

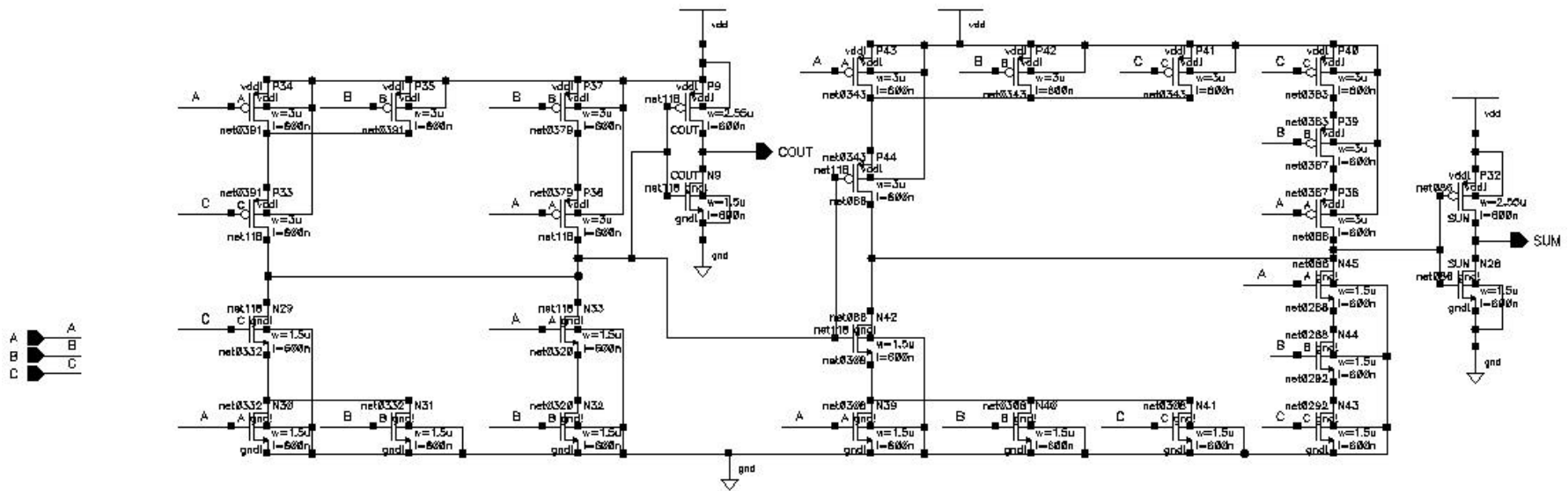
Introduction to adders

EE224

D. W Parent

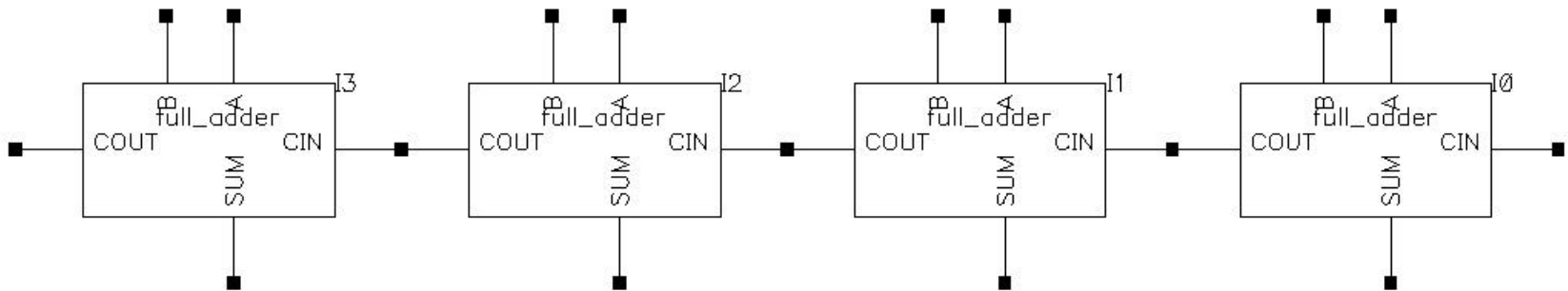
This is a very efficient 1 bit full adder.

Can we convert it to Dynamic?



Ripple Adder

Can we make it Dynamic?



Carry Look Ahead

$$\begin{array}{l} g_i = a_i \cdot b_i \quad \leftarrow \text{generate} \\ p_i = a_i \oplus b_i \quad \leftarrow \text{propagate} \\ c_{i+1} = g_i + p_i \cdot c_i \quad \leftarrow \text{carry} \\ s_i = p_i \oplus c_i \quad \leftarrow \text{sum} \end{array}$$

$$c_1 = g_0 + p_0 \cdot c_0$$

$$c_2 = g_1 + p_1 \cdot c_1$$

$$c_3 = g_3 + p_3 \cdot c_3$$

$$c_4 = g_4 + p_4 \cdot c_4$$

Derive the schematic

Can we make it dynamic?