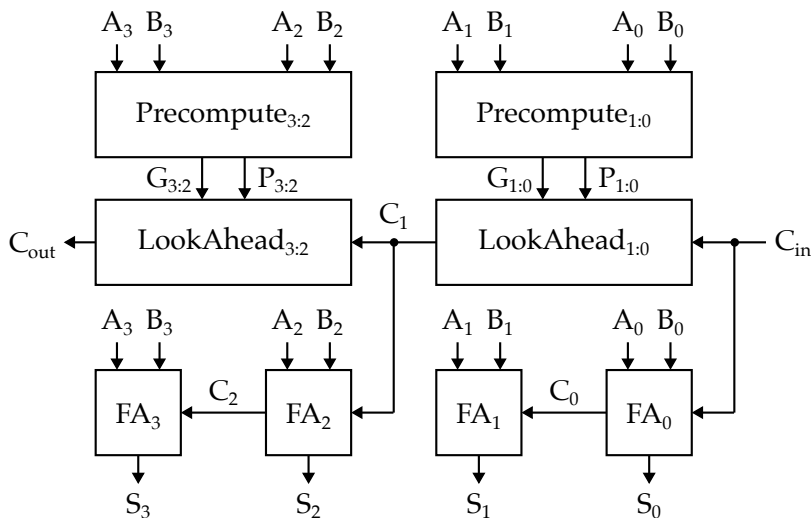
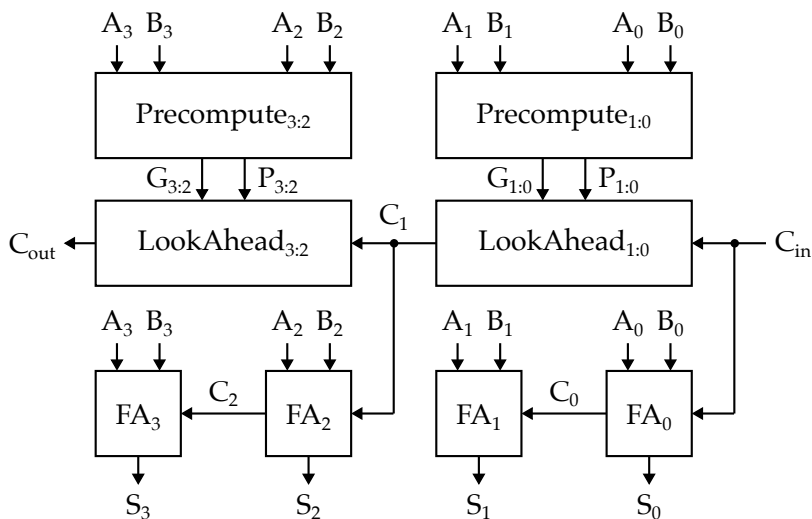
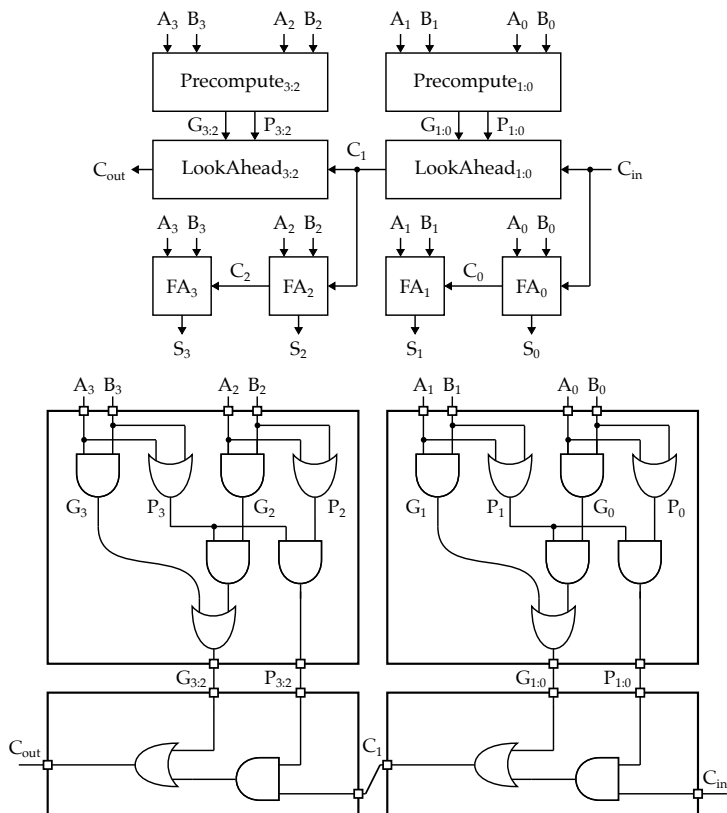


6.4. Carry-Lookahead Adders

- Carry lookahead adders take a very different approach from carry-select adders but with a common goal: reduce the propagation delay of the carry chain
- *Carry lookahead adders* break a ripple carry adder into blocks; goal is to precompute some information which then enables very quickly computing the carry in for each block
 - *Precompute Phase*: all blocks precompute a *propagate* and *generate* signal for each block in parallel
 - *Look-Ahead Phase*: carry chain uses precomputed propagate and generate signals to quickly compute the carry in for each block
 - *Ripple Phase*: each block computes the sum in parallel using small ripple-carry adders







Gate	t_{pd}	t_{cd}
NOT	1τ	1τ
AND2	3τ	1τ
OR2	4τ	1τ
XOR2	7τ	1τ

Path	Delay
$A_1 \rightarrow S_3$	
$B_1 \rightarrow S_3$	
$A_1 \rightarrow C_{out}$	
$B_1 \rightarrow C_{out}$	