



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

COMPUTER ORGANIZATION AND ARCHITECTURE
(SCSR2033-01)

LAB 6

Lecturer:

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Part C – Let's do a little programming on your own

1. In the following instruction sequence, show the value of AL for each line of code. Write the value in hexadecimal.

Instructions	Value of AL (H)
MOV AL, 01100001B	61
AND AL, 00011101B	01
MOV AL, 12H	12
AND AL, 3BH	12
MOV AL, 00001111B	0F
OR AL, 72H	7F
MOV AL, 83H	83
XOR AL, 26H	A5

2. Write instructions in assembly language code that:
- Jumps to label L1 if either bit 4, 5 or 6 is set in the BL register.

```
test bl, 01110000b  
jnz L1
```
 - Jumps to label L1 if bits 4, 5, and 6 are all set in the BL register.

```
and bl, 01110000b  
cmp bl, 01110000b  
je L1
```
 - Jumps to label L2 if AL has even parity.

```
or al, al  
jp L2
```
 - Jumps to label L3 if EAX is negative.

```
test eax, eax  
js L3
```
 - Jumps to label L4 if the expression (EBX – ECX) is greater than zero.

```
mov ebx, eax  
mov ecx, eax  
sub ebx, ecx  
js L3
```

3. Analyze the following code segment and answer the following questions.

```
CMP EAX, 20
JG L1
JL L2
L1:
MOV EBX, 1
JMP OUTT
L2:
MOV EBX, 0
OUTT:
```

- a. If EAX=25, which conditional jump is taken. Please explain your answer.
What is the final value of EBX?

The instruction JG means jump if above and since $25 > 20$, it will jump to L1 instead of L2.

Final value of EBX= 00000001h

- b. Why is the JMP OUTT instruction needed for this code segment? Please elaborate your answer.

JMP OUTT instruction needed for this code segment because the program will operate all of the instruction even though the condition is false if we did not include the JMP OUTT.