PRACTICLA-3

To Implement all Logic Operation in a single circuit in Logisim simulator.

Theory :-

The Hardware implementation of the logic microoperations requires that logic gates be inserted for each bit or pair of bits in the register to perform the required logic function.

The below image shows the circuit that generates 8 logic microoperations.

Each microoperation require sits corresponding gates that performs the required logic.

The operation to perform is selected through a 3x8 multiplexer, meaning it has three selection lines S2, S1 and S0 respectively.

The output of the logic gates are given to the inputs of the multiplexer.

The output of the multiplexer will depend on the Selection line inputs as shown in below table:

S2	S1	S0	Output	Operation
0	0	0	E = A * B	AND
0	0	1	E = A + B	OR
0	1	0	E = A'B+AB'	XOR
0	1	1	E = A	BUFFER
1	0	0	E = AB+A'B'	XNOR
1	0	1	E = (A + B)'	NOR
1	1	0	E = (A * B)'	NAND
1	1	1	E = A'	NOT

The circuit implemented in Logisim is given below: