Compare Eq:

$Eq = \&(\sim(A \wedge B))$

Compare Lt:

Overflow detection for subtraction

& - opposite signs for A and B $(A[N-1] \wedge B[N-1])$

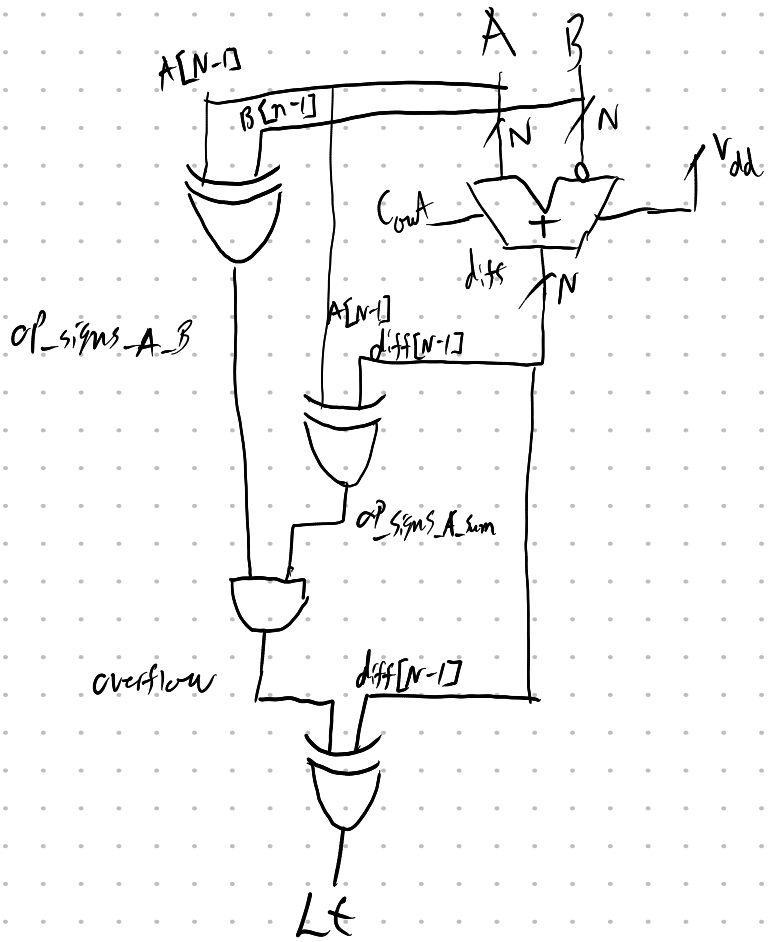
& - Opposite signs for sum and A $(A[N-1] \wedge Sum[N-1])$

$V = (A[N-1] \wedge B[N-1]) \,\&\, (A[N-1] \wedge Sum[N-1])$

According to HKH, for 2 signed numbers

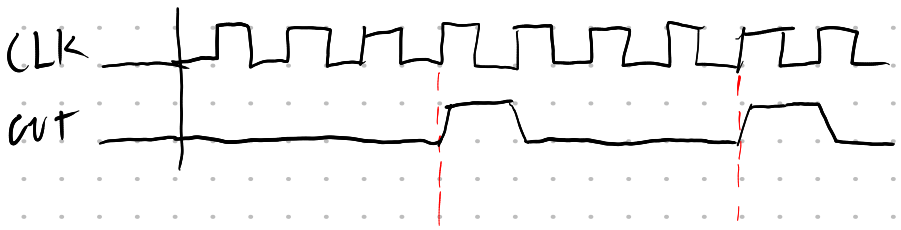
$N = Sum[N-1]$, negative output

$L = V \wedge N$



Pulse Generater

ticks = 4

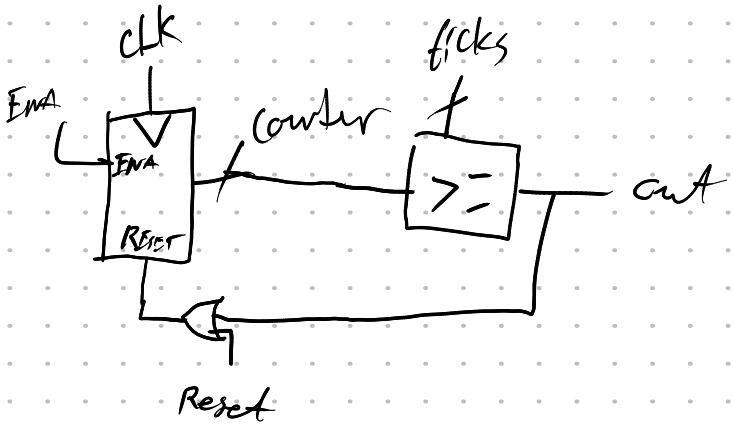


Counter:

output: if counter == ticks 1
else 0

Use >= incase ticks is changed

Next state if counter >= ticks 0
else counter++



using Counter module