



Quiz 4 (*CSE331L.7 – Asif Ahmed Nelay_Summer'20*)

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Time 20 minutes, Marks 10 (You need to answer all questions).

- 1. Explain DAA and write the asm code using the following example –**

AL 27H and AL 35H

2. Explain the “**CMP**” and “**Test**” instruction from the following example. Also, write which one of these affect the flag register and why.

```
CMP AL, 000h  
TEST AL, 001h
```

End

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1.Explain DAA and write the asm code using the following example –

AL 27H and AL 35H

The DAA (Decimal Adjust after Addition) instruction allows addition of numbers represented in 8-bit packed BCD code. It is used immediately after normal addition instruction operating on BCD codes. This instruction assumes the AL register as the source and the destination, and hence it requires no operand. The effect of DAS (Decimal Adjust after Subtraction) instruction is similar to that of DAA, except that it is used after a subtraction instruction.

For example in the following program, that NUM1 and NUM2 are decimal numbers coded in BCD format, the result should be 61

.MODEL SMALL

.STACK 200

.DATA

NUM1 DB 27H

NUM2 DB 35H

.CODE

.STARTUP

MOV AL, NUM1 ;load AX with number NUM1

ADD AL, NUM2 ;AL = AL + NUM2 i.e. AL = 5CH = 92 in decimal

;The expected result is 62 in decimal

DAA ; AL = 62

.EXIT

END

2. Explain the “CMP” and “Test” instruction from the following example. Also, write which one of these affect the flag register and why. `CMP AL, 000h` `TEST AL, 001h`

Compares the value of two register values or memory locations typically. `CMP [dest], [src]`.

It's extremely important and is the fundamental basis for branch logic (if, for, while....).

In the x86 assembly language, the TEST instruction performs a bitwise AND on two operands. The flags SF, ZF, PF are modified while the result of the AND is discarded.

The OF and CF flags are set to 0, while AF flag is undefined. There are 9 different opcodes for the TEST instruction depending on the type and size of the operands. It can compare 8-bit, 16-bit, 32-bit or 64-bit values. It can also compare registers, immediate values and register indirect values