CSC 3210

Computer Organization and Programming

Lab 3 (b)

Answer Sheet

Student Name: Ayman Tawaalai

Section: 10

Debug through each line of code and explain the register content.

(We already answered line 10 to 13 for your reference. Start writing your answer from Line 14)

Line: 10

Instruction: mov eax, 12345678h

Register value: EAX = 12345678

Explanation: 12345678 is a hexadecimal value which is 32-bit in binary. EAX register is also 32-bit.

Line 11:

Instruction: mov ax, 1122h

Register value: EAX = 12341122h

Explanation: 1122 is hexadecimal and it is 16-bit in binary. this mov instruction only updates AX (16 bit) register, a part of EAX register. That’s why you can see that the upper portion of EAX register is NOT updated.

Line 12:

Instruction: mov bl, al

Register value: EBX = \_ \_ \_ \_ \_ \_ 22

Explanation: AL register is 8-bit long. When you mov the content of al register (22) to BL register, it only updates the first 8-bit of the EBX register. The rest contains the garbage value.

Line 13:

Instruction: mov bl, ah

Register value: EBX = \_ \_ \_ \_ \_ \_ 11

Explanation: Ah register is 8-bit long. When you mov the content of AH register (11) to BL register, it only updates the first 8-bit of the EBX register. The rest contains the garbage value.

Line 14:

Instruction: mov al, 89h

Register value of EAX register, after executing line 14=12341189

Explain the content of the EAX register. The AL register is 8 bits and changes the the last 2 values of the EAX register.

Line 15:

Instruction: add al, 10h

Register value of EAX, after executing line 15: 12341199

Show the step of the hexadecimal addition.

al value is 89. the instruction above will do 89h + 10h to get an al value of 99

Line 16:

Instruction: sub al, al

What Register value of EAX, after executing line 15? 12341100

Show the step of the hexadecimal subtraction.

Since the al value is 99 and its al - al which is 99-99 the result will be 0

Line 17, 18:

Instruction:

mov al, 98h

add al, 89h

Register value of EAX, after executing line 17 and 18: 12341198 and 12341121

Show the step of the hexadecimal addition.

98 + 89 = 121 where the 1 will be the carry, this is why the OV flag has a 1