Computer Science 112 - Midterm 2 Review

Important be able to do Exercises 4.1, 4.2, 4.3, 4.4, 5.1, 5.2. 5.3, 5.4, and 5.5

*You may use a calculator and the textbook for these questions.*

1. Give the op code and number of bytes of code for each of these instructions.

**PLEASE NOTE OTHER INSTRUCTIONS ARE POSSIBLE FOR CHAPTERS 4 and 5 see labs**

(a) xchg eax, ecx Op Code\_\_\_\_\_\_ Number of Bytes \_\_\_\_\_

xchg eax, ecx Op Code\_\_91\_\_ Number of Bytes \_\_1\_\_

(b) add eax, ecx Op Code\_\_\_\_\_\_ Number of Bytes \_\_\_\_\_

add eax, ecx Op Code\_\_03\_\_ Number of Bytes \_\_2\_\_

(c) inc edx Op Code\_\_\_\_\_\_ Number of Bytes \_\_\_\_\_

inc edx Op Code\_\_42\_\_ Number of Bytes \_\_1\_\_

(d)neg value Op Code\_\_\_\_\_\_ Number of Bytes \_\_\_\_\_

(assume *value* references a doubleword in memory)

neg value Op Code\_\_F7\_\_ Number of Bytes \_\_6\_\_

(assume *value* references a doubleword in memory)

2. Each of these problems gives "before" conditions and an instruction. Give the indicated "after" state. **PLEASE NOTE OTHER INSTRUCTIONS ARE POSSIBLE FOR CHAPTERS 4 and 5 see labs**

|  |  |  |
| --- | --- | --- |
| Before | Instruction Executed | After |
|  |  |  |
| a.EDX: FF FF FF FF  EAX: FF FF FF 9A ECX: FF FF FF C7 | idiv ecx | EDX: :  EAX: |
|  |  |  |
| ANSWER: |  |  |
| a.EDX: FF FF FF FE  EAX: FF FF FF 9A ECX: FF FF FF C7 | idiv ecx | EDX: : FF FF FF D3  EAX: 00 00 00 01 |
|  |  |  |
| b.AL: F0  BH: C4 | imul bh | AX:  CF:  OF: |
| ANSWER: |  |  |
| b.AL: F0  BH: C4 | imul bh | AX: 03 C0  CF: 1  OF: 1 |
|  |  |  |
| c. ECX: 00 00 BF 7A | mov ecx, 984 | ECX: |
|  |  |  |
| ANSWER: |  |  |
| c. ECX: 00 00 BF 7A | mov ecx, 984 | ECX: 00 00 03 D8 |
|  |  |  |
| d. EAX: 12 34 56 78  EDX: 9A BC DE F0 | xchg ax, dx | EAX:  EDX: |
|  |  |  |
| ANSWER: |  |  |
| d. EAX: 12 34 56 78  EDX: 9A BC DE F0 | xchg ax, dx | EAX: 12 34 DE F0  EDX: 9A BC 56 78 |
|  |  |  |
| e. EAX: FF FF FF C8 | add eax, 56 | EAX:  SF: ZF: CF: OF: |
|  |  |  |
| ANSWER: |  |  |
|  |  |  |
| e. EAX: FF FF FF C8 | add eax, 56 | EAX: 00 00 00 00  SF: 0 ZF: 1 CF: 1 OF: 0 |
|  |  |  |
| f. EDX: 00 00 02 E9 | inc edx | EDX:  SF: ZF: |
|  |  |  |
| ANSWER: |  |  |
|  |  |  |
| f. EDX: 00 00 02 E9 | inc edx | EDX: 00 00 02 EA  SF: 0 ZF: 0 |