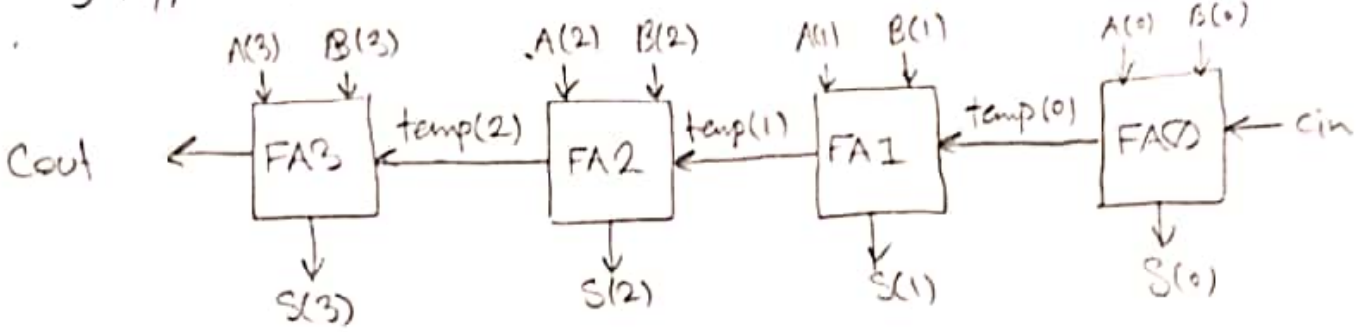
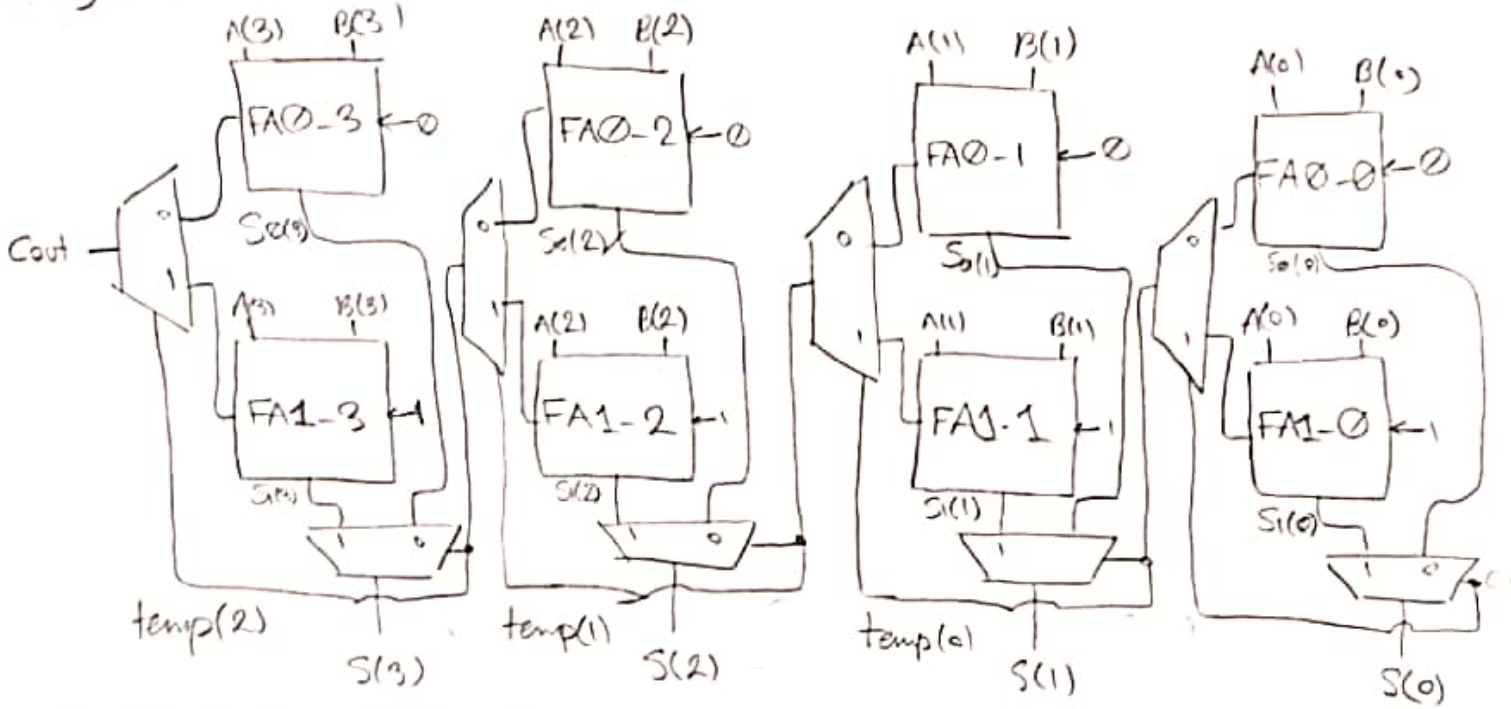
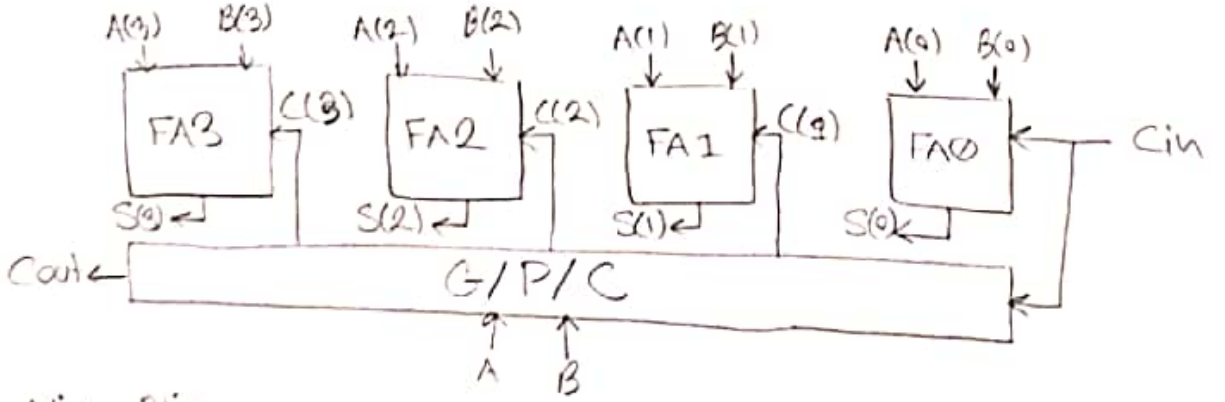
Carry Ripple Adder



Carry Select Adder



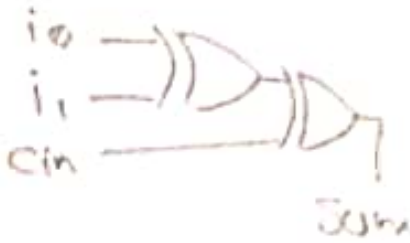
Carry lookahead Adder



* $G(i) = A(i) \cdot B(i)$
* $P(i) = A(i) + B(i)$
* $$\begin{cases} C(1) = G(0) + (P(0) \cdot Cin) \\ C(2) = G(1) + (P(1) \cdot C(1)) \\ C(3) = G(2) + (P(2) \cdot C(2)) \\ Cout = G(3) + (P(3) \cdot C(3)) \end{cases}$$

Full-Adders

Sum : $(i_0 \oplus i_1) \oplus C_{in}$ $\xrightarrow[\text{xor gates}]{\text{using 2-input}}$



Cout : $(i_1 \cdot i_0) + (i_1 \cdot C_{in}) + (i_0 \cdot C_{in})$