Processor Hardware/Software Interface
EECS 113

Assignment 3: Motor Revolution Counter

Edward Ou

15561434

Top Panel

System Clock (MHz) 12.0   100 ▼ **Update Freq.**

SBUF

R/O	W/O	TH0	TL0	R7	0x00	B	0x06
0x00	0x00	0xD9	0xCF	R6	0x00	ACC	0x80
RXD	TXD			R5	0x00	PSW	0x01
1	0	TMOD	0x51	R4	0x00	IP	0x00
SCON	0x00	TCON	0x5A	R3	0x00	IE	0x00
				R2	0x00	PCON	0x00
pins	bits	TH1	TL1	R1	0x3F	DPH	0x00
0xF9	0xF9 P3	0x00	0x0E	R0	0x45	DPL	0x00
0xFF	0xFF P2					SP	0x09
0x30	0x30 P1	PC	**8051**				
0xFF	0xFF P0	0x00A4	PSW	0 0 0 0 0 0 0 1			

Modify RAM

Data Memory   addr 0x00   0x00 value

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	45	3F	00	00	00	00	00	00	0D	00	84	00	93	00	93	00
10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
30	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
40	36	32	33	30	30	00	00	00	00	00	00	00	00	00	00	00
50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Copyright ©2005-2021 James Rogers   Remove All Breakpoints

RST Step Run New Load Save Copy Paste X

Time: 24ms 436us - Instructions: 12300

```
                ;-----CMD----- Send LCD command
        CMD:
0088|       CLR RS
008A|       MOV P1, A
008C|       ACALL PULSE
008E|       RET
                ;-----Pulse-----
        PULSE:
008F|       SETB E
0091|       ACALL DELAY
0093|       CLR E
                ;-----Delays-----
        DELAY:      ;LCD delay
0095|       MOV R7, #50
0097|       DJNZ R7, $
0099|       RET

        DELAY10:   ;10ms delay correspond
                ;65536-10000=55536, 55536=D8F
009A|       MOV TH0, #0D8H
009D|       MOV TL0, #0F0H
00A0|       SETB TR0
00A2|       SETB TR1
00A4|       JNB TF0, $
```

P0.7	1	Display-select Decoder CS	DAC WR
P0.6	1	Keypad Column 2
P0.5	1	Keypad Column 1
P0.4	1	Keypad Column 0
P0.3	1	Keypad Row 3
P0.2	1	Keypad Row 2
P0.1	1	Keypad Row 1
P0.0	1	Keypad Row 0
P1.7	0	LED 7|Seg. dp|DAC DB7|LCD DB7
P1.6	0	LED 6|Seg. g|DAC DB6|LCD DB6
P1.5	0	LED 5|Seg. f|DAC DB5|LCD DB5
P1.4	0	LED 4|Seg. e|DAC DB4|LCD DB4
P1.3	0	LED 3|Seg. d|DAC DB3|LCD DB3
P1.2	0	LED 2|Seg. c|DAC DB2|LCD DB2
P1.1	0	LED 1|Seg. b|DAC DB1|LCD DB1
P1.0	0	LED 0|Seg. a|DAC DB0|LCD DB0
P2.7	1	SW 7	ADC DB7
P2.6	1	SW 6	ADC DB6
P2.5	1	SW 5	ADC DB5
P2.4	1	SW 4	ADC DB4
P2.3	1	SW 3	ADC DB3
P2.2	1	SW 2	ADC DB2
P2.1	1	SW 1	ADC DB1
P2.0	1	SW 0	ADC DB0
P3.7	1	ADC RD	Comparator Output
P3.6	1	ADC WR
P3.5	1	Motor Sensor
P3.4	1	Display-select Input 1
P3.3	1	AND G..put|Displ..t 0|LCD RS
P3.2	0	LCD E	ADC INTR
P3.1	0	Motor Control Bit 1	Ext. UART Rx
P3.0	1	Motor Control Bit 0	Ext. UART Tx

DI i LD

7 6 5 4 3 2 1 0

1 2 3
4 5 6
7 8 9
* 0 #

AND Gate Disabled
Key Bounce Disabled
Standard ▼ i

U No Parity   8-bit UART @ 4800 Baud ▼
Rx   Rx Reset
Tx   Tx Send i

0.0 V output
Scope
DAC

62300
BF 0 AC 0x05 IR 0x80 DR 0x30 i

0.0 V
input
i
11111111
ADC

MAX
MIN
Motor Enabled

Bottom Panel

System Clock (MHz) 12.0   100 ▼ **Update Freq.**

SBUF

R/O	W/O	TH0	TL0	R7	0x00	B	0x01
0x00	0x00	0xDA	0xD3	R6	0x00	ACC	0x80
RXD	TXD			R5	0x00	PSW	0x01
1	0	TMOD	0x51	R4	0x00	IP	0x00
SCON	0x00	TCON	0x5A	R3	0x00	IE	0x00
				R2	0x00	PCON	0x00
pins	bits	TH1	TL1	R1	0x3F	DPH	0x00
0xF9	0xF9 P3	0x00	0x05	R0	0x45	DPL	0x00
0xFF	0xFF P2					SP	0x09
0x30	0x30 P1	PC	**8051**				
0xFF	0xFF P0	0x00A4	PSW	0 0 0 0 0 0 0 1			

Modify RAM

Data Memory   addr 0x00   0x00 value

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	45	3F	00	00	00	00	00	00	0D	00	84	00	93	00	93	00
10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
30	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
40	31	31	36	30	30	00	00	00	00	00	00	00	00	00	00	00
50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Copyright ©2005-2021 James Rogers   Remove All Breakpoints

RST Step Run New Load Save Copy Paste X

Time: 36ms 759us - Instructions: 18500

```
                ;-----CMD----- Send LCD command
        CMD:
0088|       CLR RS
008A|       MOV P1, A
008C|       ACALL PULSE
008E|       RET
                ;-----Pulse-----
        PULSE:
008F|       SETB E
0091|       ACALL DELAY
0093|       CLR E
                ;-----Delays-----
        DELAY:      ;LCD delay
0095|       MOV R7, #50
0097|       DJNZ R7, $
0099|       RET

        DELAY10:   ;10ms delay correspond
                ;65536-10000=55536, 55536=D8F
009A|       MOV TH0, #0D8H
009D|       MOV TL0, #0F0H
00A0|       SETB TR0
00A2|       SETB TR1
00A4|       JNB TF0, $
```

P0.7	1	Display-select Decoder CS	DAC WR
P0.6	1	Keypad Column 2
P0.5	1	Keypad Column 1
P0.4	1	Keypad Column 0
P0.3	1	Keypad Row 3
P0.2	1	Keypad Row 2
P0.1	1	Keypad Row 1
P0.0	1	Keypad Row 0
P1.7	0	LED 7|Seg. dp|DAC DB7|LCD DB7
P1.6	0	LED 6|Seg. g|DAC DB6|LCD DB6
P1.5	0	LED 5|Seg. f|DAC DB5|LCD DB5
P1.4	1	LED 4|Seg. e|DAC DB4|LCD DB4
P1.3	0	LED 3|Seg. d|DAC DB3|LCD DB3
P1.2	0	LED 2|Seg. c|DAC DB2|LCD DB2
P1.1	0	LED 1|Seg. b|DAC DB1|LCD DB1
P1.0	0	LED 0|Seg. a|DAC DB0|LCD DB0
P2.7	1	SW 7	ADC DB7
P2.6	1	SW 6	ADC DB6
P2.5	1	SW 5	ADC DB5
P2.4	1	SW 4	ADC DB4
P2.3	1	SW 3	ADC DB3
P2.2	1	SW 2	ADC DB2
P2.1	1	SW 1	ADC DB1
P2.0	1	SW 0	ADC DB0
P3.7	1	ADC RD	Comparator Output
P3.6	1	ADC WR
P3.5	1	Motor Sensor
P3.4	1	Display-select Input 1
P3.3	1	AND G..put|Displ..t 0|LCD RS
P3.2	0	LCD E	ADC INTR
P3.1	0	Motor Control Bit 1	Ext. UART Rx
P3.0	1	Motor Control Bit 0	Ext. UART Tx

DI i LD

7 6 5 4 3 2 1 0

1 2 3
4 5 6
7 8 9
* 0 #

AND Gate Disabled
Key Bounce Disabled
Standard ▼ i

U No Parity   8-bit UART @ 4800 Baud ▼
Rx   Rx Reset
Tx   Tx Send i

0.0 V output
Scope
DAC

11600
BF 0 AC 0x05 IR 0x80 DR 0x30 i

0.0 V
input
i
11111111
ADC

MAX
MIN
Motor Enabled