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ICS 312
Homework #2
Feb 6, 2009

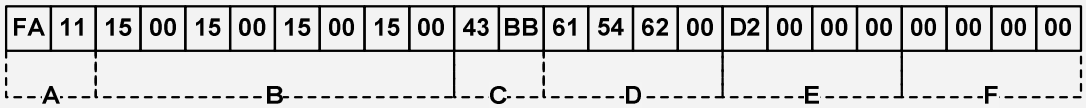
Exercise #1: Memory Layout [29pts]

Consider the following .data segment:

a. What are the contents of the 24 memory bytes starting at address A, in hex, on a machine that used Little Endian?

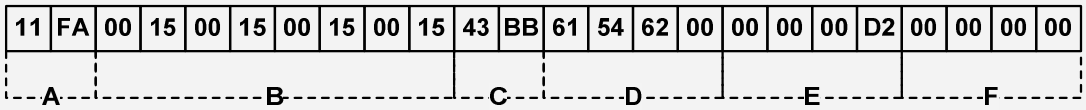
```
A                dw          011FAh
B    times   4   dw          21
C                db          043h, 0BBh
D                db          "a", 54, "b", 0
E                dd          210
F                dd          0
```

Answer:



b. What if the machine uses Big Endian?

Answer:



Exercise #2: Memory and Registers [26pts]

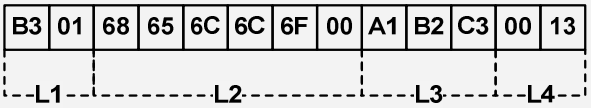
Consider the following .data segment and program fragment

```
L1      dw      435
L2      db      “h”, “e”, “l”, “l”, “o”, 0
L3      db      0A1h, 0B2h, 0C3h
L4      dw      23o
mov     eax,    [L3]
inc     eax
mov     [L2],   eax
mov     bx,     [L1]
mov     eax,    L3
inc     eax
mov     [eax],  bx
```

After the code finishes executing, what are the contents of the 13 memory bytes starting at address L1, on a machine using Little Endian? Show your work.

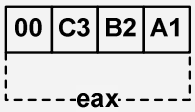
Answer:

Initially the memory looks like:



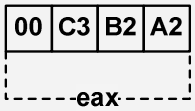
After the first statement:

```
mov     eax,    [L3]
```



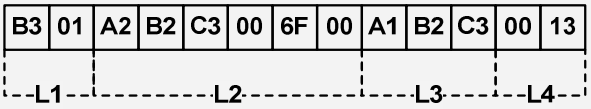
After the second statement:

```
inc     eax
```



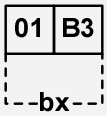
After the third statement:

```
mov     [L2],     eax
```



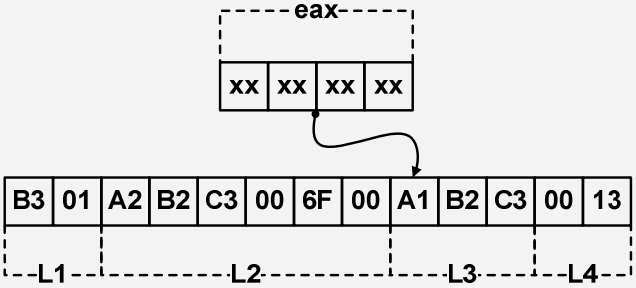
After the fourth statement:

```
mov     bx,     [L1]
```



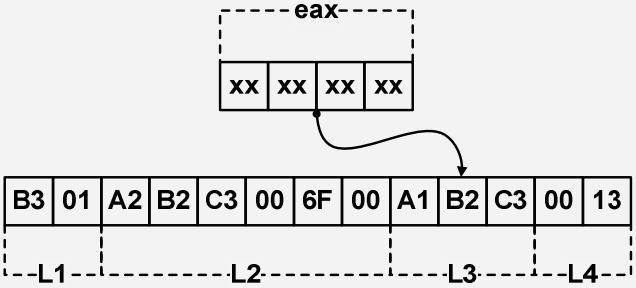
After the fifth statement:

```
mov     eax,     L3
```



After the sixth statement:

```
inc     eax
```



After the seventh statement:

```
mov     [eax],     bx
```