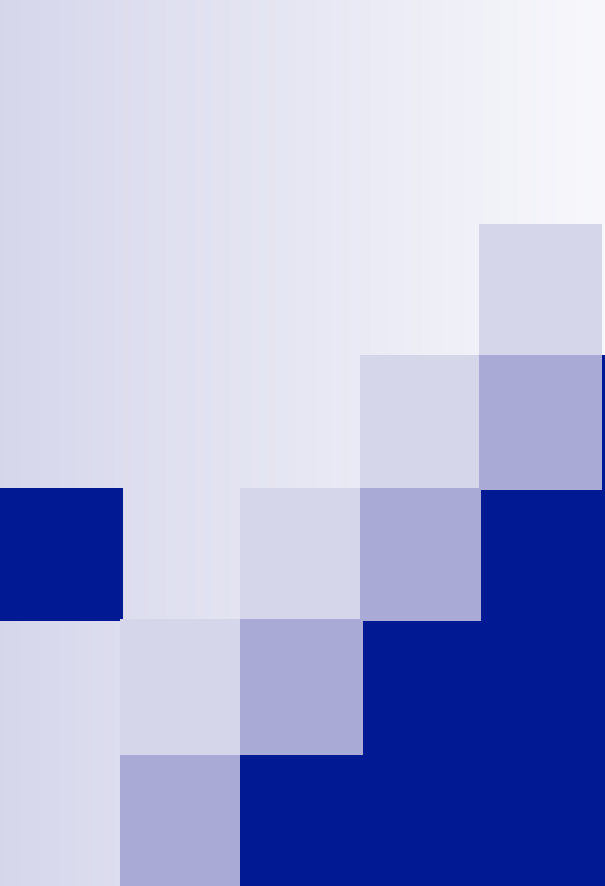




NASM Basics II

Data declarations

(Practice)

ICS312

Machine-Level and

Systems Programming

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(q1) Data Declaration Sizes

- For each declaration below give the corresponding numbers of bytes in RAM:

- L1 db "hello", 12
- L2 dw 1,2
- L3 dd 0AABBCCDDh
- L4 dd 031FFh
- L5 resw 20
- L6 times 3 dw -1
- L7 resb 100
- L8 db "w","h","a"

(q1) Solutions

- For each declaration below give the corresponding numbers of bytes in RAM:

□ L1	db	"hello", 12	6
□ L2	dw	1,2	4
□ L3	dd	0AABBCCDDh	4
□ L4	dd	031FFh	4
□ L5	resw	20	40
□ L6	times 3 dw	-1	6
□ L7	resb	100	100
□ L8	db	"w","h","a"	3

(q2) Little vs. Big Endian

- For each declaration below say whether the defined RAM content would be different or the same on a Little Endian and a Big Endian machine:

- ☐ L1 db "h","e","l","l","o"
- ☐ L2 db "hello"
- ☐ L3 times 12 dd 0FFh
- ☐ L4 db 12, -1
- ☐ L5 dw 20
- ☐ L6 dd 0FFh, -1

(q2) Little vs. Big Endian

- For each declaration below say whether the defined RAM content would be different or the same on a Little Endian and a Big Endian machine:

□ L1	db	"h","e","l","l","o"	SAME
□ L2	db	"hello"	SAME
□ L3	times 12 dd	0FFh	DIFFERENT
□ L4	db	12, -1	SAME
□ L5	dw	20	DIFFERENT
□ L6	dd	0FFh, -1	DIFFERENT

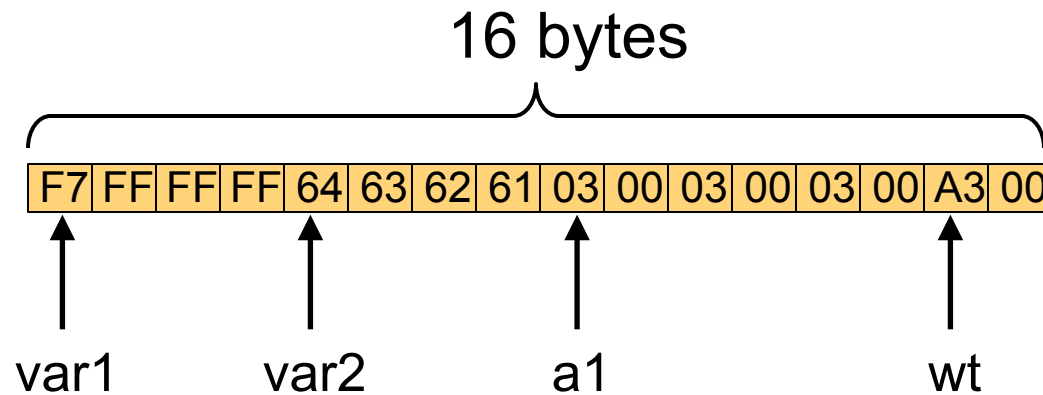
(q3) Data Layout

```
var1      dd      -9
var2      db      "dcba"
a1        times 3   dw      011b
wt        db      0A3h, 0
```

- What is the layout and the content of the data memory segment on a **LITTLE ENDIAN** machine?
 - Byte per byte, in hex

(q3) Solution

```
var1      dd      -9
var2      db      "dcba"
a1        times 3   dw      011b
wt        db      0A3h, 0
```



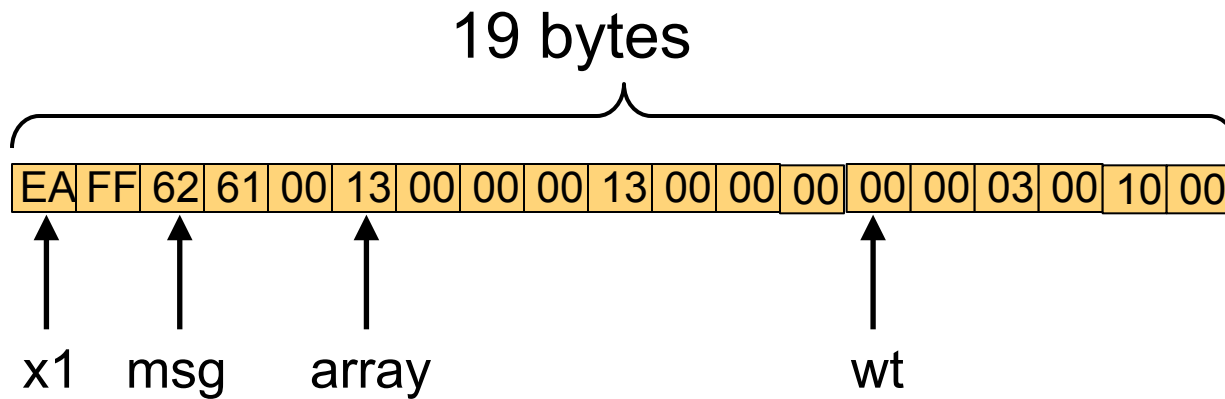
(q4) Data Layout

x1	dw	-22	
msg	db	"ba", 0	
array	times 2	dd	023o
wt	dw	0,011b,020o	

- What is the layout and the content of the data memory segment on a **LITTLE ENDIAN** machine?
 - Byte per byte, in hex

(q4) Solution

```
x1      dw      -22
msg     db      "ba", 0
array   times 2   dd      0230
wt      dw      0,011b,0200
```



(q5) Data Layout

A	db	"d", 0, "af", 27o, 0
B	dw	011FAh
C	times 2 dw	-15
D	db	043h, 0AAh
E	dw	009h
F	dw	-34o, 0

- What is the layout and the content of the data memory segment on a **LITTLE ENDIAN** machine?
 - Byte per byte, in hex

(q5) Data Layout

A	db	"d", 0, "af", 27o, 0
B	dw	011FAh
C	times 2 dw	-15
D	db	043h, 0AAh
E	dw	009h
F	dw	-34o, 0

20 bytes

