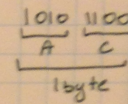
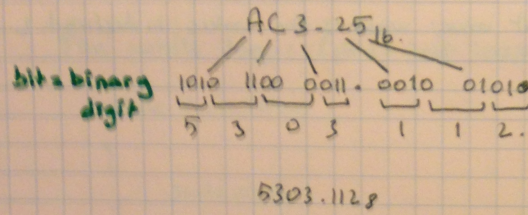
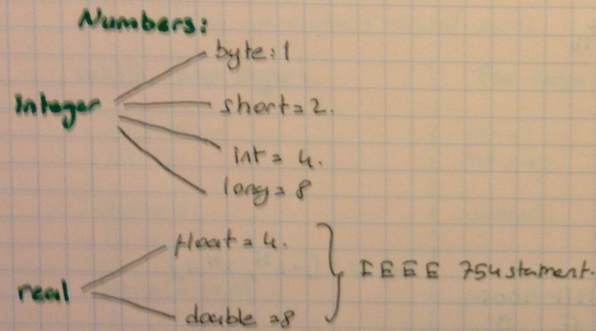


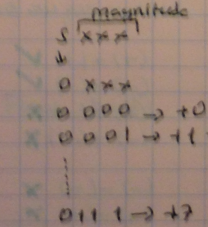
15/10/2015



words: 4 consecutive bytes
half words: 2 bytes



the numbers



n=4

max=7

$$2^{n-1} - 1 = 2^3 - 1 = 7$$

Representation of -4:

for representing negative

numbers we use 2's complement notation.

$$4 \Rightarrow 0100_2$$

Flip bits

$$1011_2 \rightarrow 1's \text{ complement}$$

$$+ \quad 1$$

$$1100$$

2's complement notation for -4.

0 0 1 → negative no

100₂ → interpret as negative number

Flip bits

$$0011$$

$$+ \quad 1$$

$$0100 \Rightarrow (-4)$$

n=4 [-8, 7]

$$[-2^{n-1}, 2^{n-1}-1]$$

n=4

-7 → 0111

$$1000$$

$$+ \quad 1$$

$$1001$$

→ Giving the following binary no. for an int value; what is the value in decimal

$$\begin{array}{r} 1001 \\ - \quad 0110 \\ \hline 0111 = -7 \end{array}$$

* For, $n=8$ $0000\ 0111_2 = 07_{16}$

$$\begin{array}{r} 0000\ 0111_2 \\ +\ 1111\ 1000 \\ \hline \end{array}$$

F916

* For, $n=16$

0007₁₆ 7

一七

III	III	III	1001
F	F	F	g

$$\text{int } i; \quad [-2^{31}, 2^{31}-1]$$

How do we add integer numbers?

$$\begin{array}{r} 1000 \\ 0100 \\ + \\ \hline 1100 \end{array}$$

$$\begin{array}{r} 1000 \\ 0111 \\ + \\ \hline 1000 \end{array}$$

$$\begin{array}{r} 0111 \\ + \quad 1 \\ \hline 1000 \end{array}$$

$$\begin{array}{r} \rightarrow 0011 \\ \underline{1} \\ 0100 \end{array}$$

lost

$$\begin{array}{r} 1000 \\ + 1000 \\ \hline 0000 \end{array}$$

overflow

$$\begin{array}{r} 0011 \\ + 0111 \\ \hline 1010 \end{array}$$

Where can we overf

$(+) + (+) \checkmark$

 $(-) + (-) \checkmark$ $(+) + (-) \times$
$$(-) + (+) \times$$
 $(-) - (-) \times$ $(+) - (+)$ ✗ $(-) - (+) \checkmark$

$(+) - (-)$ ✓