DATE

EXPT.NO.

Assignment 3

PAGE NO.

Implement a decimal to BCD encoder using 2-Input NAND gates

BCD stands for binary coded decimal and decimal is the number system with base 10. We have to implement a circuit with two input NAND gates to encode decimal to BCD.

Table of BCD code for 10 digits (0-9)

Decimal Digit	Binary Coded Decimal
D	A B C D
0	0 0 0 0
1	0 0 0 1
2	0 0 1 0
3	0 0 1 1
4	0 1 0 0
5	0 1 0 1
6	0 1 1 0
7	0 1 1 1
8	1 0 0 0
9	1 0 0 1

From the table we can see,

$A = D_8 + D_9$ ('+' stands for 'OR')

$B = D_4 + D_5 + D_6 + D_7$

$C = D_2 + D_3 + D_6 + D_7$

$D = D_1 + D_3 + D_5 + D_7 + D_9$

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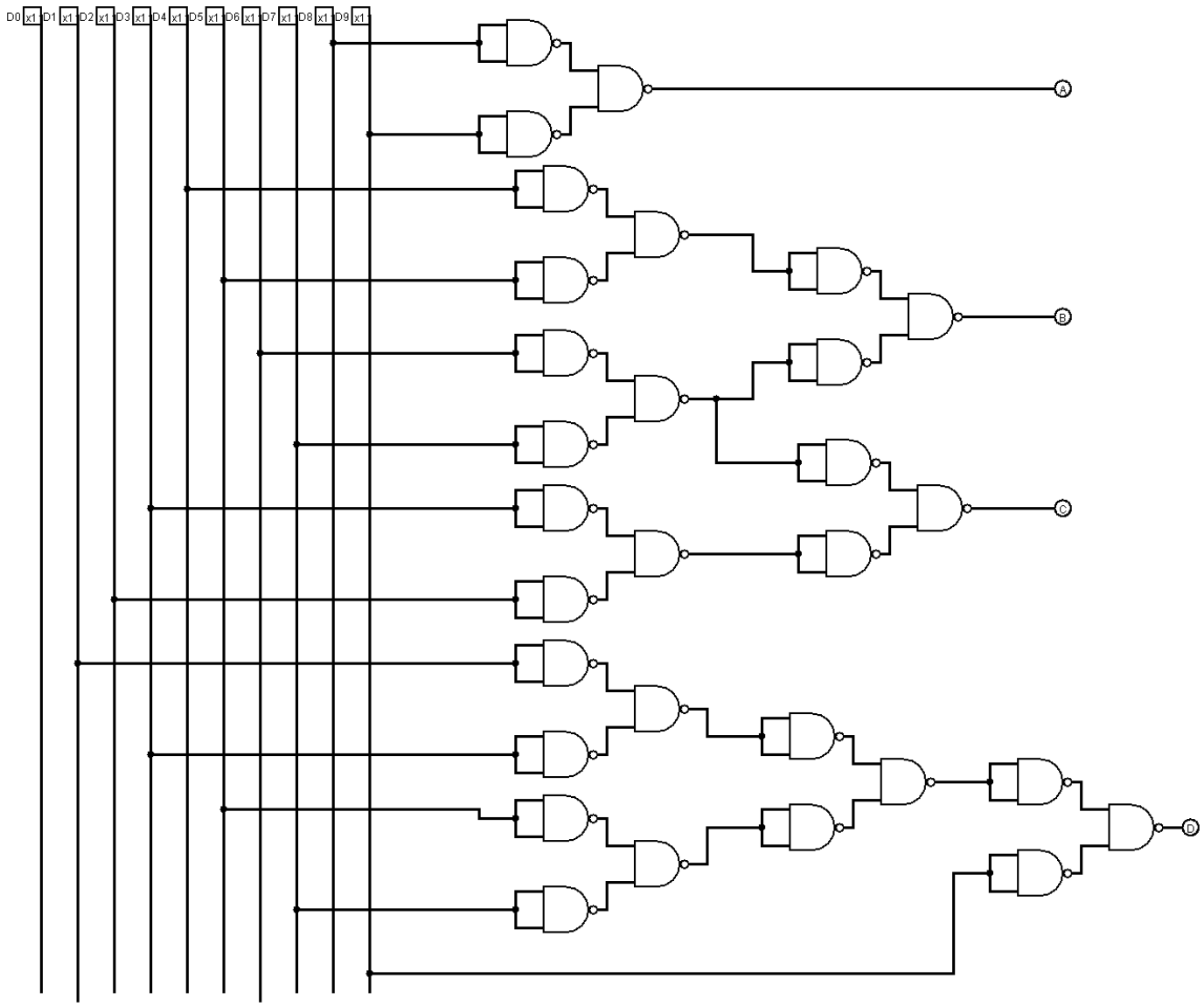

DECIMAL TO BCD ENCODER

DATE

EXPT.NO.

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Implement a BCD to decimal decoder using two input NAND gates.

Table of decimal digits with BCD code :

Binary Coded Decimal				Decimal Digit.
A	B	C	D	D
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9

From the Table we can see,

$D_0 = \bar{A}\bar{B}\bar{C}\bar{D}$

$D_1 = \bar{A}\bar{B}\bar{C}D$

$D_2 = \bar{A}\bar{B}C\bar{D}$

$D_3 = \bar{A}\bar{B}CD$

$D_4 = \bar{A}B\bar{C}\bar{D}$

$D_5 = \bar{A}B\bar{C}D$

$D_6 = \bar{A}BC\bar{D}$

$D_7 = \bar{A}BCD$

$D_8 = A\bar{B}\bar{C}\bar{D}$

$D_9 = A\bar{B}\bar{C}D$

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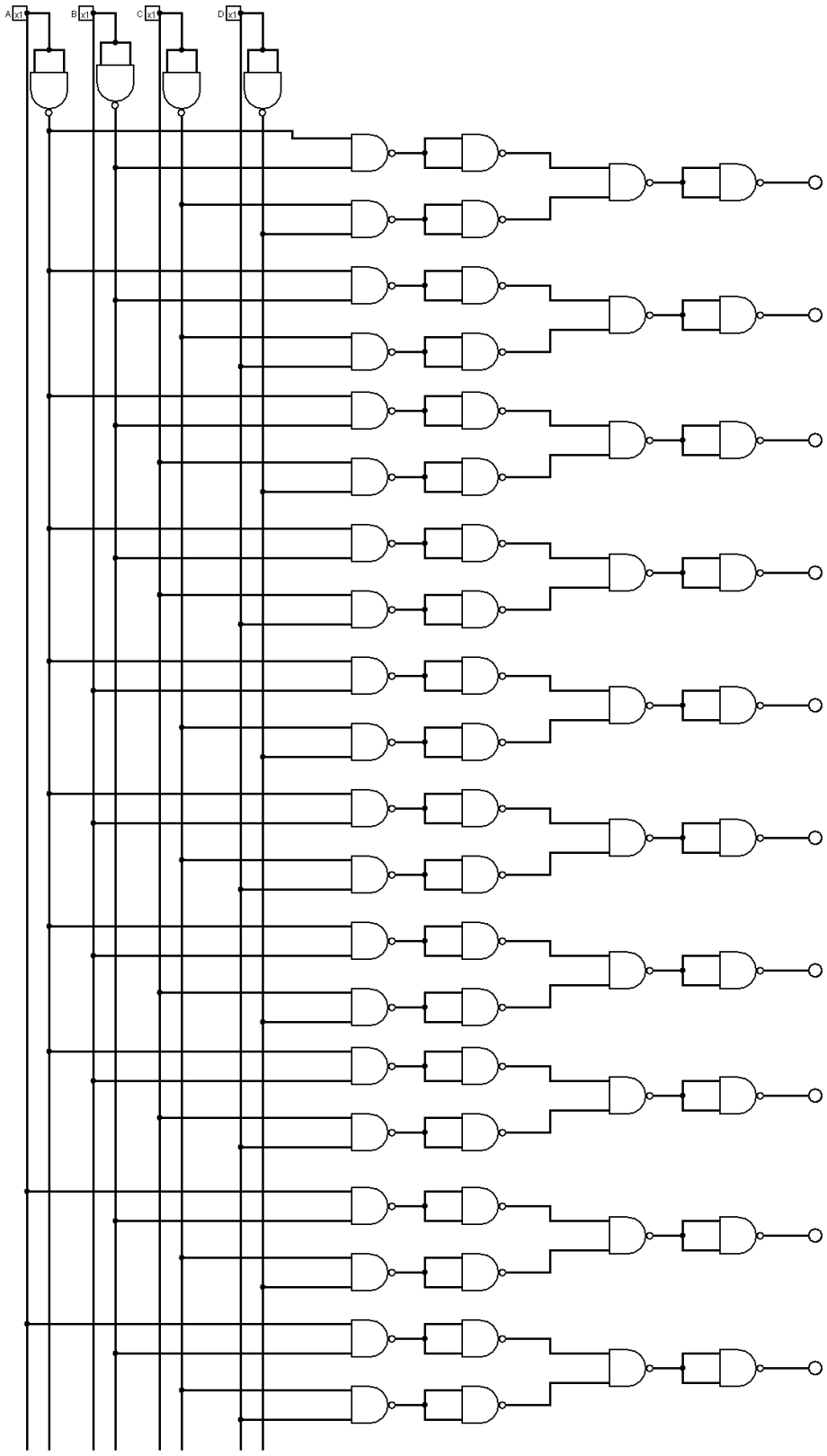

BCD TO DECIMAL DECODER