CSM 51A F14 MDE

APPROXIMATE DELAY OF A 32-BIT 2-LEVEL CARRY-LOOKAHEAD LEVEL

$T_{CLA-32} = t_{pg}$ — COMPUTE p_{i+1}, g_{i+1}, t_i

$+ t_{CLG-4}$ — // $G_j, P_j \; j=0,1,\ldots,7$

$+$ — // C_1, C_2, C_3

t_{CLG-4} — // C_4, C_8, C_{12}, C_{16}

$+$

t_{CLG-4} — // $C_{20}, C_{24}, C_{28}, C_{32}$

// C_5, C_6, C_7

C_9, C_{10}, C_{11}

C_{13}, C_{14}, C_{15}

$+ t_{CLG-4}$ — // C_{17}, C_{18}, C_{19}

C_{21}, C_{22}, C_{23}

C_{29}, C_{30}, C_{31}

$+ t_{XOR}$ — // $Z_{31}, \ldots, Z_0$

$t_{pg} = 1t_g$

$t_{CLG-4} = 2t_g$

$t_{XOR} = 1t_g$

NOTE: Z_i COMPUTED AS SOON AS C_i IS KNOWN.

COULD YOU SHOW A TIMING DIAGRAM FOR $\{C_i, Z_i\}$

$T_{CLA-32} = 1 + 4\times2 + 1 = 10t_g$

$T_{CRA-32} = 32\times2 = 64t_g$

$\frac{T_{CRA-32}}{T_{CLA-32}} > 6$ TIMES FASTER

CALCULATE COST(CLA-32) AND COST(CRA-32) AND COMPARE