Lab 2 - Part 3

A hand-drawn logic circuit diagram of a multiplier array.

Top row AND gate inputs (left to right): $X_4 Y_1$, $X_4 Y_0$, $X_3 Y_1$, $X_3 Y_0$, $X_2 Y_1$, $X_2 Y_0$, $X_1 Y_1$, $X_1 Y_0$, $X_0 Y_1$, $X_0 Y_0$, $X_0 Y_0$

First adder row: HA — $C13$ — FA — $C12$ — FA — $C11$ — FA — $C10$ — HA

Labels: $c(5)$, $C14$, $c(4)$, $S14$, $S(4)$, $c(4)$, $S13$, $c(3)$, $S12$, $c(2)$, $S11$, $CC1)$, $S10$, $S0$, $P(0)$

Second row AND inputs: $X_4 Y_2$, $X_3 Y_2$, $X_2 Y_2$, $X_1 Y_2$, $X_0 Y_2$

Second adder row: FA — $C23$ — FA — $C22$ — FA — $C21$ — FA — $C20$ — HA

Labels: $c(10)$, $C24$, $S24$, $c(9)$, $S9$, $S23$, $S8$, $c(8)$, $S22$, $S7$, $c(7)$, $S21$, $S67$, $c(6)$, $S5$, $S20$, $P(2)$, $P(1)$, $S(4)$, $S(3)$, $S(2)$, $S(1)$

Third row AND inputs: $X_4 X_3$, $X_3 Y_3$, $X_2 Y_3$, $X_1 Y_3$, $X_0 Y_3$

Third adder row: A — $C33$ — FA — $C32$ — A — $C31$ — FA — $C30$ — HA

Labels: $C15$, $S34$, $c(14)$, $c(14)$, $S33$, $S(13)$, $c(13)$, $S32$, $S(12)$, $c(12)$, $S31$, $S(11)$, $c(11)$, $S10$, $S30$, $P(3)$

Fourth row AND inputs: $X_3 Y_4$, $X_2 Y_4$, $X_1 Y_4$, $X_0 X_4$

Fourth adder row: FA — $C42$ — FA — $C41$ — A — $C40$ — HA

Labels: $C44$, $C43$, $S(19)$, $S43$, $P(7)$, $S42$, $P(6)$, $S(18)$, $C(16)$, $S(20)$, $S41$, $P(5)$, $C(17)$, $S(16)$, $C(16)$, $S40$, $P(4)$, $S(15)$

Left labels: $C34$, $C(17)$, $S(17)$, $S44$, $P(8)$, $C44$, $P(9)$

Right side circled numbers: 1, 2, 3, 4