

Carry Skip Adder (5D)

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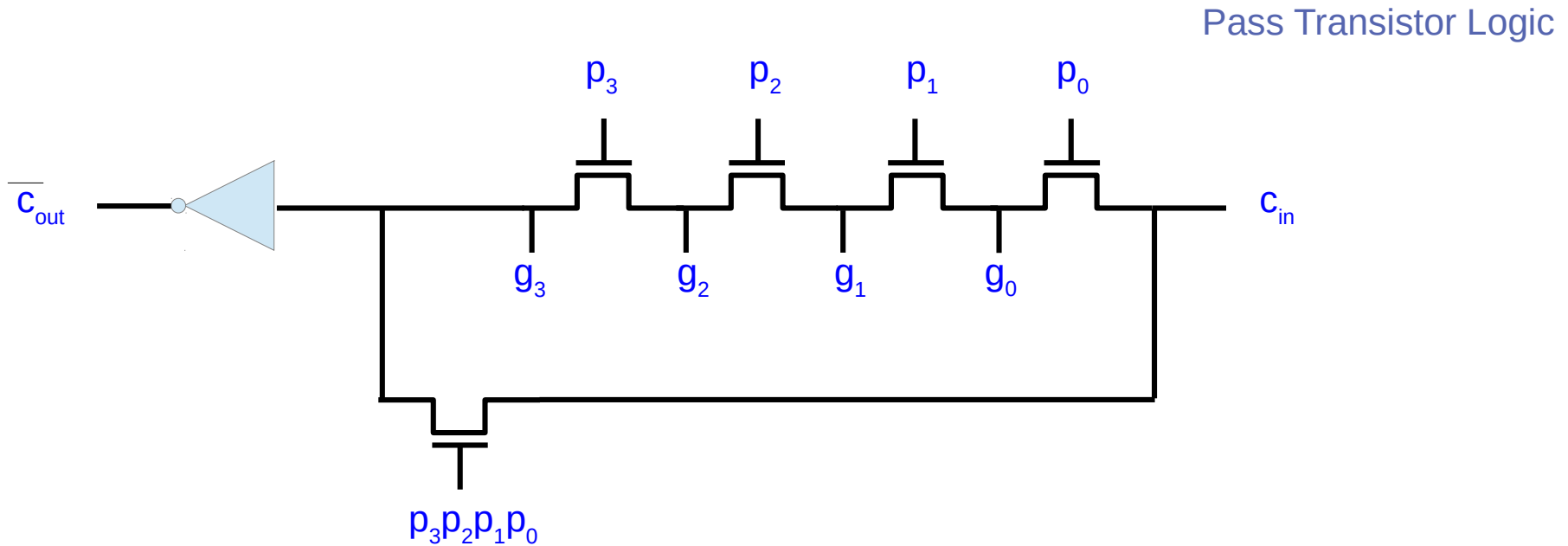
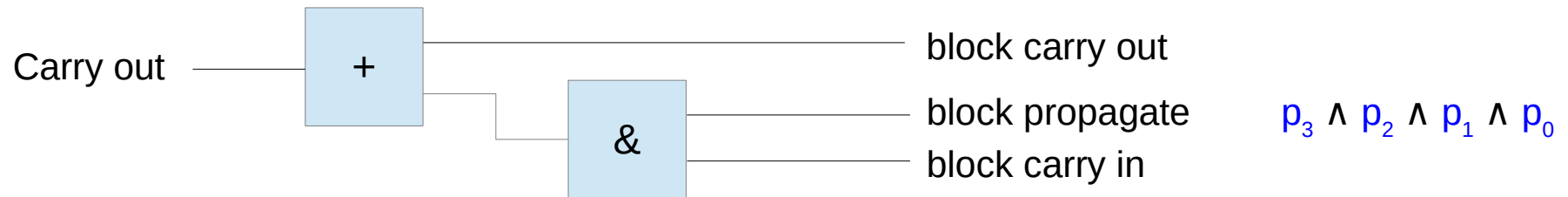
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https://en.wikipedia.org/wiki/AND_gate
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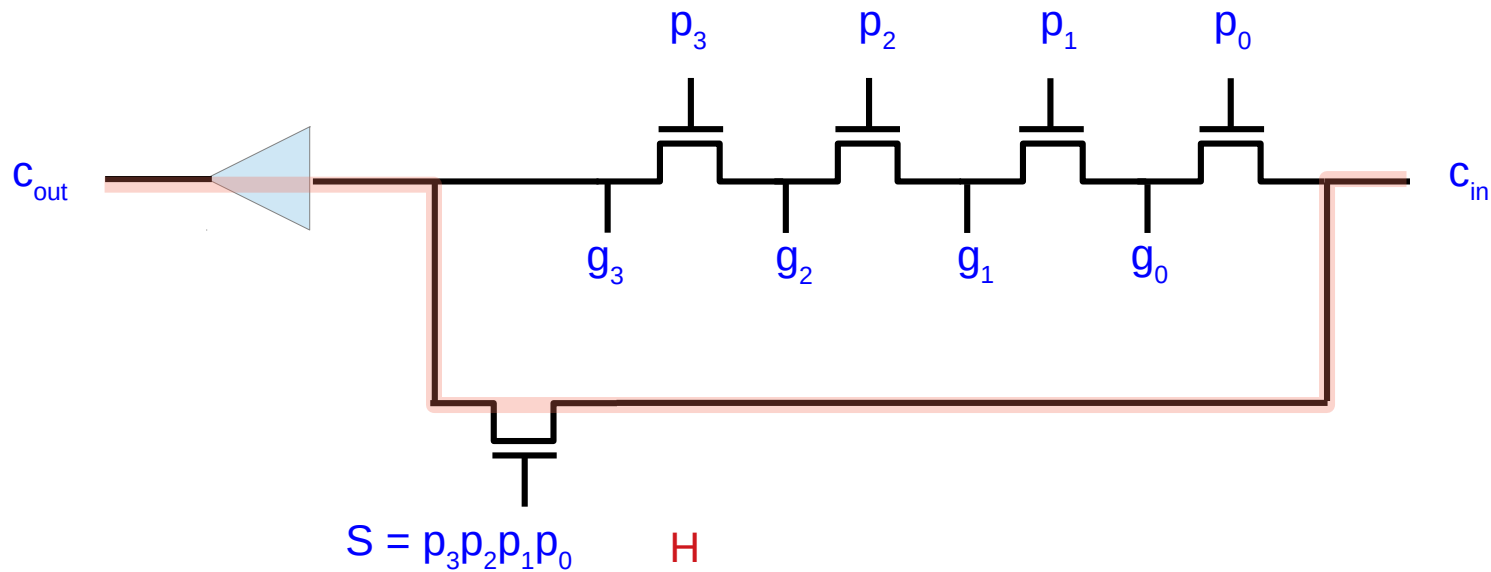
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Carry Skip Chain Implementation



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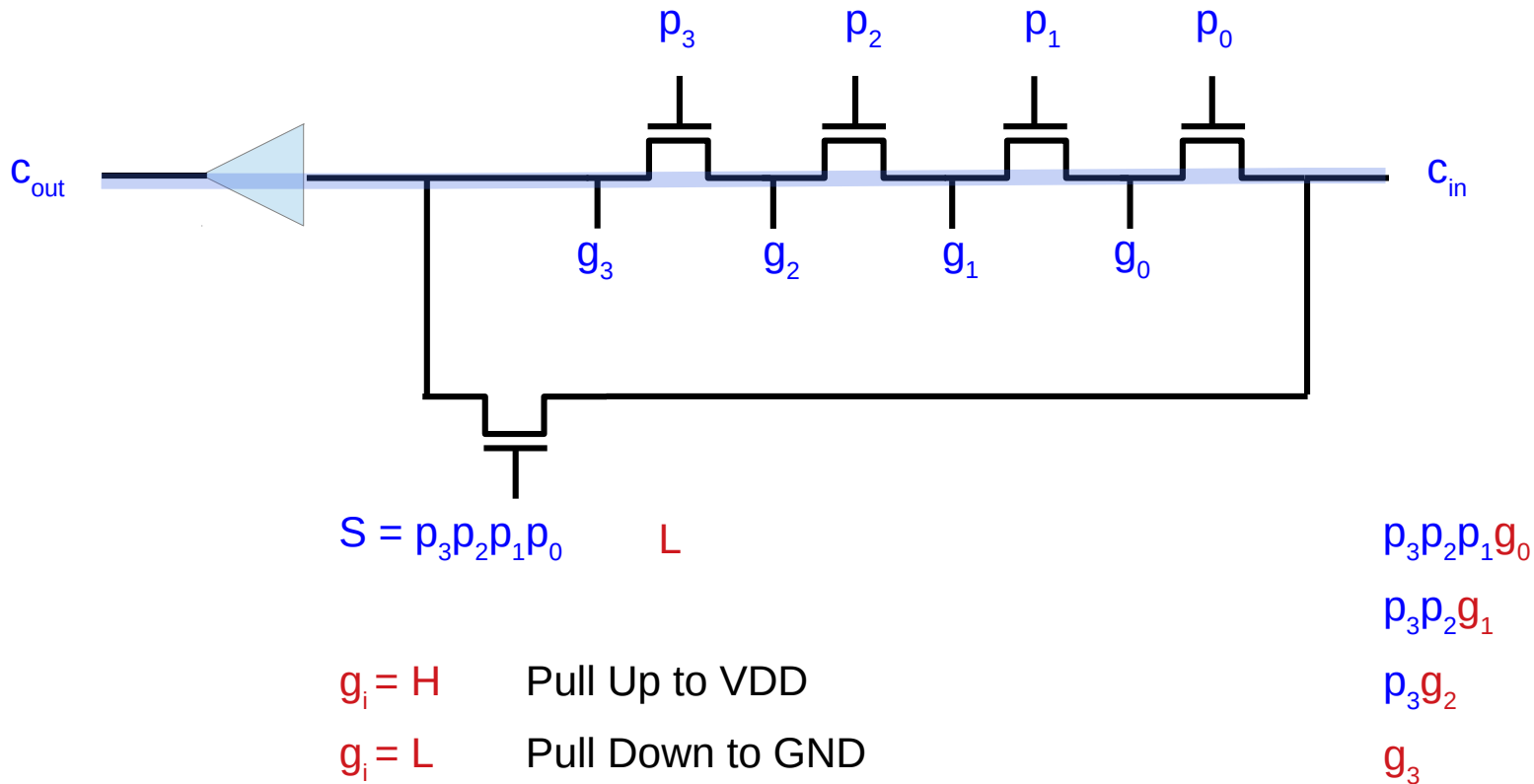
Carry Skip Chain Implementation



$p_i = H \Rightarrow g_i = L$
 $S = H \Rightarrow \text{All } g_i = L, i=0,1,2,3$

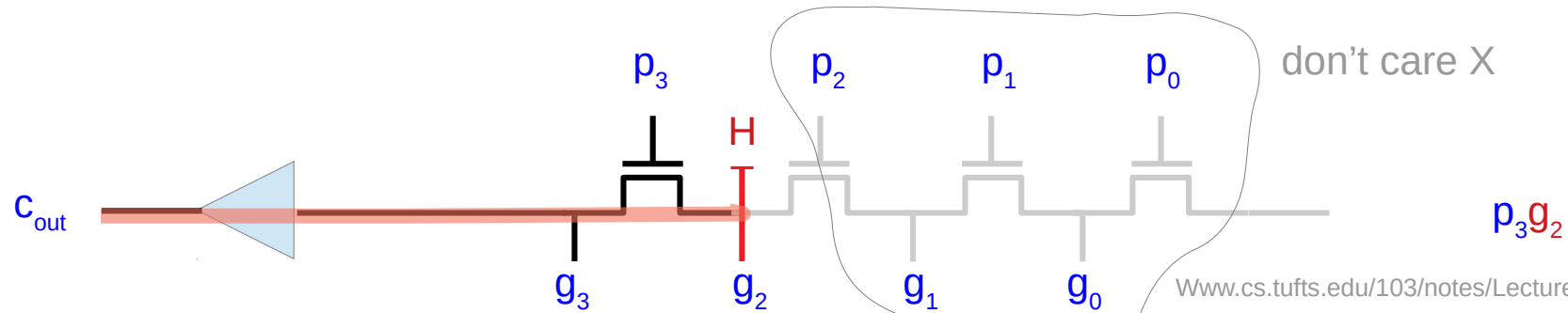
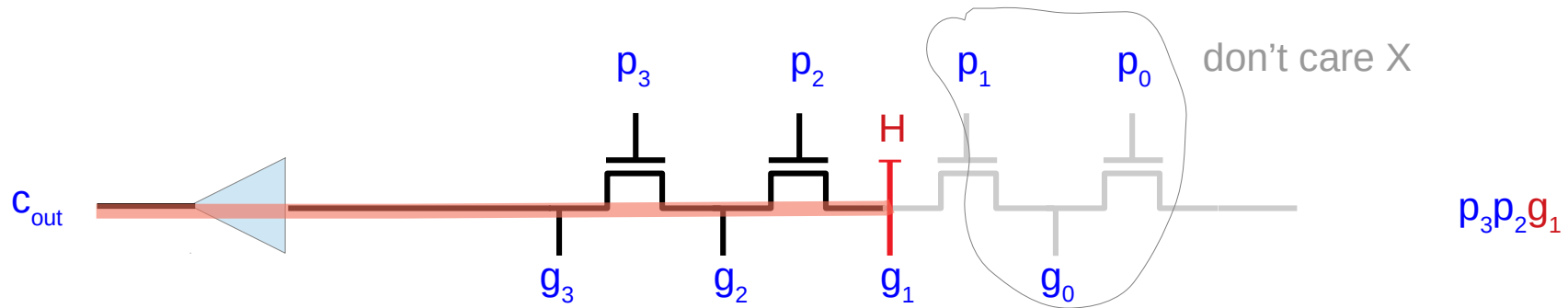
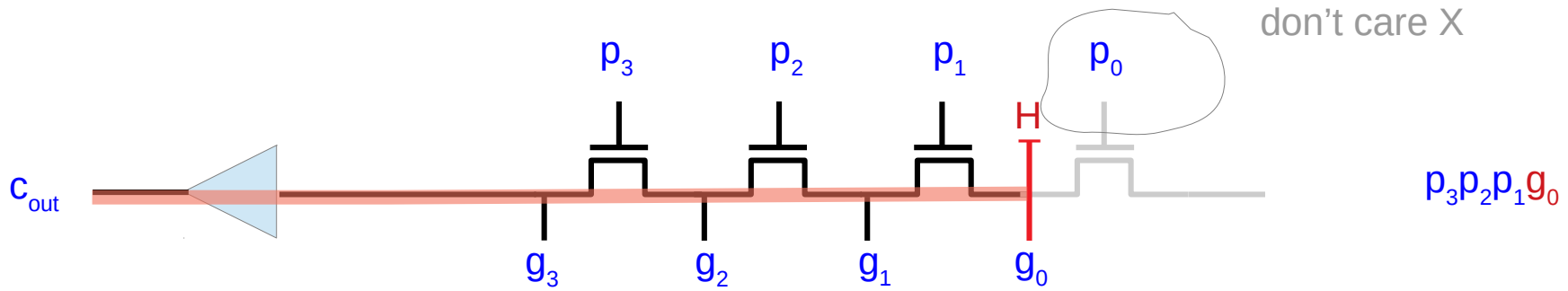
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Carry Skip Chain Implementation



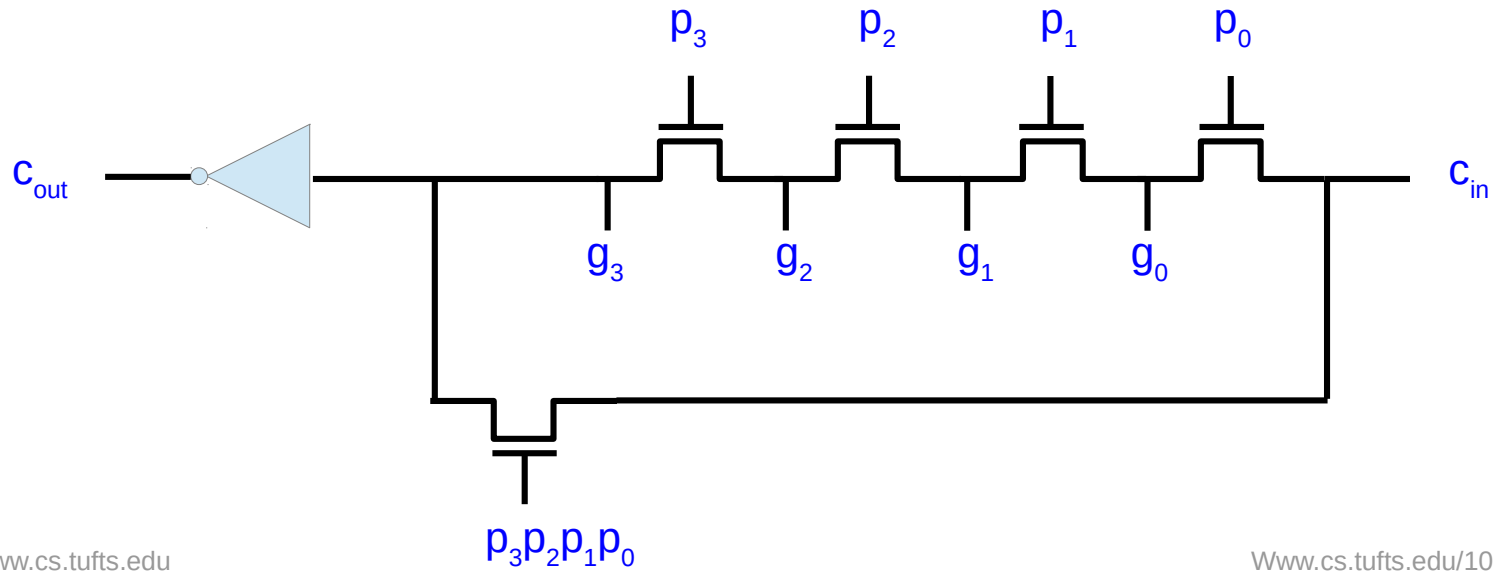
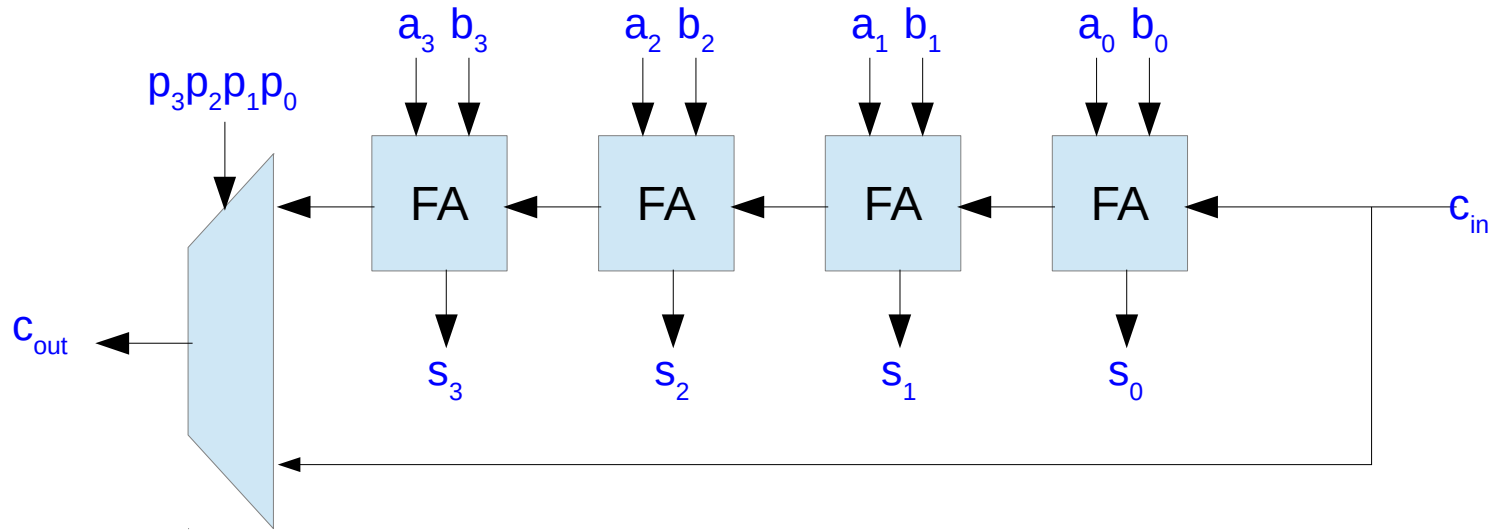
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Carry Skip Chain Implementation

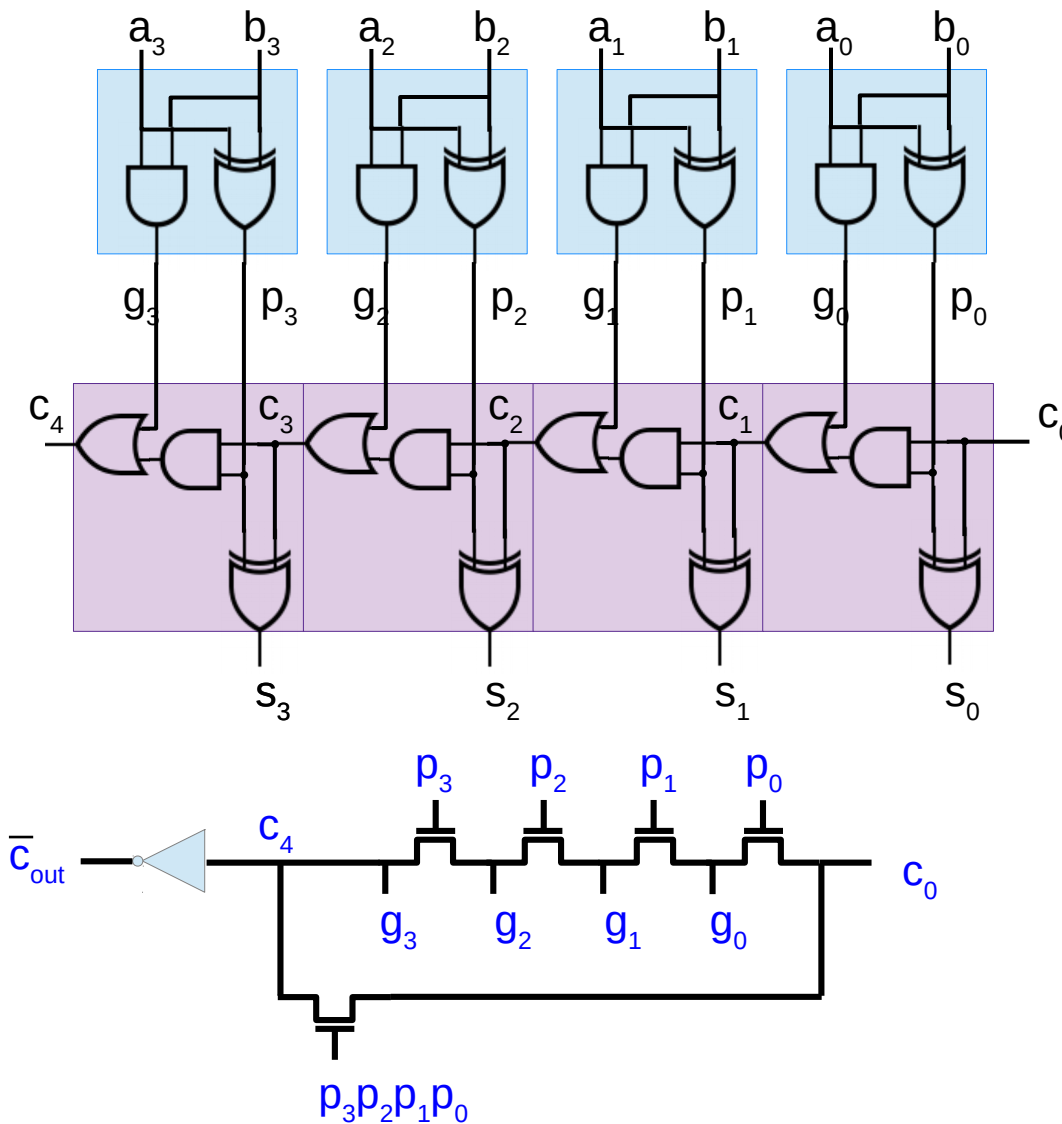


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Carry Skip Adder



4-bit Carry Skip Adder with P and G



Half Adder

$$p_i = a_i \oplus b_i$$

$$g_i = a_i \wedge b_i$$

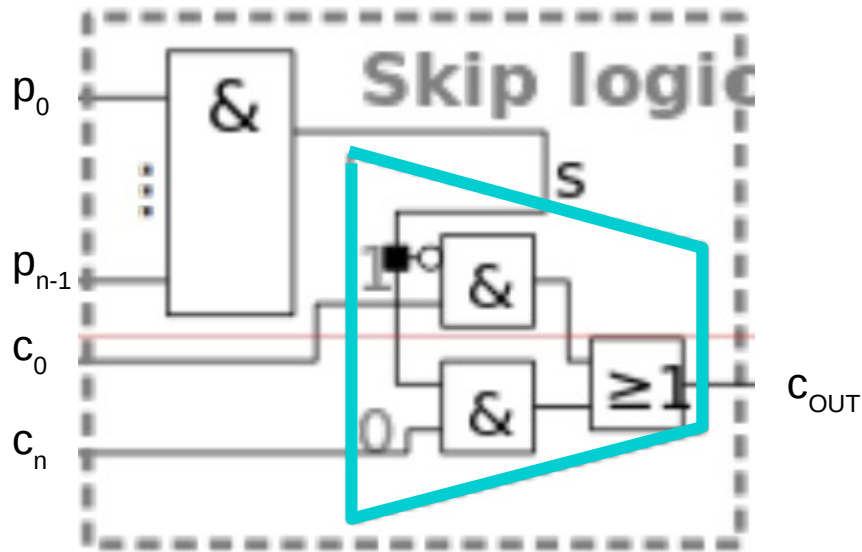
Half Adder

$$C_{i+1} = g_i + p_i \wedge C_i$$

$$S_i = p_i \oplus C_i$$

<https://upload.wikimedia.org/wikiversity/en/1/18/RCA.Note.H.1.20151215.pdf>

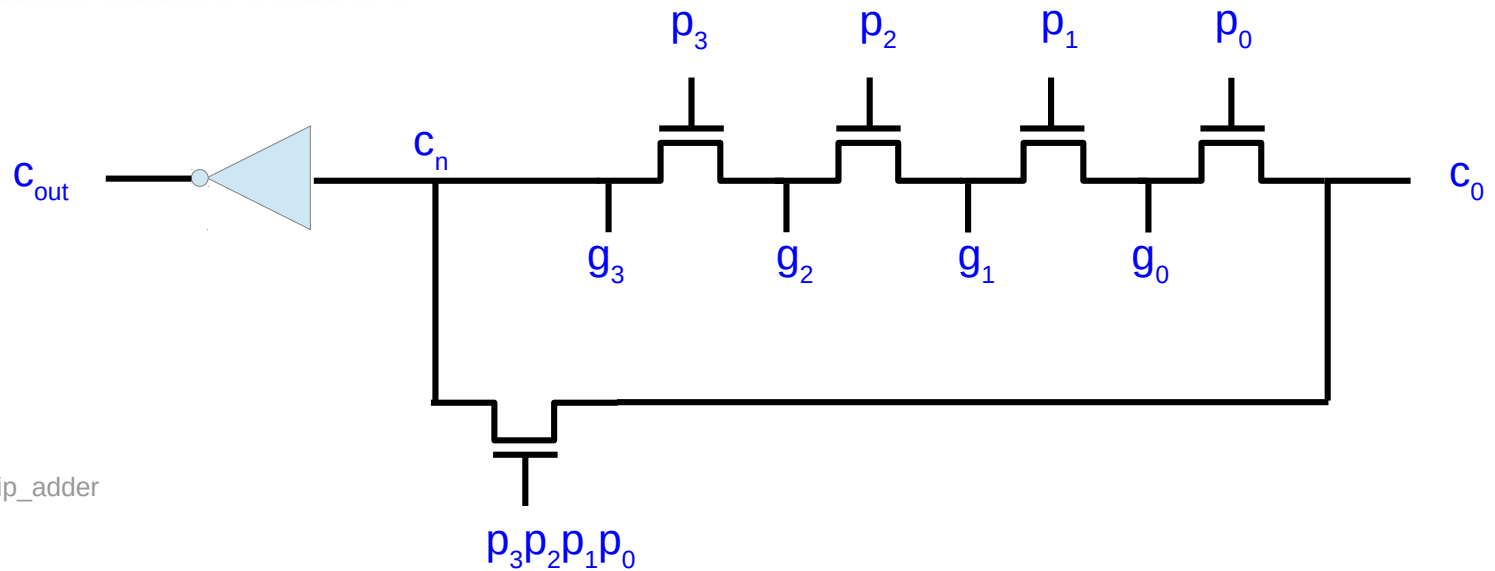
Block Carry Skip Adder



$$p_i = a_i \oplus b_i$$

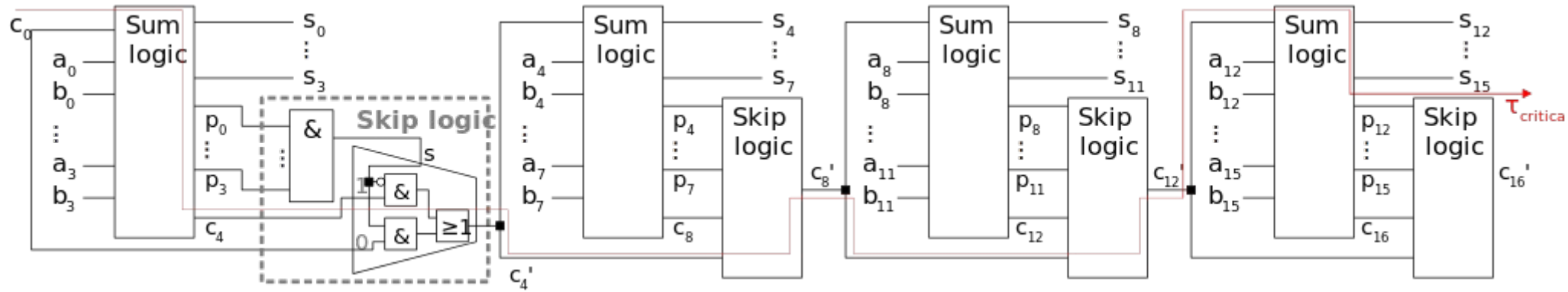
$$c_{out} = c_0 \text{ if } p_0 \wedge p_1 \wedge p_2 \wedge p_3$$

$$c_{out} = c_n \text{ otherwise}$$



https://en.wikipedia.org/wiki/Carry-skip_adder

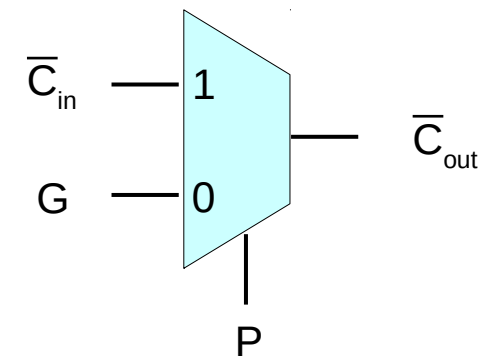
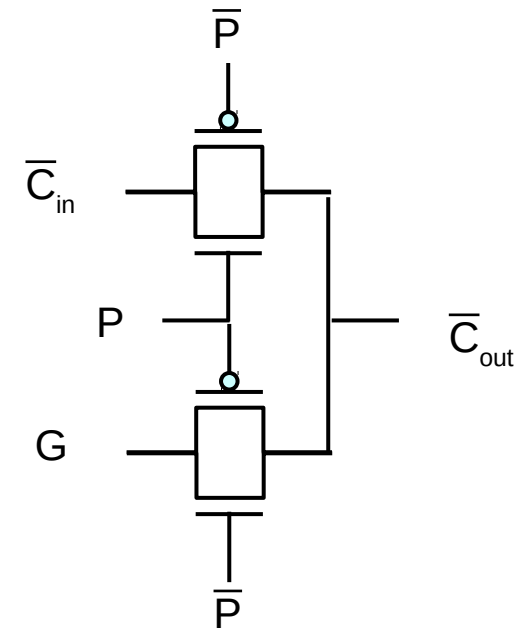
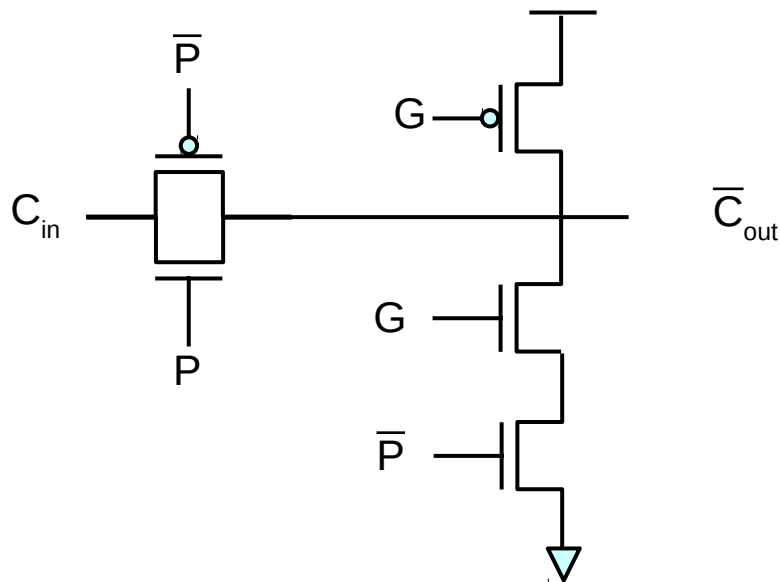
Block Carry Skip Adder



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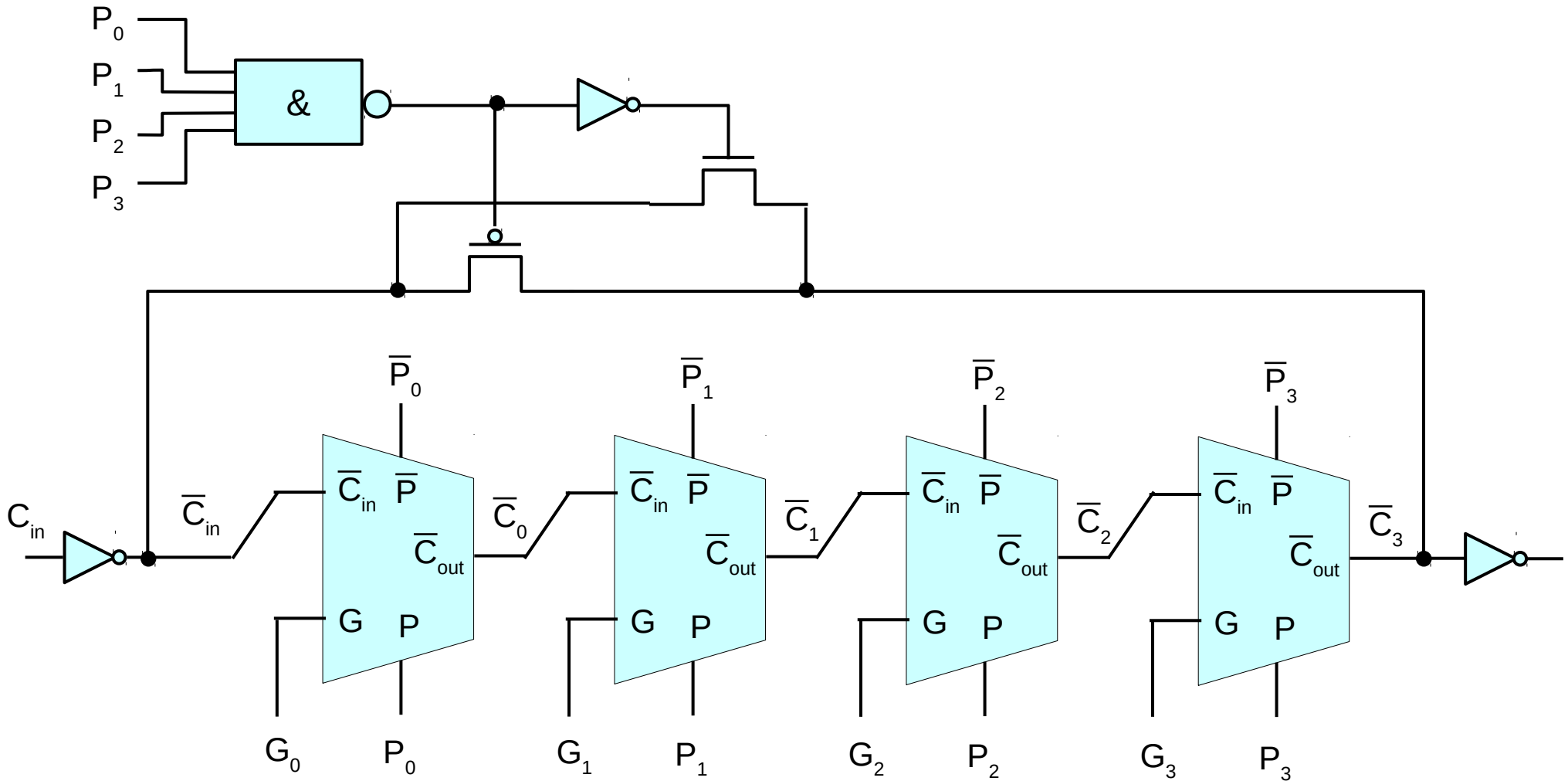
Static Carry Circuit - using pass transistors

$$G = a \cdot b$$



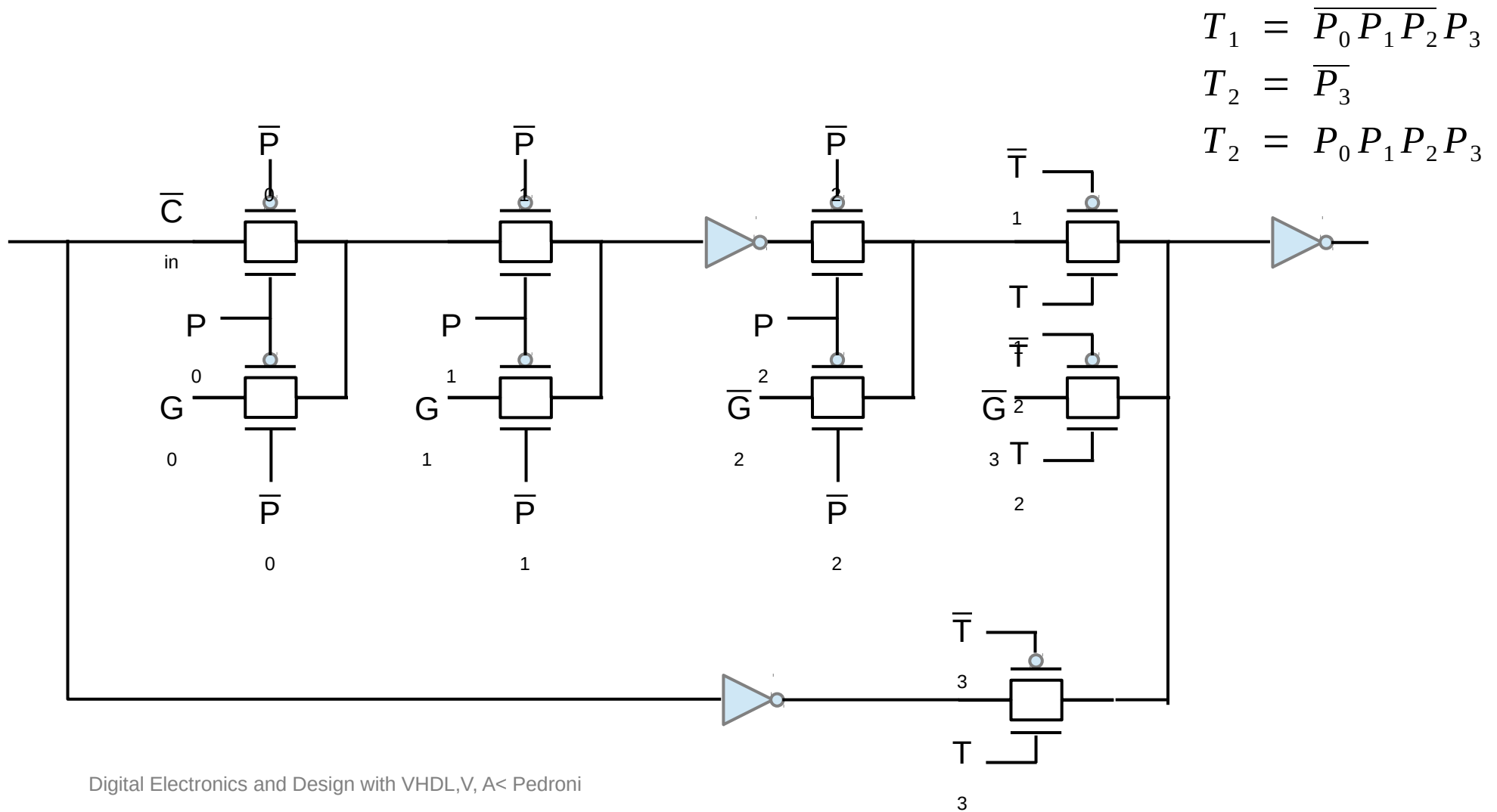
Digital Electronics and Design with VHDL, V. A. Pedroni

Static Carry Circuit - using pass transistors



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Static Carry Circuit - using pass transistors



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References

- [1] en.wikipedia.org
- [2] Parhami, “Computer Arithmetic Algorithms and Hardware Designs”