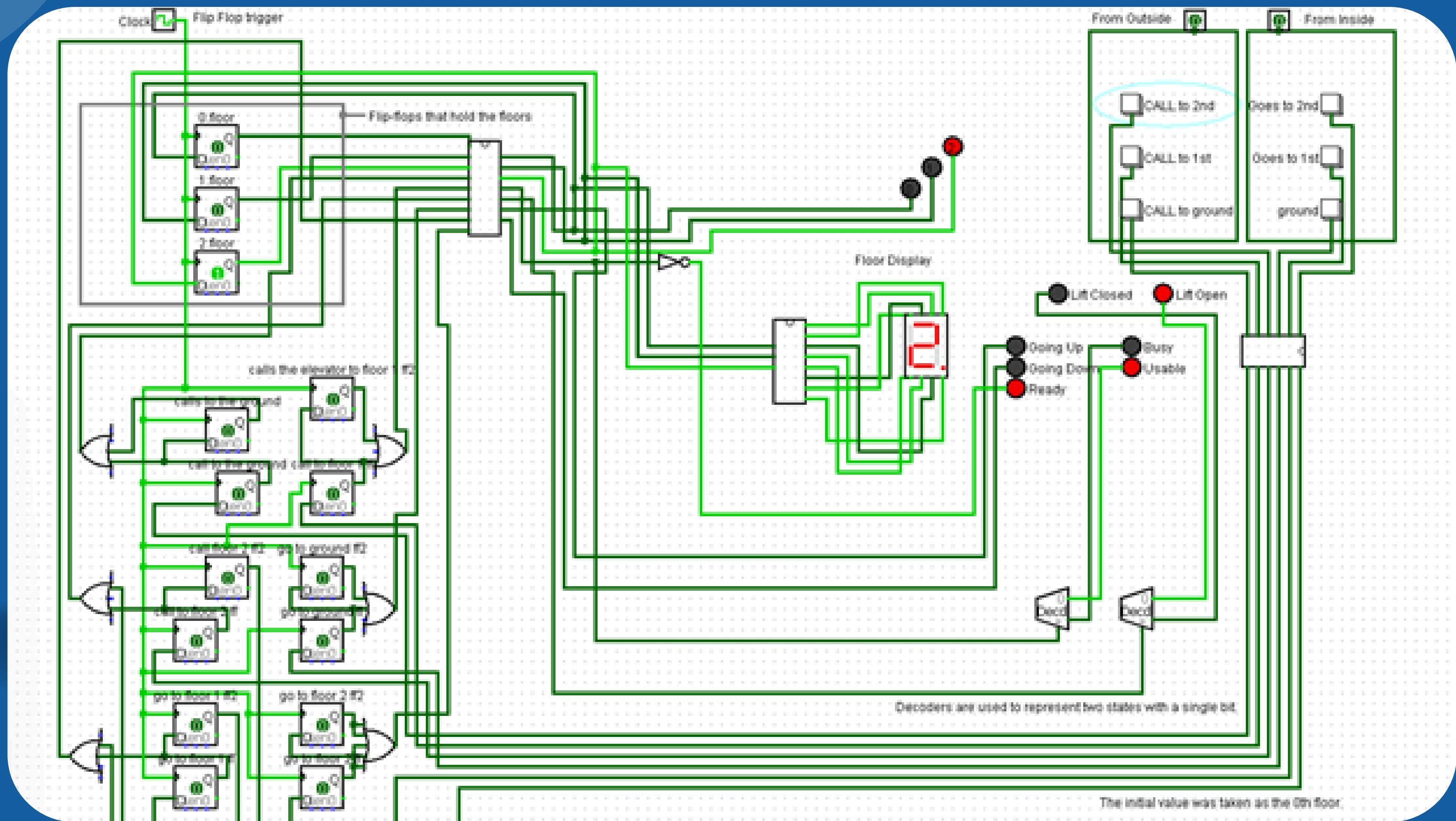
## Subcircuit 3: Request Memory Block

- Built using D Flip-Flops
- Latches momentary button presses
- Stores pending requests until served
- Forms the memory of the FSM

# Main Circuit

- Integrates all subcircuits
- D Flip-Flops store floor & request states
- Decision logic generates control signals
- Drives motor direction, door control, and indicators

# Main Circuit:



# CONCLUSION

- Successfully implemented FSM-based elevator
- Modular and hierarchical design
- Reliable state transitions using clocked logic
- Accurate floor display and control signals

# THANK YOU!