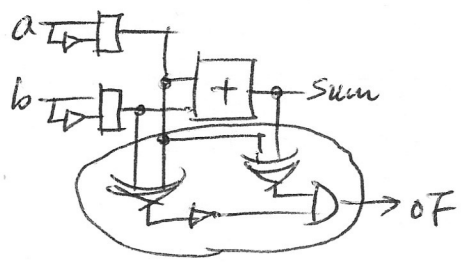
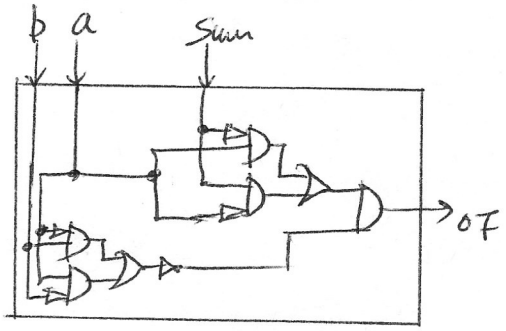
# CS113 Assign 2 Key

#1.




⇒

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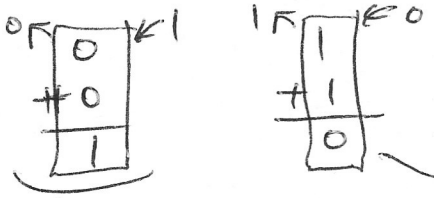
#2. for sign-bit, the following 2 cases yield OF.




∵ (op1-sign = op2-sign ; op's sign ≠ sum's sign

for this condition, (Cin = 1, Cout = 0)

for this condition, (Cin = 0, Cout = 1) must hold.

Cin ≠ Cout for sign-bit ≡ [ if (op1-sign = op2-sign) if (op sign ≠ sum sign) ]

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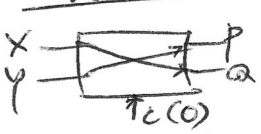
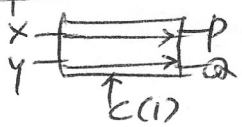
#3.

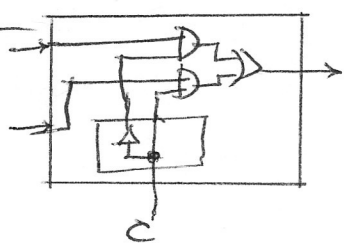
Cross



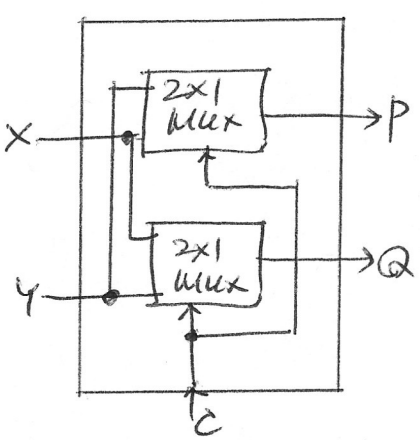

pass




2x1 Mux




Concept




#4.

$$Sp = \frac{1}{(1-Fe) + \left(\frac{Fe}{Se}\right)}$$

$$2 = \frac{1}{0.7 + \left(\frac{0.3}{Se}\right)}$$

⇒ Solve for Se.

$$Se = -\frac{0.6}{0.4} = -1.5$$ ??

-1.5 : impossible speedup value

— what's wrong?

⇒ ∃ maximally achievable Sp for given Fe.