

**Embedded Systems with ARM Cortex-M  
Microcontrollers in Assembly Language and C**

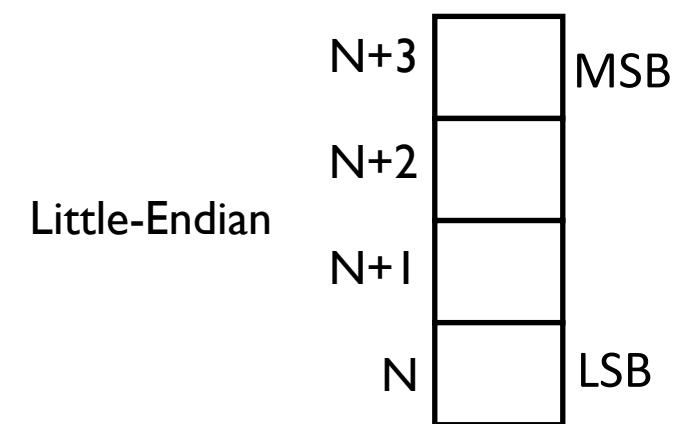
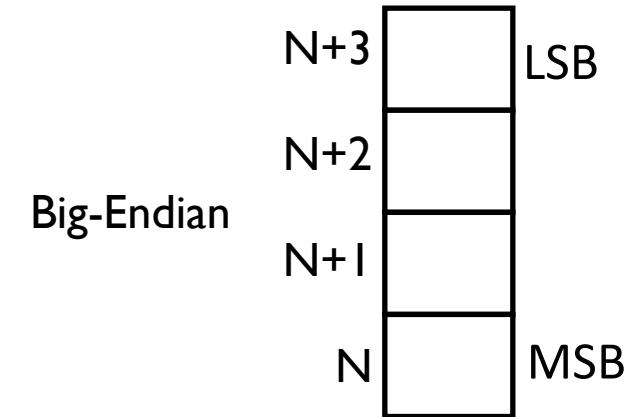
**Chapter 3  
ARM Instruction Set Architecture  
Exercises**

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# Question: Endianness

- Q: Assume Big-Endian ordering. If a 32-bit word resides at memory address N, what is the address of:
  - (a) The MSB (Most Significant Byte)
  - (b) The 16-bit half-word corresponding to the most significant half of the word
- Q: Redo the question assuming Little-Endian ordering.



# Question: Endianness

What are the memory address of these four words?

32-bit Words	Bytes	Addr.
Word 3 Addr = ??		0015
Word 2 Addr = ??		0014
Word 1 Addr = ??		0013
Word 0 Addr = ??		0012
		0011
		0010
		0009
		0008
		0007
		0006
		0005
		0004
		0003
		0002
		0001
		0000

# Question: Endianness

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The word stored at  
address 0x20008000  
with Big-Endian  
ordering is

?

The word stored at  
address 0x20008000  
with Little-Endian  
ordering is

?

Memory Address	Memory Data
0x20008003	0xA7
0x20008002	0x90
0x20008001	0x8C
0x20008000	0xEE