

Task 16.

Target:

Interfacing with DC motor and 7 segments.

Resources:

Ahmed Abd El Ghafar diploma (LEC 3 & 4) in Microcontroller Interfacing (04 - 05- 06).

Task:

Design a manual door lock system that indicates the door's status using LEDs and a 7-segment display. The system uses a DC motor to lock and unlock the door.

Components:

1. Microcontroller (PIC)
2. LEDs (Red and Green)
3. 7-Segment Display (One)
4. DC Motor
5. Motor Driver (e.g., L298N)
6. Limit Switches (for detecting door position)
7. Push Button (for manual control)

Functionality:

1. **LED Indicators:**
 - **Red LED:** Door is locked.
 - **Green LED:** Door is unlocked.
2. **7-Segment Display:**
 - Displays "L" when the door is locked.
 - Displays "U" when the door is unlocked.
3. **DC Motor Control:**
 - The motor will lock the door when a lock signal is received.

- The motor will unlock the door when an unlock signal is received.
- 4. **Limit Switches:**
 - Detect if the door is fully locked or fully unlocked.
 - Ensure the motor stops at the correct position.
- 5. **Control:**
 - A push button can be used to manually lock or unlock the door.

Deadline:

Monday 15/7/2024 at 11.59 pm

Notes:

Task Instructions:

1. **Video Requirements:**
 - **Duration:** Maximum of 5 minutes.
 - **Content:**
 - Discuss the application file.
 - Build the code.
 - Run it on Proteus.
 - **Introduction:** Mention your name at the beginning of the video.
 - **Submission:** Upload the video to Google Drive and include it in the GitHub documentation.
2. **Documentation:**
 - **Task Folder Name:** The folder containing the task should be named `Task_num_taskTopic`.
 - **Contents:** The documentation should describe the task and include all the drivers required for the task, not just the application file.

Feel free to ask if you have any questions or to understand a problem 😊