Question 1:

Design and implement a program in C language for the PIC 16 microcontroller that simulates a pedestrian crossing system (نظام عبور المشاة). This system will control the traffic light and a pedestrian crossing signal.

- Three LEDs: Red (for vehicles), Yellow (for vehicles), and Green (for vehicles).
- Two additional LEDs for the pedestrian crossing signal (e.g., red LED and green).
- The pedestrian signal should be active for 5 seconds during the red light for vehicles, allowing pedestrians to cross safely.
- The following table explains the details

Steps	Vehicle Light	Pedestrian Light
1	Red (5 seconds)	Green (5 seconds)
2	Yellow (5 seconds)	Red (blinking)
3	Green (5 seconds)	Red
4	Yellow (5 seconds)	Red
5	Red (5 seconds)	Green(5 seconds)

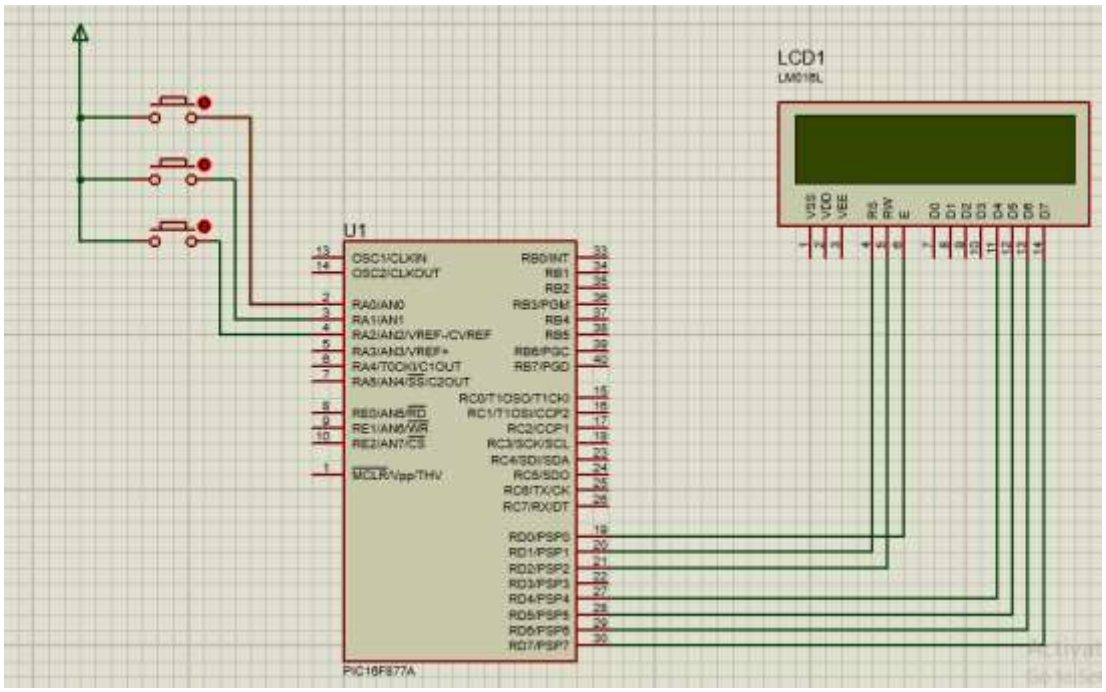
Question 2:

Design a program in C language for the PIC 16 microcontroller that interfaces with an LCD and three push buttons. The system should allow users to control a counter value displayed on the LCD using the push buttons.

Button A: Increments the counter by 3.

Button B: Decrements the counter by 3.

Button C: Resets the counter value to zero.



Question 3:

Designing a system using the PIC 16 microcontroller and the L298 H-bridge to control a motor's direction and speed. The system should be designed as follows:

- There are three push buttons (Button 1, Button 2, and Button 3).
- A motor is connected through the L298 H-bridge to the PIC 16 microcontroller.
- A potentiometer is used to control the duty cycle of the PWM signal, thereby controlling the speed of the motor.

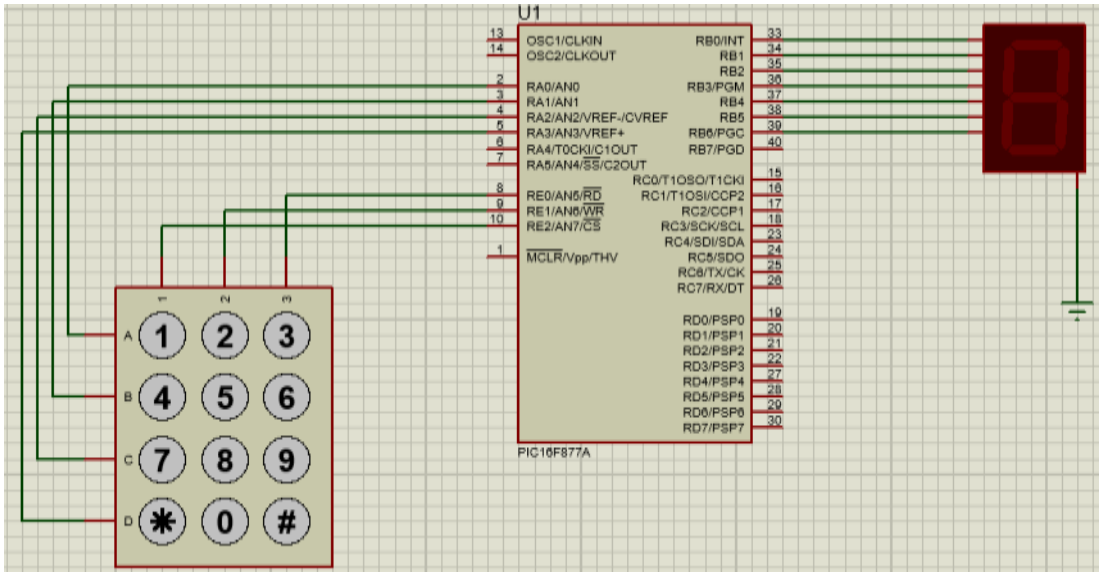
System Operations:

- When Button 1 is pressed, the motor should rotate in the clockwise direction.
- When Button 2 is pressed, the motor should rotate in the counter-clockwise direction.
- When Button 3 is pressed, the motor should stop.

The speed of the motor should be controlled by adjusting the potentiometer.

Question 4:

Use 7 Segment and Keypad to show the numbers from 0-9 on the 7 segment.



Question 5:

Use Keypad to control TWO motors as following:

Button	M1	M2
1	Clockwise	OFF
2	Counterclockwise	OFF
3	OFF	Clockwise
4	OFF	Counterclockwise
5	Clockwise	Clockwise
6	Counterclockwise	Counterclockwise
7	Clockwise	Counterclockwise
8	Counterclockwise	Clockwise
0	OFF	OFF