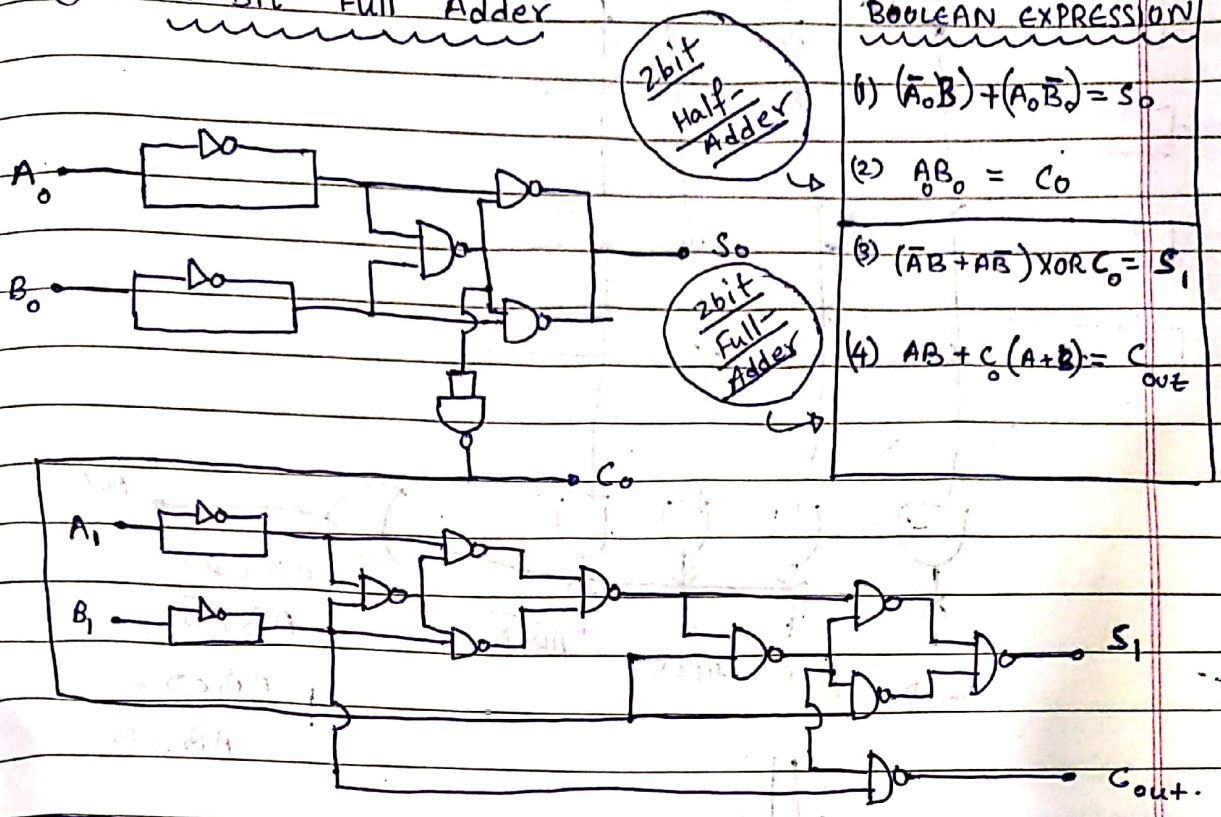
COURSERA - INTRODUCTION TO FPGA.

(1) 2 Bit Full Adder



BOOLEAN EXPRESSION

(1) $(\bar{A}_0 B) + (A_0 \bar{B}_0) = S_0$

(2) $A_0 B_0 = C_0$

(3) $(\bar{A}B + A\bar{B})$ XOR $C_0 = S_1$

(4) $AB + C_0(A+B) = C_{out}$

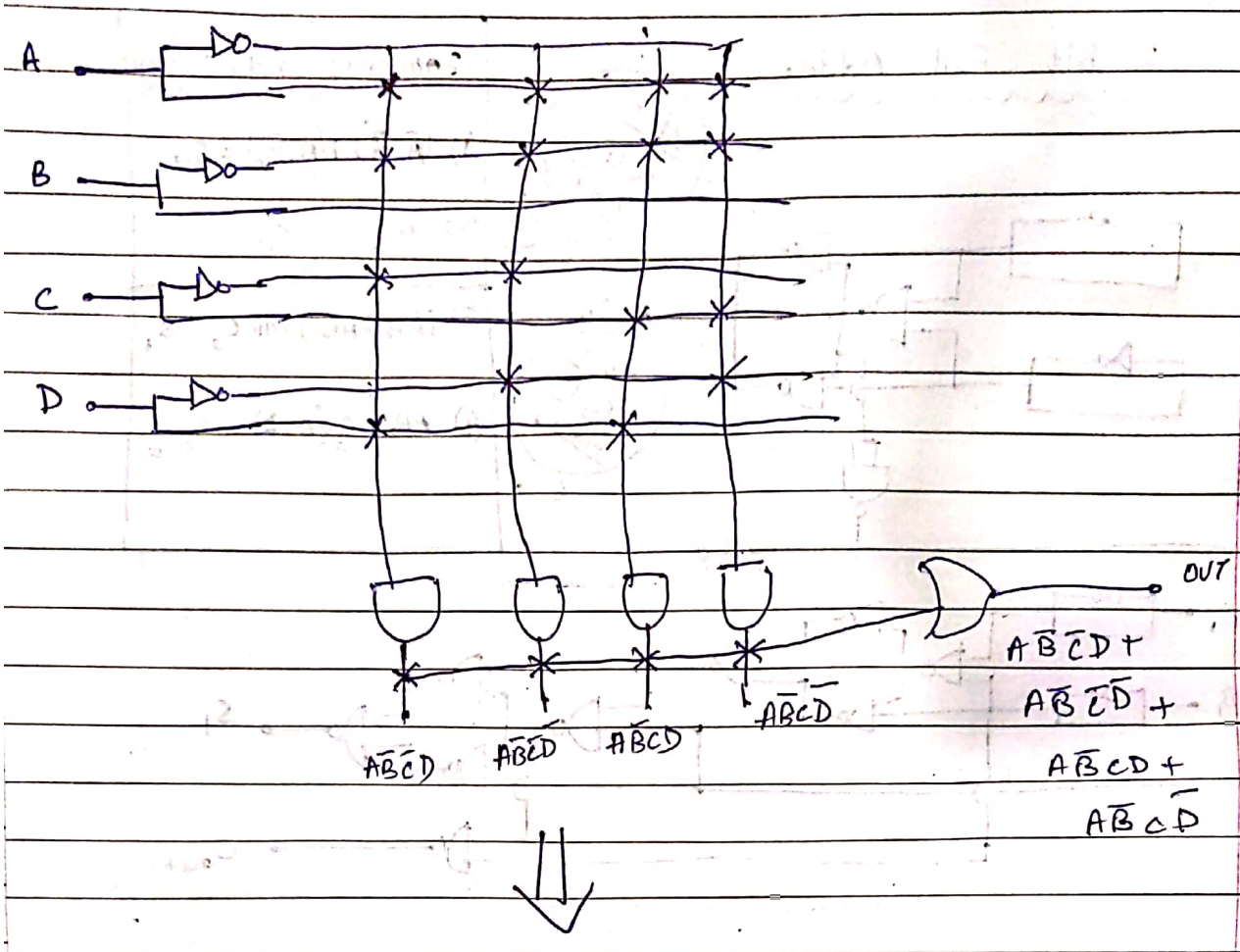
(2) (A AND NOT(B)) OR (C AND NOT(D))

A	B	C	D	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	1
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

$Y = \bar{A}B\bar{C}\bar{D} + \bar{A}BC\bar{D} + A\bar{B}\bar{C}\bar{D} + A\bar{B}C\bar{D} + A\bar{B}CD + ABC\bar{D}$

$Y = A\bar{B}\bar{C}\bar{D} + A\bar{B}C\bar{D} + A\bar{B}CD + ABC\bar{D}$

# of prog. AND gate = # of min terms = 4



CORRECT DIAGRAM —