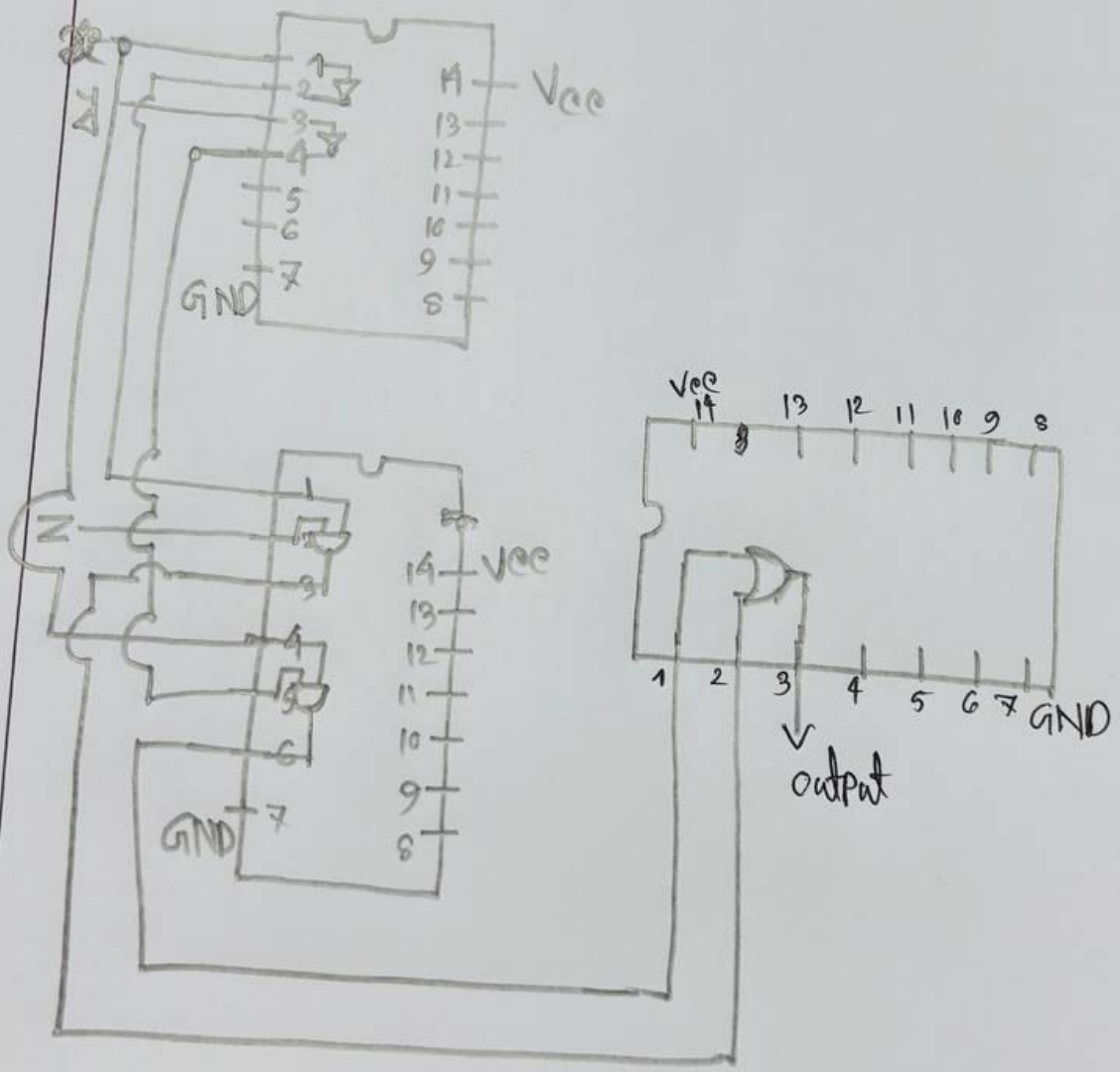
Output: Here after constructing the circuit and testing it with different values, we can conclude that it exactly matches with our truth table. So, we can say our circuit with its simplified form gets the actual output.

Here two inverter and two and gate and a one or gates are used to get the final output.

Pin Diagram:

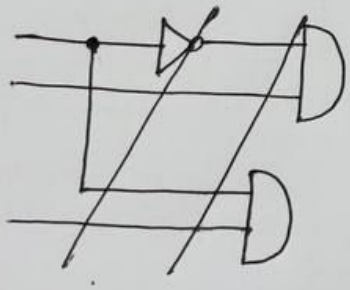


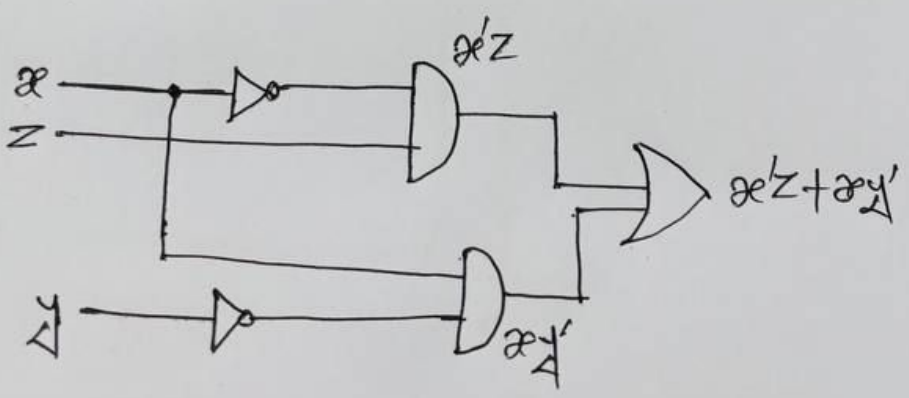
Simplified function truth table:

x	y	z	x'	y'	$x'z$	xy'	$x'z + xy'$
0	0	0	1	1	0	0	0
0	0	1	1	1	1	0	1
0	1	0	1	0	0	0	0
0	1	1	1	0	1	0	1
1	0	0	0	1	0	1	1
1	0	1	0	1	0	1	1
1	1	0	0	0	0	0	0
1	1	1	0	0	0	0	0

Hence we can say we will get exactly the same result with our simplified form.

Logic Diagram:





Apparatus: Breed board, jumper, cables, power supply (5V), 7404, 7408, 7432.

Boolean Function:

$$F = x'y'z + x'yz + xy'$$

$$= x'z(y + y') + xy'$$

$$= x'z + xy'$$

So, the simplified form is $x'z + xy'$

Truth Table:

x	y	z	x'	y'	$x'y'z$	$x'yz$	xy'	$x'y'z + x'yz + xy'$
0	0	0	1	1	0	0	0	0
0	0	1	1	1	1	0	0	1
0	1	0	1	0	0	0	0	0
0	1	1	1	0	0	1	0	1
1	0	0	0	1	0	0	1	1
1	0	1	0	1	0	0	1	1
1	1	0	0	0	0	0	0	0
1	1	1	0	0	0	0	0	0

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CCE-224
DLD (sessional)

Experiment 01

Experiment Title: Implementing circuit with basic gates.

Theory: This lab introduces basic logic gates and ICs. we are trying to implement a basic gate with its simplified form. Our equation is $xy'z + x'yz + xy'$. Here if we are trying to implement it directly, we will have to use upto 7 different logic gates. So we try to simplify our equation to get a more minimal and optimal approach to solve the circuit. Here,

Not Gate = An inverter, which turns its output into opposite bit.

And Gate = This gate outputs 1 only if all inputs are 1.