

ACTIVITY 9

1. Suppose a program has the following .data section.

```
.data
someValue DWORD 5
someWord WORD 3
someSignedWord SWORD 2
anotherSignedWord SWORD -6
```

Write an instruction (or sequence of instructions) that:

- (a) Reads the value of someValue from memory into the EAX register.

- (b) Reads the value of someSignedWord into BX.

- (c) Stores the value 15 into someWord (in memory).

- (d) Reads the value of anotherSignedWord into the low 16 bits of EBX and sets the upper 16 bits of EBX to zero.

What value will be placed in EBX? _____

- (e) Reads the value of someSignedWord from memory and sign-extends it to 32 bits, placing the result in EAX.

What value will be placed in EAX? _____

- (e) Reads the value of anotherSignedWord from memory and sign-extends it to 32 bits, placing the result in EAX.

What value will be placed in EAX? _____

- (f) Loads the value 70h into the DS register.

12. Suppose a program has the following .data section.

```
.data
someValue DWORD 5
someWord WORD 4
anotherWord WORD 3
someSignedByte SBYTE 2
```

Are the following instructions valid or invalid? If invalid, why?

- | | | | | |
|-----|---------------------------|-----------------------------|-------------------------------|-------|
| (a) | mov someValue, 8 | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (b) | mov someWord, anotherWord | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (c) | mov ah, someSignedByte | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (d) | mov bx, someValue | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (e) | mov ds, 1F3Bh | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (f) | mov ds, ax | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (g) | mov cs, ax | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (h) | mov eip, someValue | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (i) | mov someValue, esi | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (j) | mov eax, someWord | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (k) | movzx eax, ebx | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (l) | movzx ebx, 5 | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (m) | movsx ax, al | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (n) | movzx ebx, si | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |
| (o) | movsx ds, ah | <input type="radio"/> Valid | <input type="radio"/> Invalid | _____ |