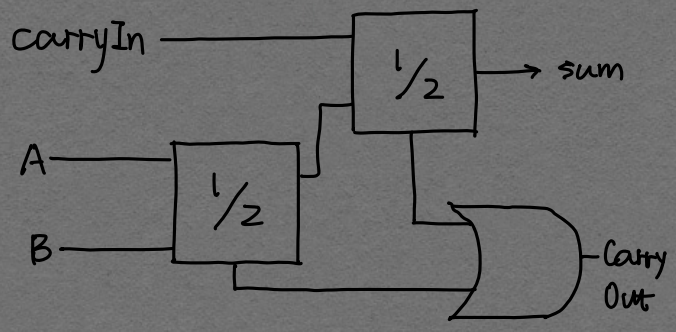
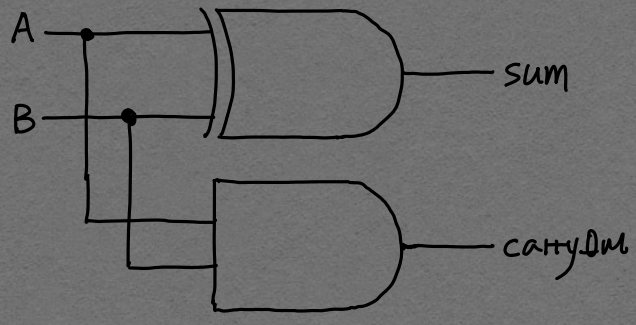
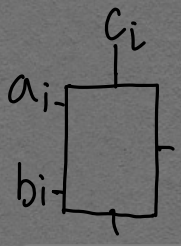
FULL ADDER



Half Adder





carry	no carry
a+c	a+b
b+c	

$$c_1 = g_0 + p_0 c_0$$

$$c_2 = g_1 + p_1 c_1$$
$$c_2 = g_1 + p_1 (g_0 + p_0 c_0)$$
$$c_2 = g_1 + p_1 g_0 + p_1 p_0 c_0$$

$$c_3 = g_2 + p_2 c_2$$
$$c_3 = g_2 + p_2 g_1 + p_2 p_1 g_0 + p_2 p_1 p_0 c_0$$

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$$C_{i+1} = a_i b_i + a_i c_i + b_i c_i$$
$$= \underbrace{a_i b_i}_{\text{generate}} + \underbrace{(a_i + b_i)}_{\text{propagate}} c_i$$

$C_4 = g_3 + P_3 g_2 + P_3 P_2 g_1 + P_3 P_2 P_1 g_0 + P_3 P_2 P_1 P_0 C_0$

C_0 → Create a carry inside that doesn't exist before, doesn't mention carry-in

P_0

$$P_8 \cdots P_4 g_3 + P_8 \cdots P_3 g_2 + P_8 \cdots P_2 g_1 + P_8 \cdots P_1 g_0 + P_8 P_7 \cdots P_0 C_0$$