EE5811 : FPGA LAB
CHALLENGE PROBLEM 2

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Problem

Is it possible to implement the NAND logic using some data structure/algorithm?

Solution

To answer the above question I have used Struct datatype in C. I have created a NAND Structure with two input elements and a function pointer to calculate the result when required. The code for the same can be seen in NAND_Struct.c file.

One examples have been worked out with : AB + CD $\Leftrightarrow$ $\overline{\overline{AB}.\overline{CD}}$
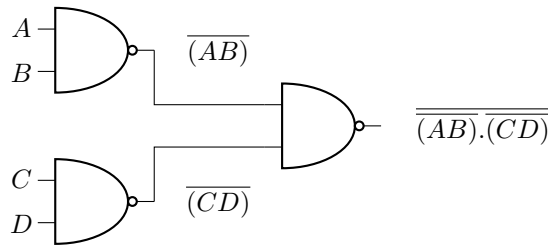
A	B	C	D	OUT
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Table 1: Truth table for above shown logic

NOTE : C programs are executed sequentially. This should be kept in mind while making gate connections in the code.