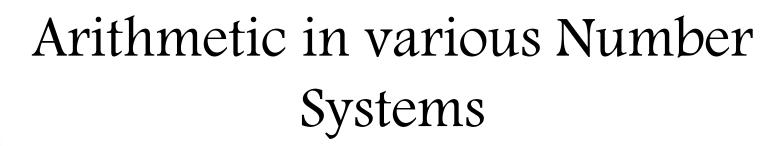


Chapter 2 Computer Arithmetic (Part 1)





- Addition of numbers in any number system
 - Add numbers starting at the least significant digit.
 - Perform addition on numbers of the same number base.
- Subtraction of numbers
 - Must use complements



- To add binary numbers: (X + Y)
 - Get the SCR of the negative numbers
 - Add the two numbers
 - If the SCR used is:
 - 2's C. Discard end carry
 - 1's C. Add the end carry to the sum



- Add the following numbers. Use 8 bits to represent each number.
 - **6** + 13
 - -6 + (-13)
 - -(-6) + 13
 - -(-6) + (-13)

$$-6 + 13 = 19$$



-6 + 13 = 19

0 0000110



$$-6 + 13 = 19$$

0 0000110 + 0 0001101



$$-6 + 13 = 19$$



$$-6 + 13 = 19$$

$$-6 + (-13) = -7$$

$$-6 + 13 = 19$$

$$-6 + (-13) = -7$$

0 0000110

$$-6 + 13 = 19$$

$$-6 + (-13) = -7$$

(1's)

$$-6 + 13 = 19$$

$$-6 + (-13) = -7$$

$$-6 + 13 = 19$$

$$-6 + (-13) = -7$$



$$-(-6) + 13 = 7$$

1 1111010 (2's)

$$-(-6) + 13 = 7$$

$$-(-6) + 13 = 7$$

$$-(-6) + 13 = 7$$

$$-(-6) + 13 = 7$$

$$(-6)+(-13)=-19$$

$$-(-6) + 13 = 7$$

$$-(-6)+(-13)=-19$$

$$-(-6) + 13 = 7$$

$$-(-6)+(-13)=-19$$

$$-(-6) + 13 = 7$$

$$-(-6)+(-13)=-19$$

$$-(-6) + 13 = 7$$

$$-(-6)+(-13)=-19$$

 $-(999.5 + 281.6)_{10}$

999.5

+ 281.6

1281.1

$$(999.5 + 281.6)_{10} = (110.11 + 1010.11)_{2}$$

$$999.5 = 110.11$$

$$+ 281.6 = 1010.11$$

$$1281.1 = 10001.10$$

 $-(355.4 + 240.61)_8$

355.4

+ 240.61

 $-(355.4 + 240.61)_8$

$$-(355.4 + 240.61)_{8}$$

■
$$(355.4 + 240.61)_8$$
 ■ $(A0C.D + E72.9)_{16}$

■
$$(355.4 + 240.61)_8$$
 ■ $(A0C.D + E72.9)_{16}$