

University of Engineering and Technology, Peshawar

Department of Computer Systems Engineering.

Course 307: CSE-307 MicroProcessor Based System Design

Zubair Khan

Section

Batch

Submitted to



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Dr. Bilal Habib

TASK_#_: 05

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**.

Source Code

```
#include<reg51.h>
#include<stdio.h>
sbit LED = P3^1;
sbit Button_00 = P3^2;
sbit Button_01 = P3^3;
unsigned int looping_controller = 0;
void t() interrupt 3 {
    looping_controller++;
    if(looping_controller == 5000) {
        IE = 0;
        LED = 1;
    }else {
        TH1 = 0xD1;
        TL1 = 0x1F;
    }
}
void Func_B() interrupt 0 {
    P1 = P1 + 1;
}
void Func_A() interrupt 2 {
    P2 = P2 + 1;
}
void strt_timer() {
    TR1 = 1;
}
void main() {
    P3 |= 0x0c;
    LED = 0;
    P1 = 0;
    P2 = 0;
    IT0 = 1;
    IT1 = 1;
    IE = 0x8D;
    TMOD = 0x10;
    TH1 = 0xD1;
    TL1 = 0x1F;
    strt_timer();
    while(1);
}
```

Schematic Diagram

