PROJECT TITLE : PC Management System, Admin Control

Aim: To design and implement a PC Management System with advanced features such as remote control, user authentication, timer-based power management, and real-time monitoring.

Abstract: This project introduces a robust PC Management System that allows administrators to control and monitor multiple PCs efficiently. The system incorporates user authentication, remote control via a priority encoder, timer-based power management, and real-time monitoring, enhancing the functionality and security of PC management in a networked environment.

Description of Components Used

- Binary Counter: A 4-bit binary counter is used to keep track of the usage time for each PC.
- Priority Encoder: The priority encoder handles remote control commands, prioritizing them for execution.
- User Authentication Module: This component ensures secure access to the system, requiring authorized users to input a passcode for operation.
- Remote Control Interface: The remote control interface allows users to send commands to the system.
- Clock Source: Provides the clock signal for the counters.
- Reset Functionality: Buttons for resetting counters and timers.
- PC Control Logic: Custom logic gates control the power state of each PC.
- Decoder: Decodes the output of the priority encoder to execute the associated actions.

Aspects and Features of the Project

- User Authentication:

A passcode-based system prevents unauthorized access to the PC management system.

- Remote Control with Priority Encoding:

The priority encoder manages simultaneous remote control commands, ensuring that the highest-priority command is executed.

- Usage Timer:

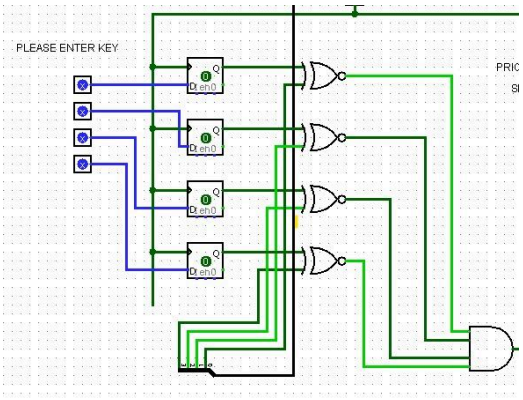
A binary counter records the usage time of each PC, with a 7-segment display providing visual feedback.

- Scheduled Shutdown:

A timer-based feature allows scheduled shutdowns for individual PCs.

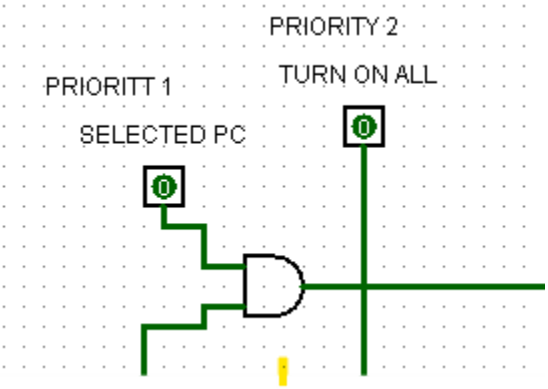
Total Implementation Description Step by Step

1. User Authentication:

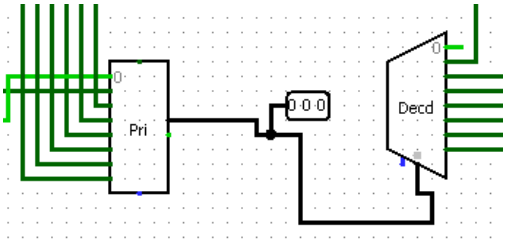


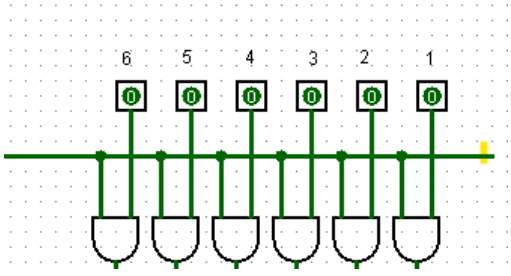
- We use input pins to simulate passcode entry. These pins represent each digit of the passcode.
- Implement a logic gate arrangement (like AND, OR gates) that compares the entered passcode with a preset or expected passcode.
- If the entered passcode matches the expected passcode, set a flag or signal indicating successful authentication.
- The flag or signal from the verification logic is used to enable or disable access to the PC management system.
- When access is allowed, users can proceed to send remote commands.

2. Remote Control with Priority Encoding:



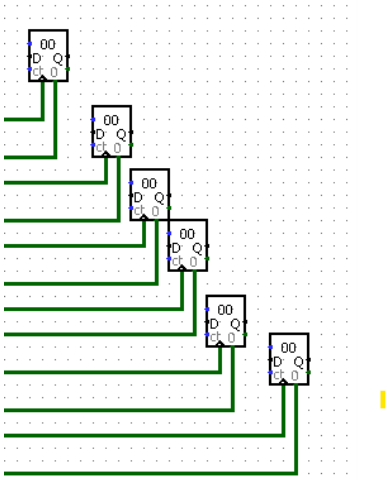
- We use input pins to simulate remote commands and label these pins according to the commands we designed.
- integrate a priority encoder to prioritize the commands.
- Connect the input pins from remote commands to the priority encoder's inputs.
- The priority encoder will assign a binary code to the highest-priority active command.
- Implement a decoder to interpret the binary code generated by the priority encoder.
- Connect the output of the priority encoder to the decoder's inputs.
- For each output of the decoder, create specific logic that performs the corresponding action. These actions should control the state of PCs as intended (turning them on or off).





3. Usage Timer:

- Place a binary counter for each PC.
- Connect the counter to the clock source (simulated clock signal).
- Use logic gates to ensure the counter only increments when the PC is turned on.
- Implement logic such that when the PC is ON, the counter is enabled, allowing it to count.
- Add a reset button for each counter to reset the count to zero. Connect the reset button to the clear (CLR) input of the binary counter.



FINAL CIRCUIT :