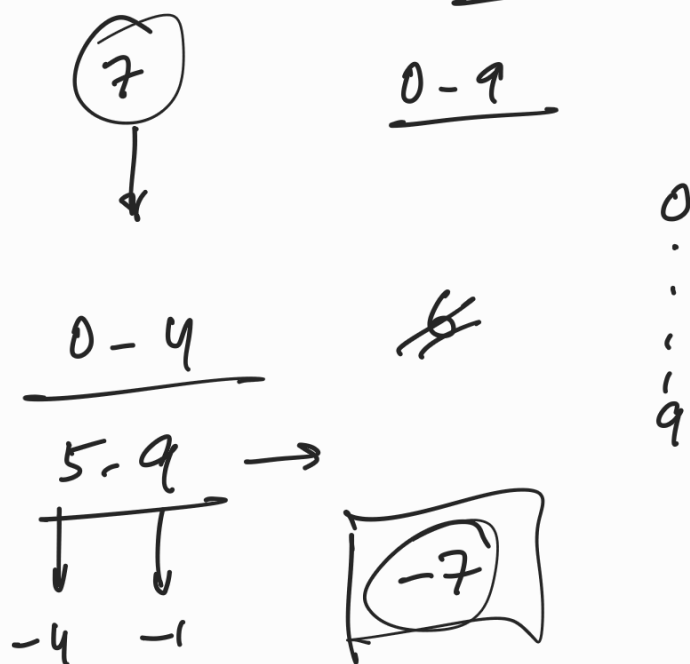


10's Complement.

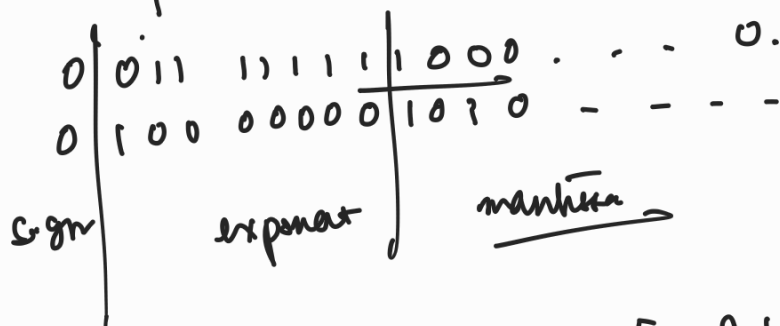
1 digit 10's complement



Floating point adder.

3FC00000 ←
40500000 ←

① Extract exponent & mantissa.



1st op: S: 0, E: 127, F: 0.1
2nd op: S: 0, E: 128, F: 0.101

② Prepend 1 to F.

$N_1 = 1.1$
 $N_2 = 1.101$

③ Compare exponents

$$127 - 128 = -1.$$

First op: $0.11 \times 2^1 \rightarrow$

2nd op: 1.101×2^1

$$\begin{array}{l} 127 \rightarrow 0 \checkmark \\ 128 \rightarrow 1 \checkmark \end{array}$$

④ Add mantissa

$$\begin{array}{r} 0.11 \\ 1.101 \\ \hline 10.011 \times 2^1 \end{array}$$

⑤ Normalize

$$10.011 \times 2^1 = 1.0011 \times 2^2$$

⑥ Assemble into IEEE 754 format.

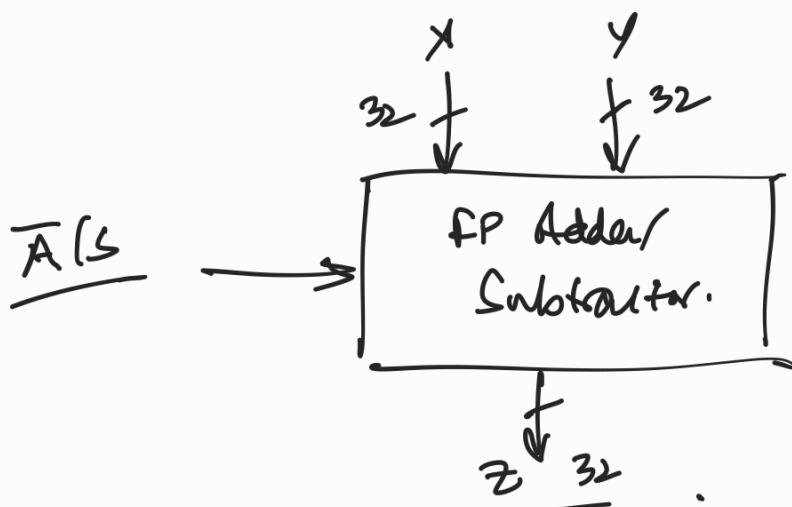
$$S = 0$$

$$E = 2 + 127 = 129 = 1000\ 0001_2$$

$$F = 00110 \dots 0$$



40480000



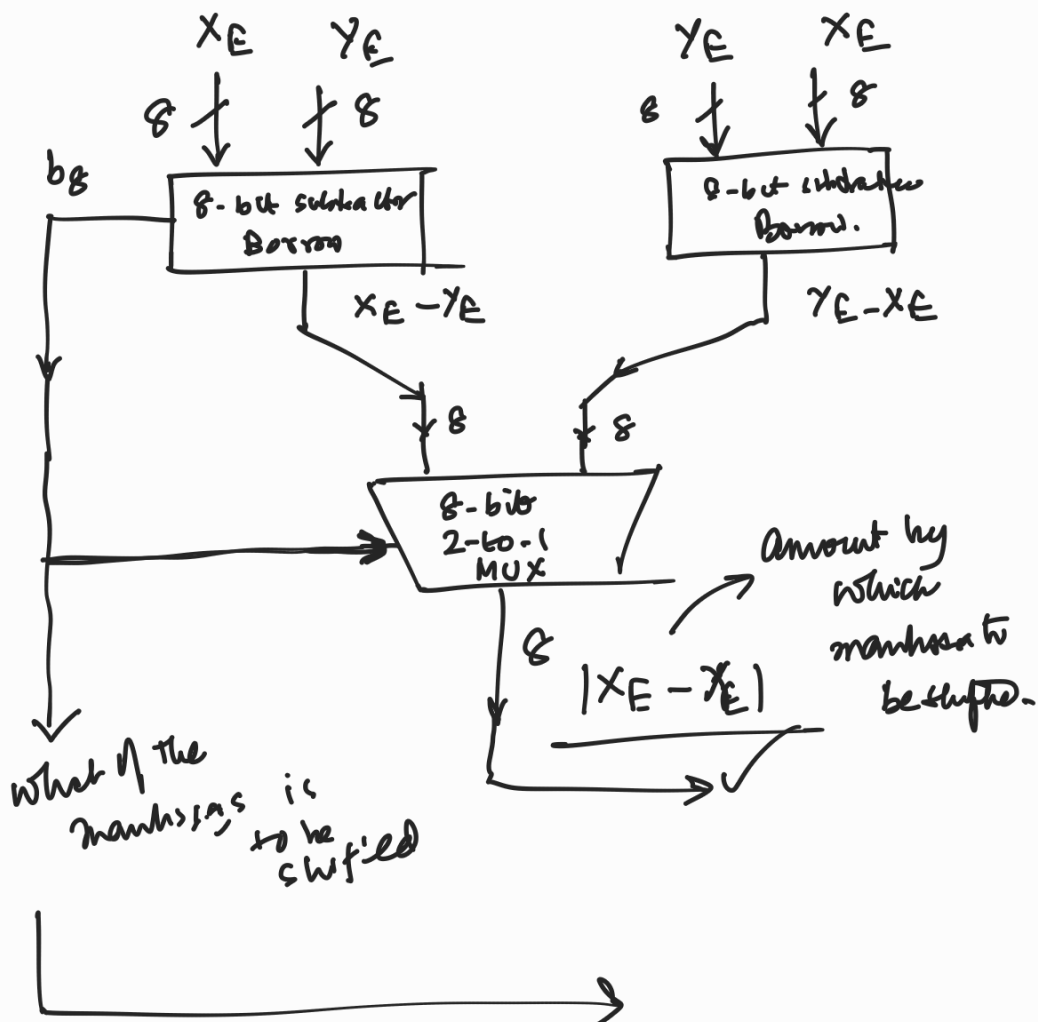
① Exponent comparison : $X_E > Y_E$
 $Y_E > X_E$.

② Mantissa alignment
 Shift the mantissa with smaller exponent by
 $|X_E - Y_E|$ bits.

③ Mantissa addition

$$\begin{array}{r} 01100111 \\ - 01101111 \\ \hline \end{array}$$

④ Result normalization.



$$\begin{array}{r} 1 \quad 1 \quad 0 \\ 0 \quad 1 \quad 0 \\ \hline 1 \quad 0 \quad 0 \end{array}$$

$\nearrow 0$
 $b = 1 \quad 1$

$1. X_m$
2n bit