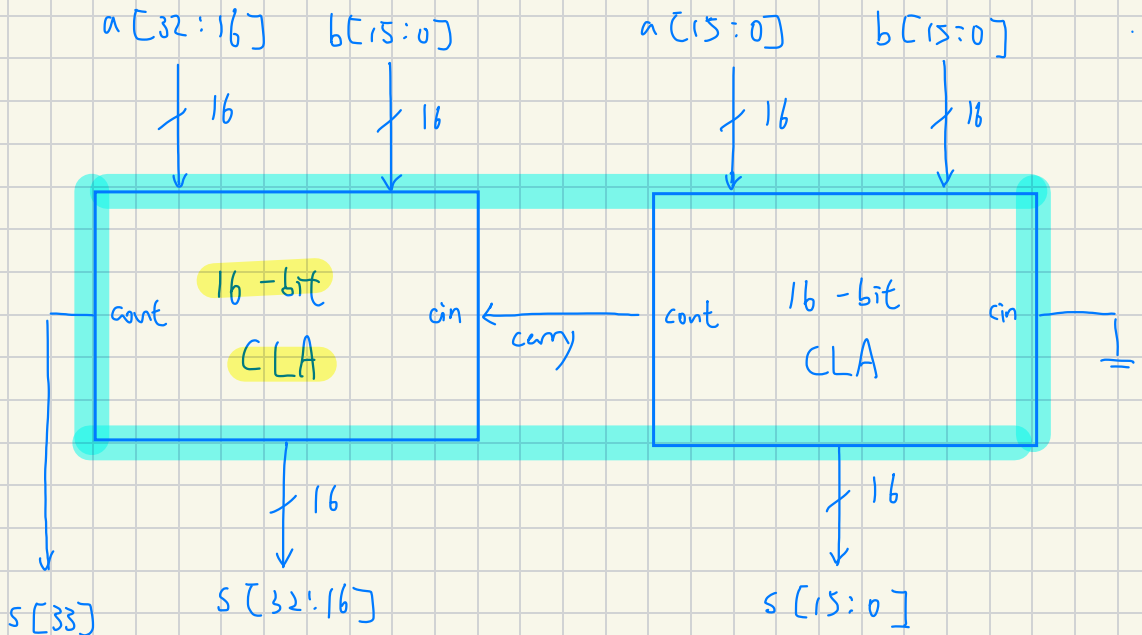
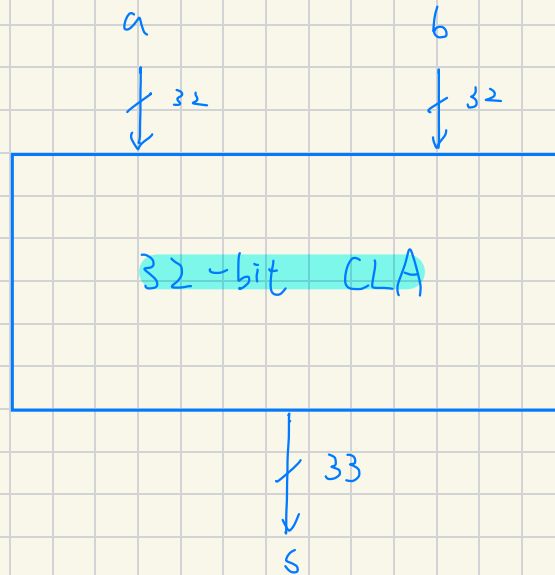
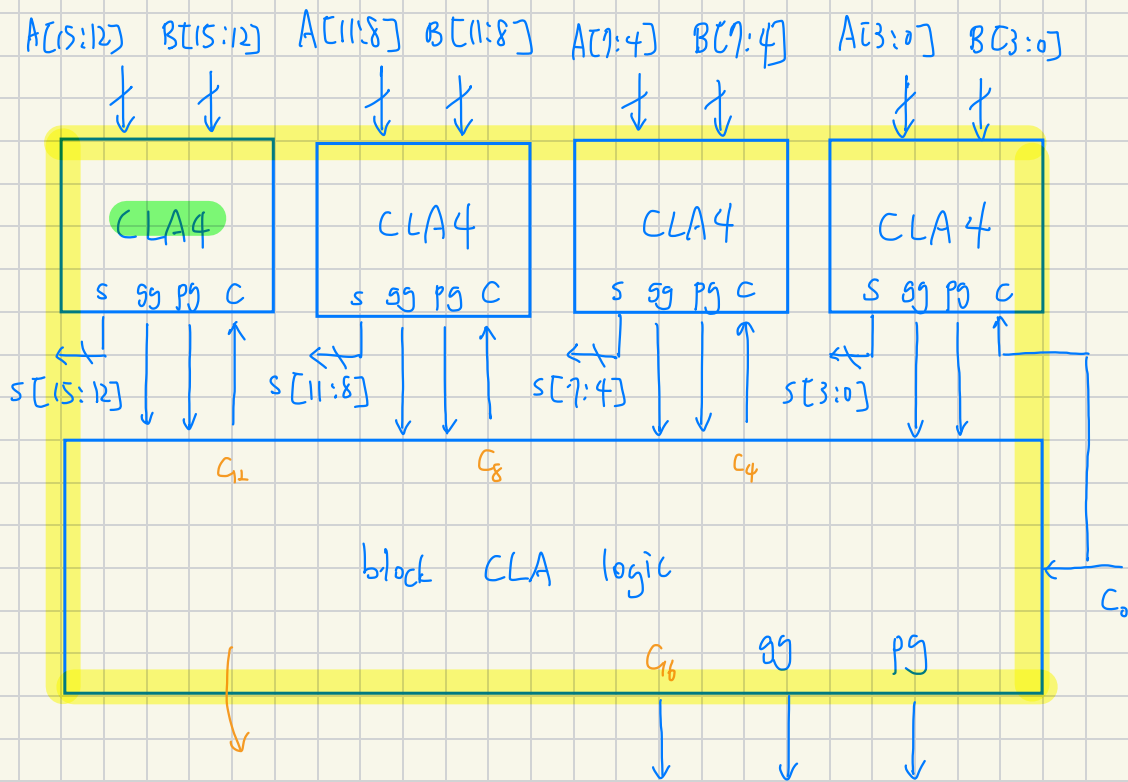


### 3 32-bit Carry-lookahead Adder





$$C_4 = G_{G_0} + P_{G_0} C_0$$

$$C_8 = G_{G_1} + P_{G_1} C_4$$

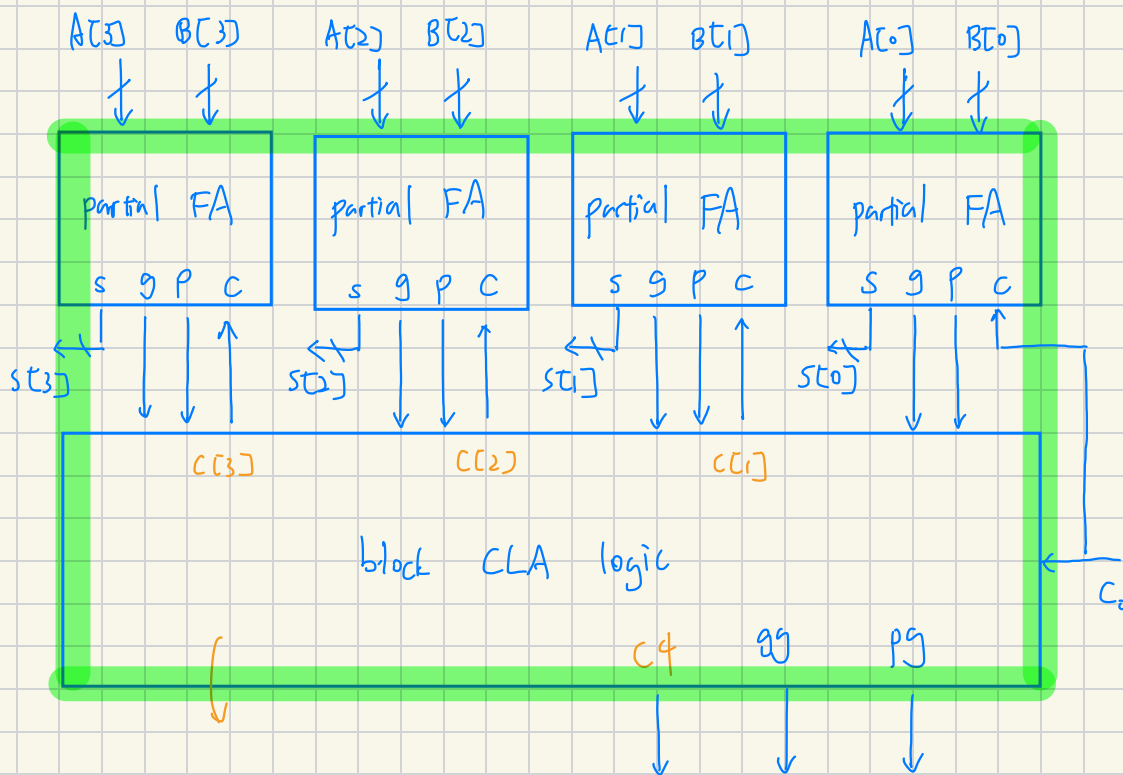
$$= G_{G_1} + P_{G_1} G_{G_0} + P_{G_1} P_{G_0} C_0$$

$$C_{12} = G_{G_2} + P_{G_2} C_8$$

$$= G_{G_2} + P_{G_2} G_{G_1} + P_{G_2} P_{G_1} G_{G_0} + P_{G_2} P_{G_1} P_{G_0} C_0$$

$$C_{16} = G_{G_3} + P_{G_3} G_{G_2} + P_{G_3} P_{G_2} G_{G_1} + P_{G_3} P_{G_2} P_{G_1} G_{G_0} + P_{G_3} P_{G_2} P_{G_1} P_{G_0} C_0$$

$$= G_G + P_G C_0 \quad \left( \begin{array}{l} G_G : \text{group generate} \\ P_G : \text{group propagate} \end{array} \right)$$



$$C_1 = G_0 + P_0 C_0$$

$$C_2 = G_1 + P_1 C_1$$

$$= G_1 + P_1 G_0 + P_1 P_0 C_0$$

$$C_3 = G_2 + P_2 C_2$$

$$= G_2 + P_2 G_1 + P_2 P_1 G_0 + P_2 P_1 P_0 C_0$$

$$C_4 = G_3 + P_3 G_2 + P_3 P_2 G_1 + P_3 P_2 P_1 G_0$$

$$+ P_3 P_2 P_1 P_0 C_0$$

$$= G_G + P_G C_0$$

for each  
partial FA

$$\begin{aligned} P_i &= A_i \oplus B_i \\ G_i &= A_i B_i \\ S_i &= A_i \oplus B_i \oplus C_i \\ &= P_i \oplus C_i \end{aligned}$$