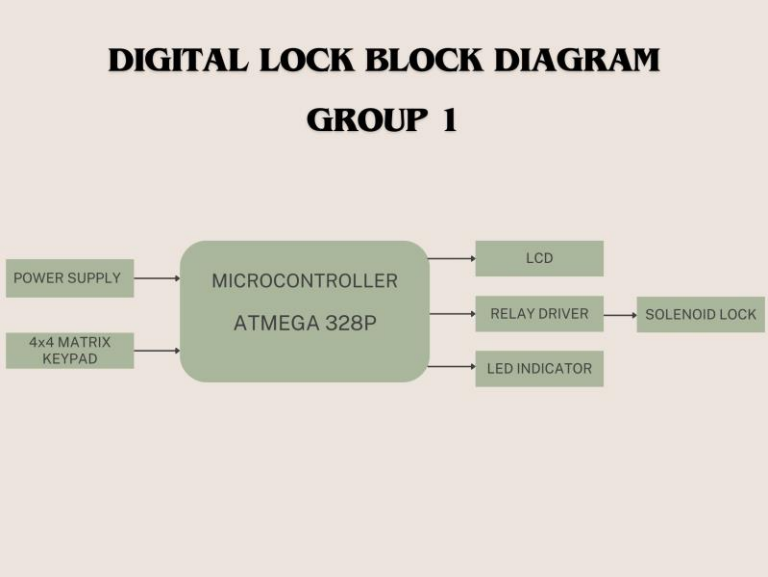
Design specification of Digital Door Lock

I. Block Diagram

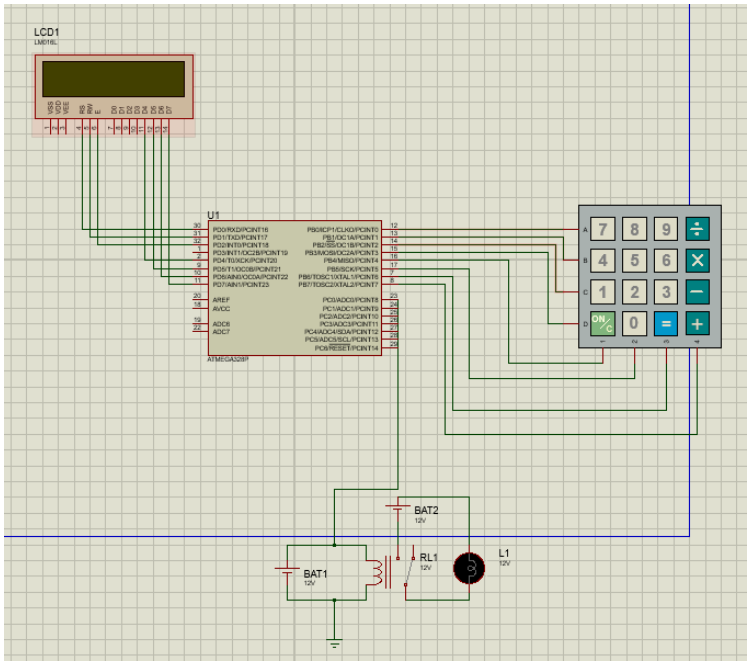


II. Hardware selection

SR.NO	NAME OF COMPONENT	SPECIFICATION	QUANTITY
1	Microcontroller	Atmega328p	1
2	4x4 Matrix Keypad	ESCD	1
3	Solenoid Lock	Solenoid Lock LY-03	1
4	LCD screen	LCD TEXT LCD2004 blue	1
5	Driver relay	5V 1-Channel Relay Module with Optocoupler H/L Level Triger RN5I	1

6	Power supply	Dc power supply 5VDC 1A HS001436	1
7	Indicator led	5mm color led HS000095	1

III. Schematic



IV. Schematic explanation

- Microcontroller (Atmega328p): This serves as the central processing unit. It reads input from the keypad, manages the display on the LCD, and controls the other devices based on the programmed logic.
- 4x4 Keypad: Users input a code through the keypad, and the microcontroller processes this input to determine whether to grant access or trigger an alarm.
- 16x2 LCD: This display unit shows relevant information, like prompts for code input, system status, or error messages, enhancing the user interface.
- Battery 12V for Relay: Powers the relay, which acts as an electronic switch. When the correct code is entered, the microcontroller signals the relay to switch, allowing the 12V power to flow and activate the door lock mechanism.

- Battery for LED: Powers an indicator LED, giving a visual cue about the system's status, such as power on or system armed.
- Relay 12V: This is crucial for controlling the electronic lock. When activated by the microcontroller, the relay physically connects or disconnects the circuit that controls the door lock, enabling or preventing access.
- LED: An LED serves successful passcode or incorrect code