CSE 331L Microprocessor Interfacing & Embedded System

Quiz 4 ***(CSE331L.7 – Asif Ahmed Neloy\_Summer’20)***

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

**AL 27H and AL 35H**

This instruction is used to make sure the result of adding two packed BCD numbers is adjusted to be a

legal BCD number. The result of the addition must be in AL for DAA to work correctly. If the lower

nibble in AL after an addition is greater than 9 or AF was set by the addition, then the DAA instruction

will add 6 to the lower nibble in AL. If the result in the upper nibble of AL in now greater than 9 or if the

carry flag was set by the addition or correction, then the DAA instruction will add 60H to AL.

Let AL = 27H, and BL = 35H

**ADD AL, BL AL = 27H; AF = 1, add 35H to AL**

**DAA AL = 27H;upper nibble > 9, add 35H to AL**

**CF = 1**

The DAA instruction updates AF, CF, SF, PF, and ZF; but OF is undefined.

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1. 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**

This instruction compares a byte / word in the specified source with a byte / word in the specified

destination. The source can be an immediate number, a register, or a memory location. The destination

can be a register or a memory location. However, the source and the destination cannot both be memory

locations. The comparison is actually done by subtracting the source byte or word from the destination

byte or word. The source and the destination are not changed, but the flags are set to indicate the results of

the comparison. AF, OF, SF, ZF, PF, and CF are updated by the CMP instruction. For the instruction

**CMP AL, 000H Compare immediate number 000H with byte in AL**

This instruction ANDs the byte / word in the specified source with the byte / word in the specified

destination. Flags are updated, but neither operand is changed. The test instruction is often used to set

flags before a Conditional jump instruction.

The source can be an immediate number, the content of a register, or the content of a memory location.

The destination can be a register or a memory location. The source and the destination cannot both be

memory locations. CF and OF are both 0’s after TEST. PF, SF and ZF will be updated to show the results

of the destination. AF is be undefined.**TEST AL, 001H :AND BH with AL. No result stored; Update PF, SF, ZF**

**End**