Question 1

a) $F_1(A, B, C, D) = \sum m(0, 1, 4, 5, 8, 9, 10, 12, 13)$

CD\AB	00	01	11	10
00	1	1		
01	1	1		
11	1	1		
10	1	1		1

$F_1 = C' + AB'D'$

b) $F_2(A, B, C, D) = \sum m(3, 5, 7, 8, 9, 10, 11, 13, 15)$

CD\AB	00	01	11	10
00			1	
01		1	1	
11		1	1	
10	1	1	1	1

$F_2 = AB' + CD + BD$

Question 2

$F = AB' + AD + BC + CD' + A'B'C'D'$

A	B	C	D	F
0	0	0	0	1
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	1
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	1
1	1	1	0	1
1	1	1	1	1

CD\AB	00	01	11	10
00	1	0	0	1
01	0	0	1	1
11	0	1	1	1
10	1	1	1	1

$F = B'D' + AD + BC$

CD\AB	00	01	11	10
00	1	0	0	1
01	0	0	1	1
11	0	1	1	1
10	1	1	1	1

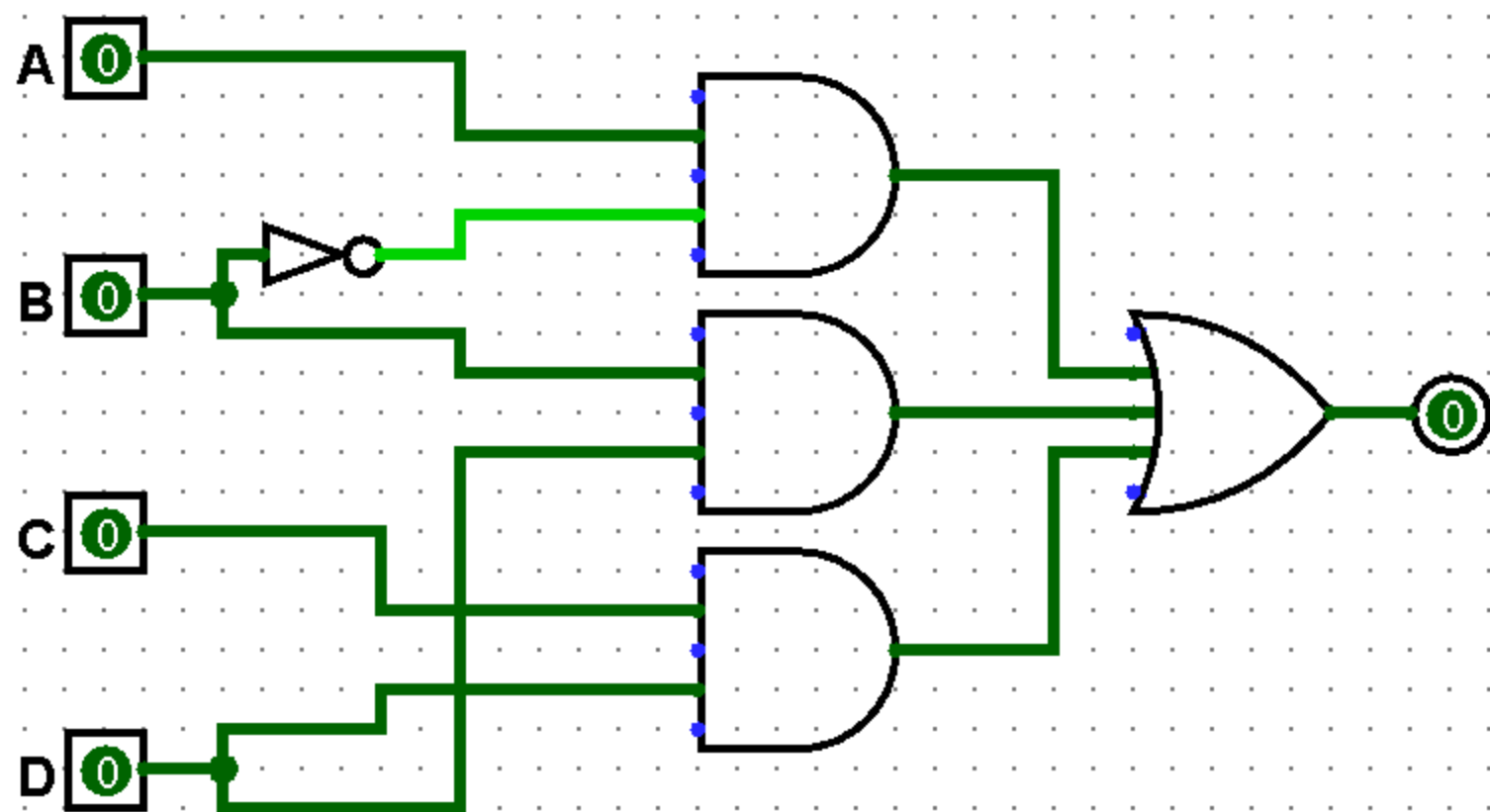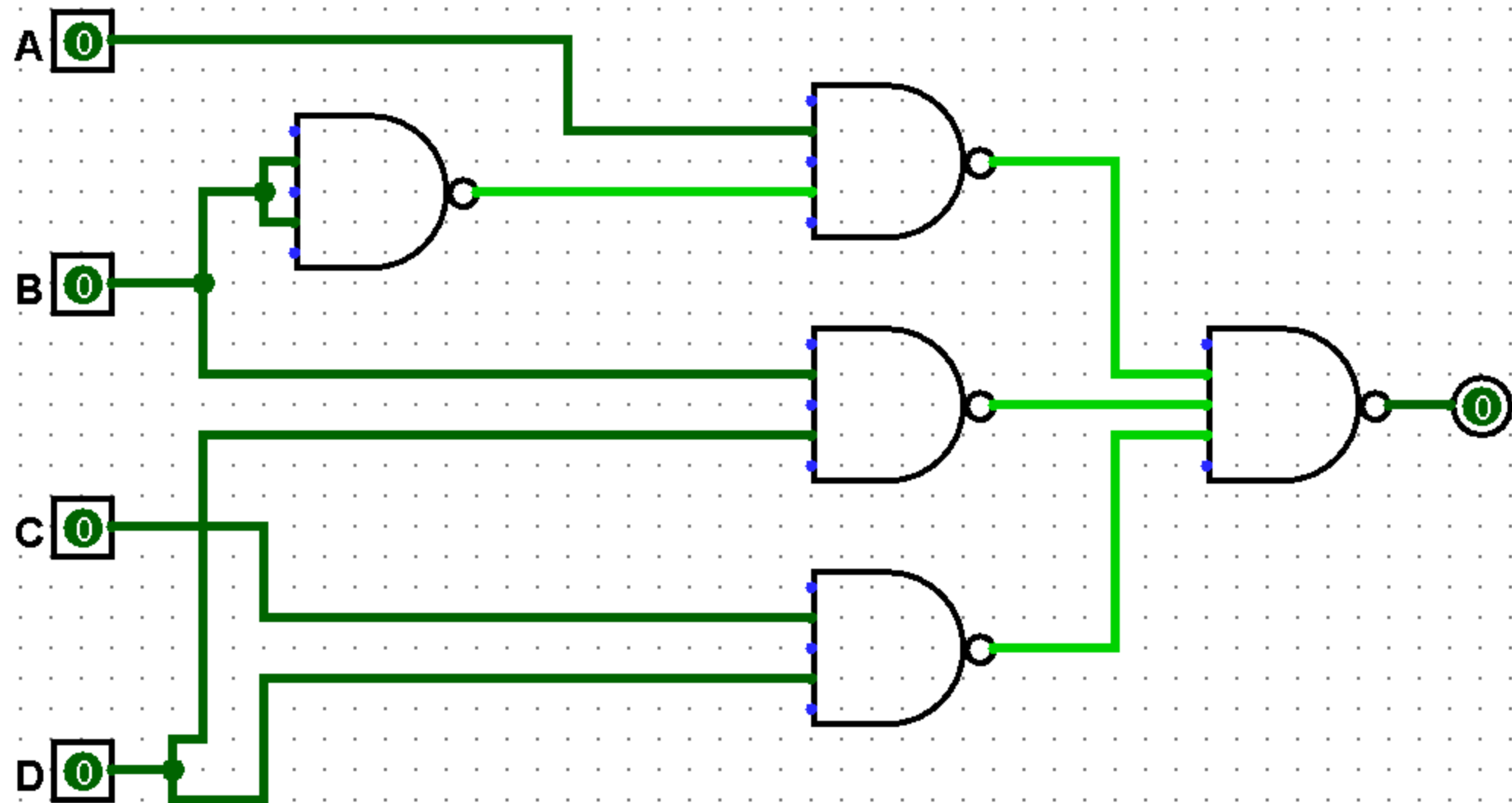$F' = BC'D' + A'C'D + A'B'D$

(Question 1) Function 1
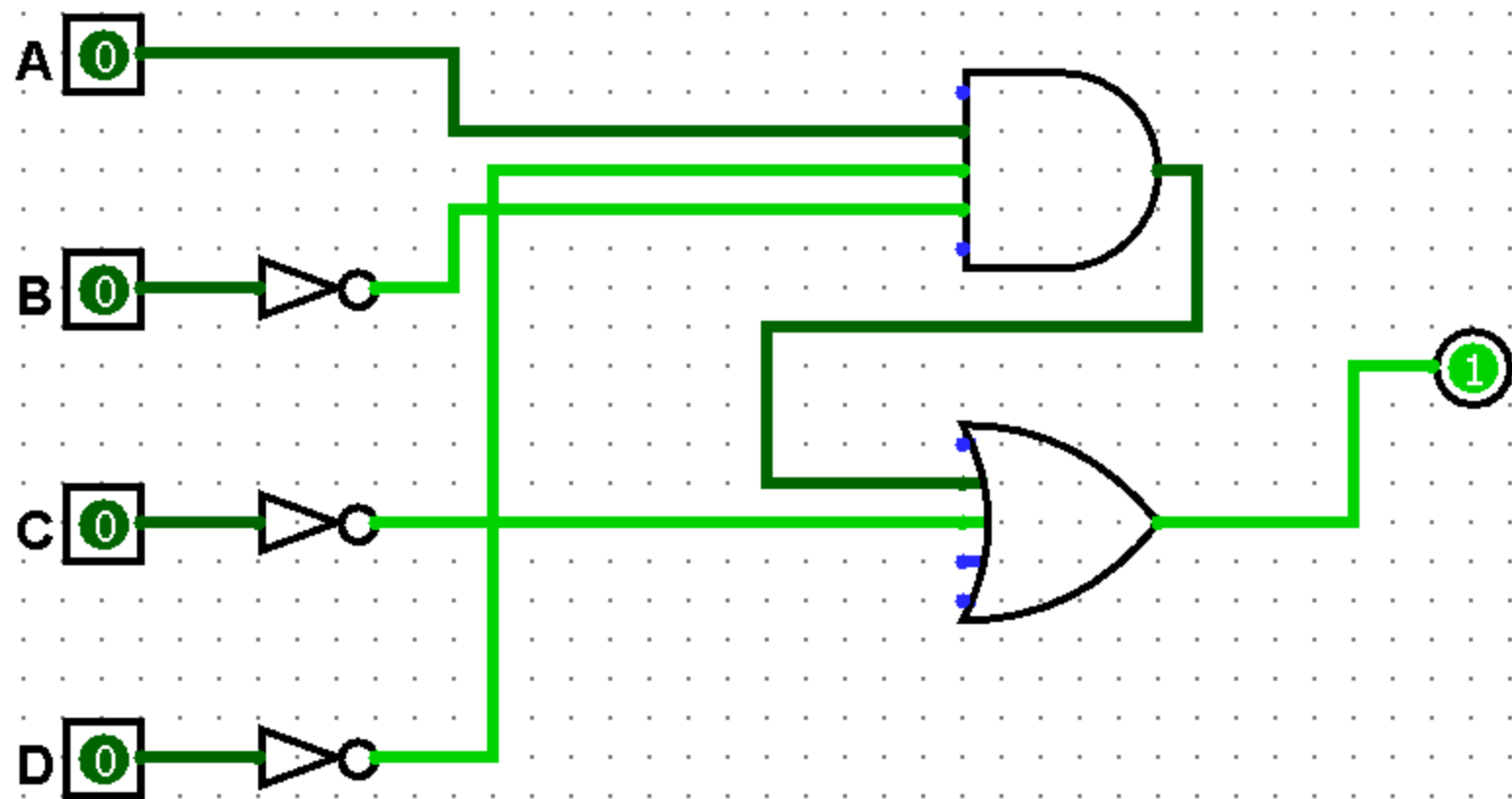
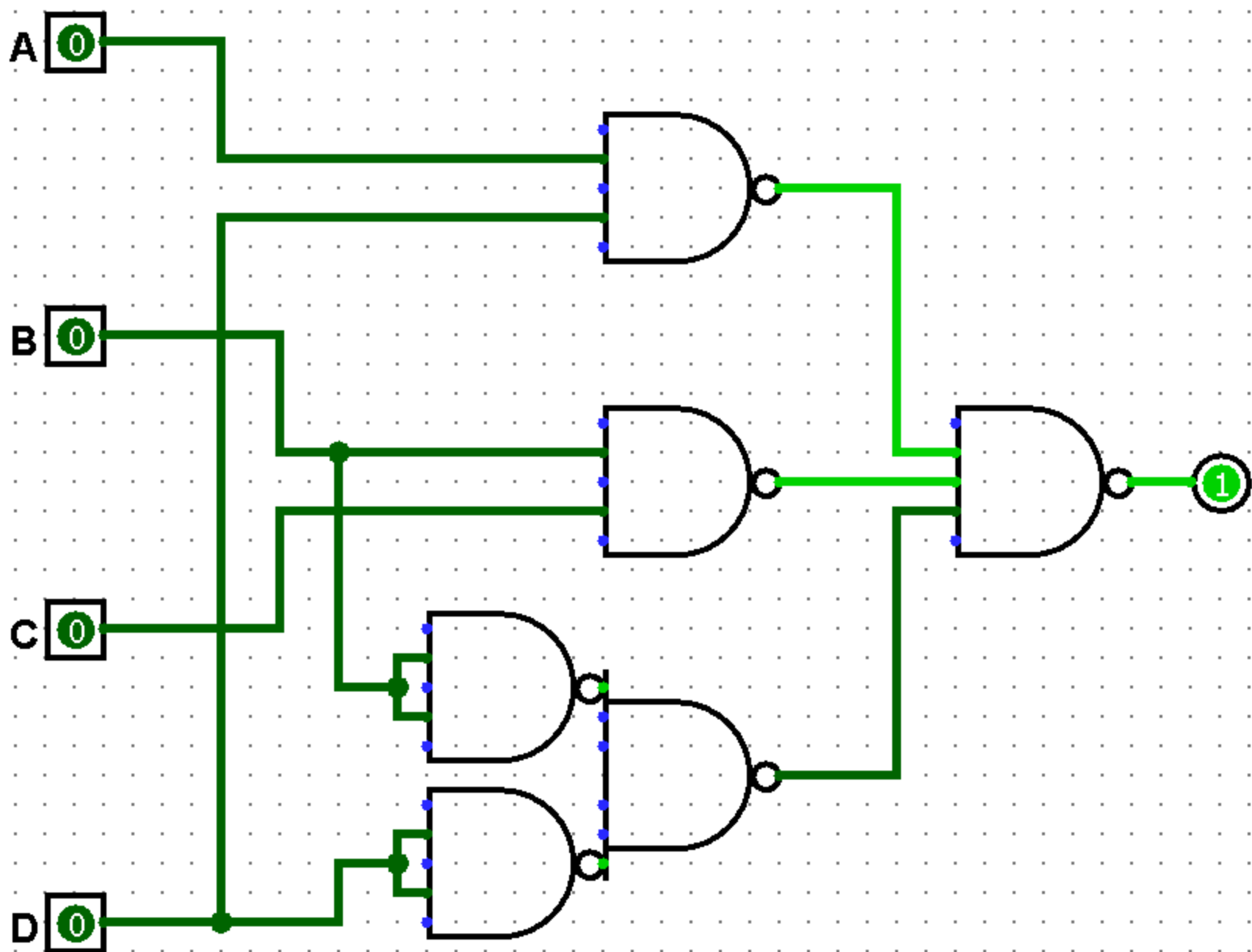# (Question 1) Function 1 (NAND)
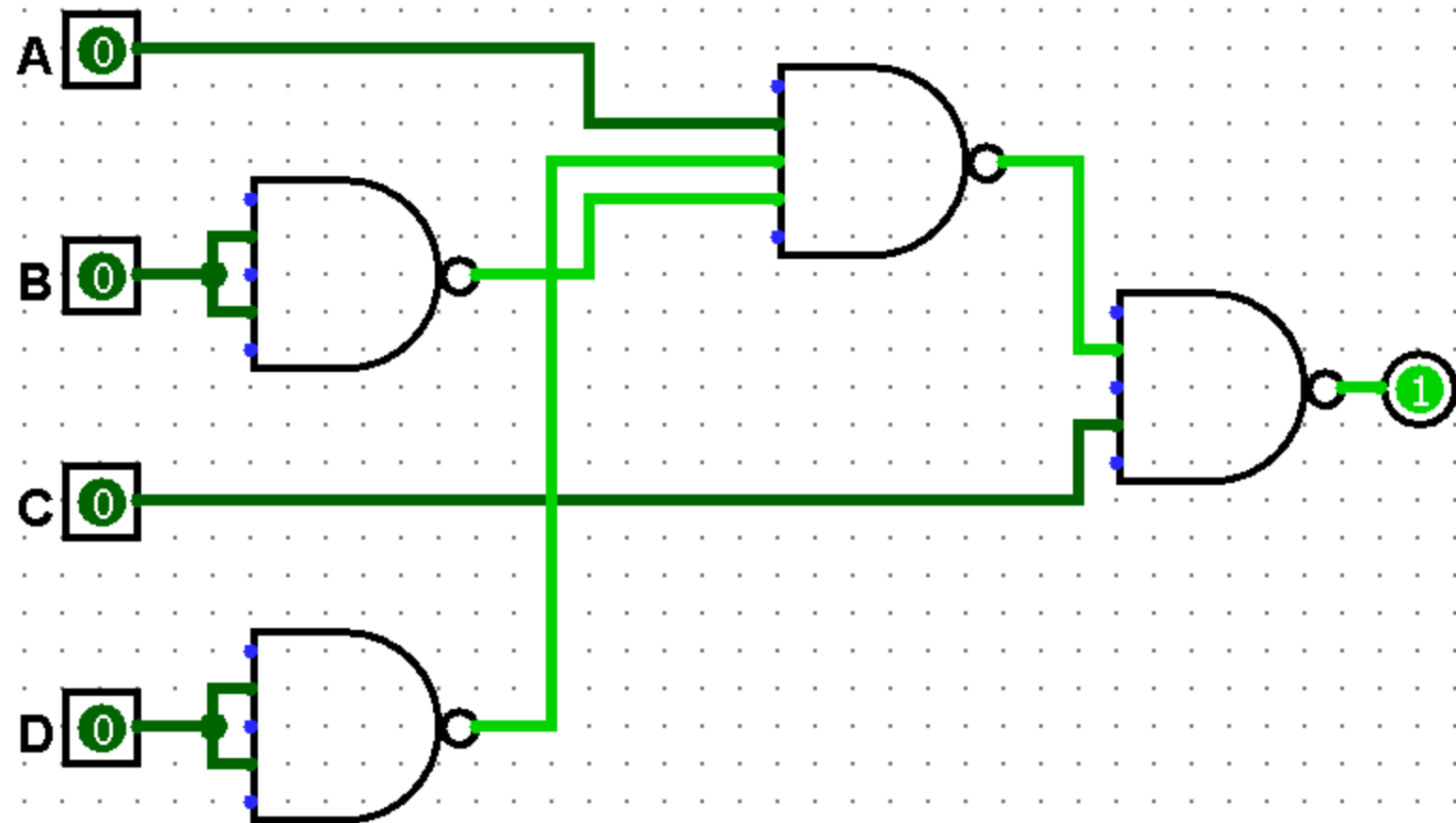
(Question 1) Function 2

(Question 1) Function 2 (NAND)

(Question2) F = B'D' + AD + BC

(Question2) F' = BC'D' + A'C'D + A'B'D