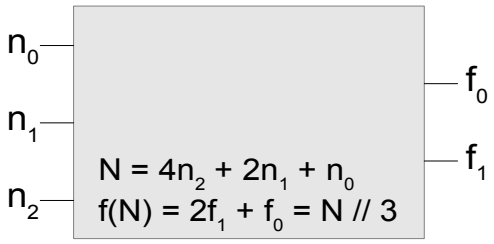
CMP 334 Spring 2019 Quiz 4 Name _____

Complete the combinational circuit design process for a circuit that computes the integer division of an unsigned 3-bit integer by 3. Here is the blackbox informal description:



a) complete the truth table for the function:

n_2	n_1	n_0	N	N // 3	f_1	f_0	term
0	0	0	0	0	0	0	$\bar{n}_2\bar{n}_1\bar{n}_0$
0	0	1	1	0	0	0	$\bar{n}_2\bar{n}_1 n_0$
0	1	0	2	0	0	0	$\bar{n}_2 n_1\bar{n}_0$
0	1	1	3	1	0	1	$\bar{n}_2 n_1 n_0$
1	0	0	4	1	0	1	$n_2\bar{n}_1\bar{n}_0$
1	0	1	5	1	0	1	$n_2\bar{n}_1 n_0$
1	1	0	6	2	1	0	$n_2 n_1\bar{n}_0$
1	1	1	7	2	1	0	$n_2 n_1 n_0$

b) write the Boolean formulas for the function.

$$f_0 = \bar{n}_2 n_1 n_0 + n_2\bar{n}_1\bar{n}_0 + n_2\bar{n}_1 n_0 = \bar{n}_2 n_1 n_0 + n_2\bar{n}_1$$

$$f_1 = n_2 n_1\bar{n}_0 + n_2 n_1 n_0 = n_2 n_1$$

c) draw the circuit for the function.