

Task 5  
MBSD  
DCSE, UET Peshawar  
Spring-2021

**Deadline: 10am on 6/6/2022**

At a Motorway entry point in Peshawar, assume there are only two lanes to enter. One is for small vehicles and another one is for large ones. We have connected a sensor at each entry point. The sensor sends a signal (high-to-low edge) to our embedded system whenever a vehicle passes through the entry point and enters the Motorway. Use an 89C51 to count the number of vehicles passed through the entry point in one **minute**. As soon the one-minute time is over, it is indicated by turning ON a led at P3.1 pin, send the final value of small vehicles to Port-1 and larger ones to Port-2. Finally, the program goes into an infinite loop, doing nothing.

- Draw schematic along with timing diagram. The oscillator frequency is 12MHz.
- Entry of a vehicle can be simulated using a button press.
- Use two buttons: one for large vehicles and another one for smaller ones.
- Use port interrupts at P3.2 and P3.3.
- Use seven segments to display count of vehicles at Port 1 and Port 2.
- Use timers for creating a delay of 1 min.

Hint: Use timer interrupt and port interrupt. Use C language and Proteus **ONLY**.