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A Mini Project Report
On
“ **Digital Voting Machine** “

[Code No: EEEG 202]

For partial fulfilment of II Year/ I Semester in Computer Engineering

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Abstract

This project presents a Digital Voting System using Logisim Evolution, incorporating counters, and 7-segment displays to ensure fair voting. Each candidate has a counter to track votes, with a BCD to 7-segment decoder displaying results. The system uses a splitter to manage counter outputs efficiently. This design ensures secure, transparent, and tamper-proof electronic voting.

Bonafide Certificate

This mini project on
“Digital Voting System”

is the bonafide work of

Aakriti Pandey
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who carried out this mini project under my supervision.

Subject Instructor

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Chapter 1: Introduction

Chapter 1.1 Introduction

This report explores the design and simulation of a digital voting system using Proteus, a powerful tool for electronic circuit design and simulation. The system is built using fundamental digital components, including push buttons, counters , logic gates, and a 7-segment display or LCD. These components were selected for their simplicity, efficiency, and reliability in counting and displaying votes.

The digital voting system operates by allowing users to cast votes using push buttons. Each button corresponds to a candidate, and the votes are counted using counters, which update the display accordingly. Logic gates ensure correct vote registration, while additional circuit elements help maintain accuracy.

This project highlights the practical application of digital logic circuits in real-world scenarios, demonstrating how simple combinational and sequential logic can be used to develop an efficient and secure voting system. The report includes circuit schematics, component descriptions, and step-by-step implementation details, emphasizing the importance of precision, security, and reliability in electronic voting.

Overall, this project serves as an educational tool, showcasing the role of digital electronics in modern voting systems. The successful simulation in logisim evolution validates the design’s effectiveness, proving its potential for further development and real-world implementation.

Chapter 2: Circuit Composition and its Working

2.1 Components

The primary components used in this project are:

- Push Buttons
    - Function: Used as input switches to cast votes.
    - Role: Each push button represents a candidate and sends a signal when pressed.
- 7447 IC (Decade Counter with 7-Segment Display Driver)
    - Function: Counts the votes and drives the 7-segment display.
    - Role: Increments the vote count for a candidate each time a button is pressed and displays the result.
- Counter CTR4 in Logisim Evolution
    - Function: Keeps track of the number of votes received by each candidate.
    - Role: Increments the vote count when a voter casts a vote and sends the binary output to the BCD to 7-segment decoder for display.
- Logic Gates (AND, OR, NOT)
    - Function: Manage control logic within the voting system.
    - Role: Prevents multiple votes from a single user and ensures accurate counting.
- 7-Segment Display / LCD
    - Function: Visually displays the number of votes for each candidate.
    - Role: Shows the final vote count in a readable format.
- Power Supply
    - Function: Provides the necessary voltage and current for the circuit.
    - Role: Ensures all components receive adequate power for proper functioning.
- Connecting Wires
    - Function: Establish electrical connections between components.
    - Role: Facilitate the flow of current and signals

2.2 Circuit functionalities

2.2.1 Vote Registration Mechanism

1. Push Button Activation:
    - When a voter presses a button, it sends a signal to the corresponding counter.
2. Pulse Generation for Counting:
    - If using discrete logic, the 4026 IC counts the button presses and displays the result.

2.2.2 Vote Counting

1. Counting Logic:
    - The counter increments the vote count with each button press.
    - Each candidate has a separate counter to tally votes.
2. Driving the Display:
    - The output of the 4026 IC is connected to a 7-segment display or LCD, which shows the total votes.

2.2.3 Reset Mechanism

1. Vote Reset Option:
    - A reset button can be added to clear the counts and restart the voting process.
2. Use of Logic Gates for Reset:
    - AND/OR gates can be used to reset the circuit once a certain condition is met (e.g., all votes counted).

2.2.4 Displaying Vote Counts

1. 7-Segment Display Configuration:
    - Each candidate's vote count is shown on a dedicated 7-segment display.
2. LCD Display (If Used):
    - An LCD screen can be used to show vote counts more clearly, including candidate names and vote tallies.

2.2.5 Power Supply and Circuit Stability

1. Providing Stable Power:
    - A 9V or 5V power supply ensures all components function correctly.
2. Capacitors for Noise Reduction:
    - Small capacitors filter out noise and stabilize signals.

2.3 Working

- ➢ Voter presses a button to select a candidate.
- ➢ The signal is processed
- ➢ The counter IC (4026) increments and updates the display.
- ➢ Votes are continuously displayed until the voting period ends.
- ➢ A reset mechanism allows the system to restart for the next voting session.

2.4 Project link

Github repository: https://github.com/pandeyaakriti/Digital-Voting-System

Chapter 3 : Result and Conclusion

3.1 Result

The simulation of the Digital Voting System using Proteus 8 yielded successful results, demonstrating the functionality and accuracy of our design. The push buttons effectively registered votes, and the counters correctly counted and displayed the votes on 7-segment displays. The use of logic gates ensured proper vote processing and prevented errors such as multiple votes from a single press. The power supply provided stable operation, and the circuit performed within the expected parameters.

Overall, the simulation confirmed the effectiveness of the Digital Voting System, proving its potential for secure and transparent electronic voting applications.

3.2 Conclusion

The Digital Voting System project using Proteus 8 has successfully demonstrated the practical application of digital logic components in an electronic voting system. By using push buttons, 4026 ICs, logic gates, and 7-segment displays, we created a reliable and accurate vote-counting system.

The push buttons registered votes, the 4026 ICs incremented and displayed the vote count, and logic gates managed vote processing to prevent errors. The system ensured accurate vote counting and displayed real-time results. This project provided valuable insights into the design and implementation of digital circuits, highlighting the importance of circuit stability, logic control, and accurate counting.

In summary, this project effectively illustrated the use of digital electronics in developing an electronic voting system, serving as an educational tool and a potential foundation for more advanced and secure electronic voting mechanisms.