

Liam Spinner

CSE2120

Dr. Caraway

12 Mar 2024

Homework 4

Chapter 2: 2.10(a,b,c,d), 2.19, 2.21, 2.28, 2.34, on pages 44-46

- 2.10

- MOV 26H, #26H

- 0

- MOV R0, #26H

- 0

- MOV @R0, #7AH

- 0

- MOV A, #13H

- 00010011

TMOD	0x00	R4	0x00	IP	0x00
TCON	0x00	R3	0x00	IE	0x00
		R2	0x00	PCON	0x00
TH1	TL1	R1	0x00	DPH	0x00
0x00	0x00	R0	0x26	DPL	0x00
				SP	0x07
PC	0x007A	i	ACC	0	0
				0	0
				1	1

```
;MOV @R0, #7AH
0000| MOV A, #13H
;MOV 30H, #55H
;XRL 30H, #0AAH
;SETB P1.1
;MOV P3, #0CH
```

- MOV 30H, #55H

- 0

- XRL 30H, #0AAH

- 0

- SETB P1.1

- 0

- MOV P3, #0CH

- 0

- 2.19: What is the active register bank after execution of each of the following instructions?

- MOV PSW, #0C8H

- 11001000

0 1 Update Freq.

R7	0x00	B	0x00
R6	0x00	ACC	0x00
R5	0x00	PSW	0xC8
R4	0x00	IP	0x00
R3	0x00	IE	0x00
R2	0x00	PCON	0x00
R1	0x00	DPH	0x00
R0	0x00	DPL	0x00
		SP	0x07

8051

i PSW 1 1 0 0 1 0 0 0

Executed 0x0000: MOV 0D0H, #0C8H

```

0000 | MOV PSW, #0C8H
0003 | MOV PSW, #50H
0006 | MOV PSW, #10H

```

- MOV PSW, #50H

- 0101000

0 1 Update Freq.

R7	0x00	B	0x00
R6	0x00	ACC	0x00
R5	0x00	PSW	0x50
R4	0x00	IP	0x00
R3	0x00	IE	0x00
R2	0x00	PCON	0x00
R1	0x00	DPH	0x00
R0	0x00	DPL	0x00
		SP	0x07

8051

i PSW 0 1 0 1 0 0 0 0

Executed 0x0003: MOV 0D0H, #50H

```

0000 | MOV PSW, #0C8H
0003 | MOV PSW, #50H
0006 | MOV PSW, #10H

```

- MOV PSW, #10H

- 00010000

0 1 Update Freq.

R7	0x00	B	0x00
R6	0x00	ACC	0x00
R5	0x00	PSW	0x10
R4	0x00	IP	0x00
R3	0x00	IE	0x00
R2	0x00	PCON	0x00
R1	0x00	DPH	0x00
R0	0x00	DPL	0x00
		SP	0x07

8051

i PSW 0 0 0 1 0 0 0 0

Executed 0x0006: MOV 0D0H, #10H

```

0000 | MOV PSW, #0C8H
0003 | MOV PSW, #50H
0006 | MOV PSW, #10H

```

- 2.21: If an 8051 is operating from a 4MHz crystal, what is the duration of a machine cycle?

- $4\text{MHz} * (1/12) \rightarrow 0.33\text{MHz} \rightarrow 333,333 \text{ cycles/s}$

- $1\text{s}/333,333 \text{ cycles} = 0.000003\text{s} \rightarrow 3,000 \text{ ns} \rightarrow \mathbf{3 \text{ microsecond}}$
- 2.28: What is the bit address of bit 3 in byte address 2FH in the 8051's internal data memory?
 - Remember 8 bits per byte
 - 2FH byte = $2\text{FH} * 8 \text{ bits} \rightarrow 23\text{H}$
 - + bit # = **26H**
- 2.34: what is the state of the P bit in the PSW after execution of each of the following instructions?
 - CLR A
 - Parity bit is 0
 - MOV A, #03H
 - Parity bit is 0
 - MOV A, #0ABH
 - Parity bit is 1