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Lab 02 Report
ECE 2031 L10
10 September 2024

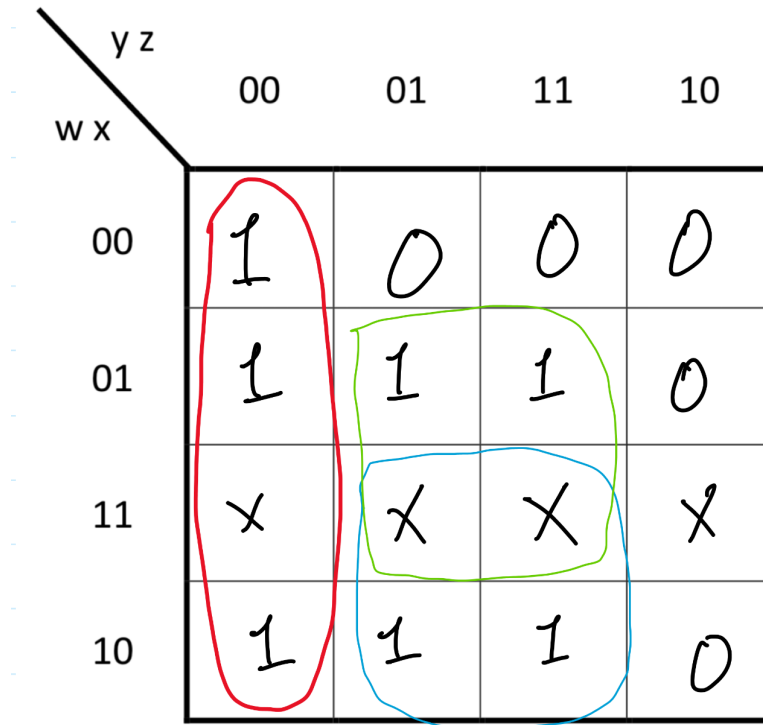


Figure 1. Karnaugh Map of “F” including three essential prime implicants. The derived Sum of Products expression is $F = \bar{Y} \cdot \bar{Z} + W \cdot Z + X \cdot Z$.

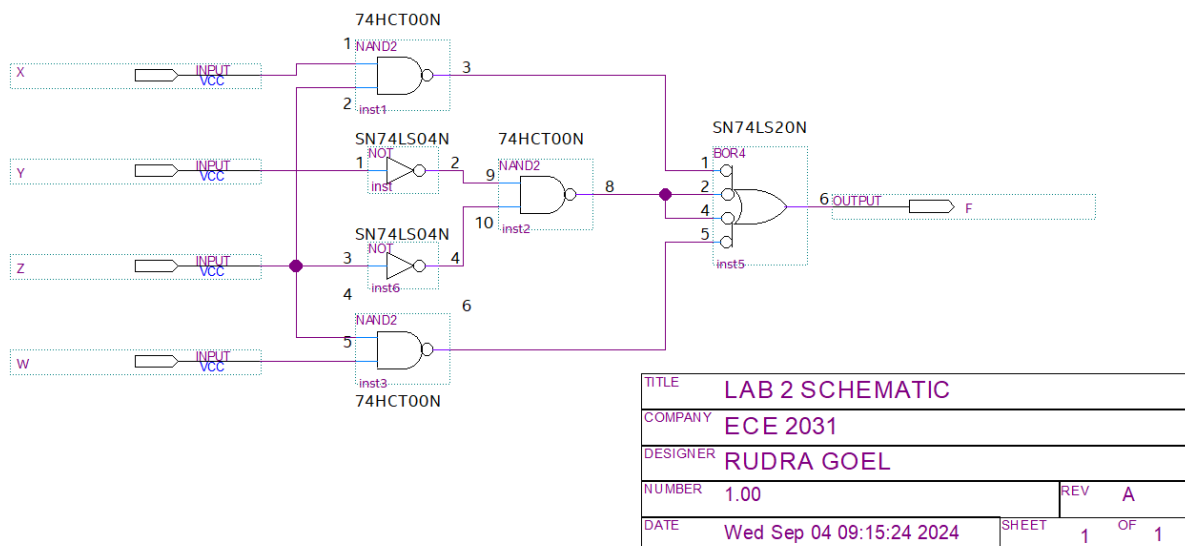


Figure 2. Schematic that implements the expression $F = \bar{Y} \cdot \bar{Z} + W \cdot Z + X \cdot Z$ using 74HCT00N NAND gate, SN74LS04N inverter, and SN74LS20N quad input NAND gate.

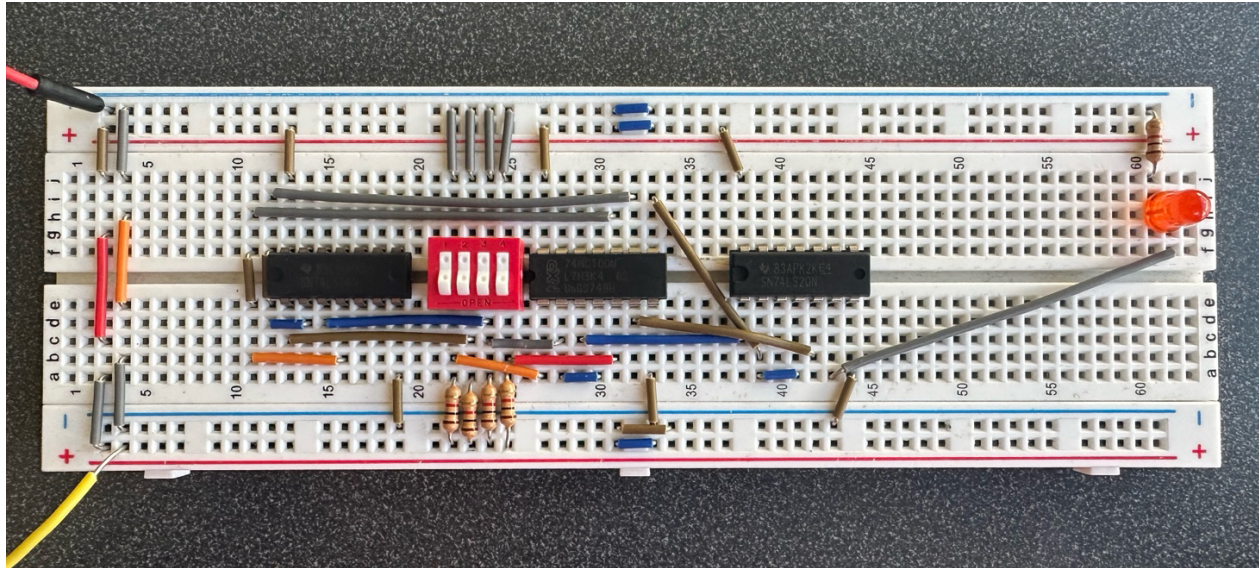


Figure 3. Physical circuit implementation of schematic (shown above) with 4 position DIP switch to drive inputs. Breadboard is powered with 5V from DE10 board (wires going out on left). LED (right) used as an indicator for analyzing signals.

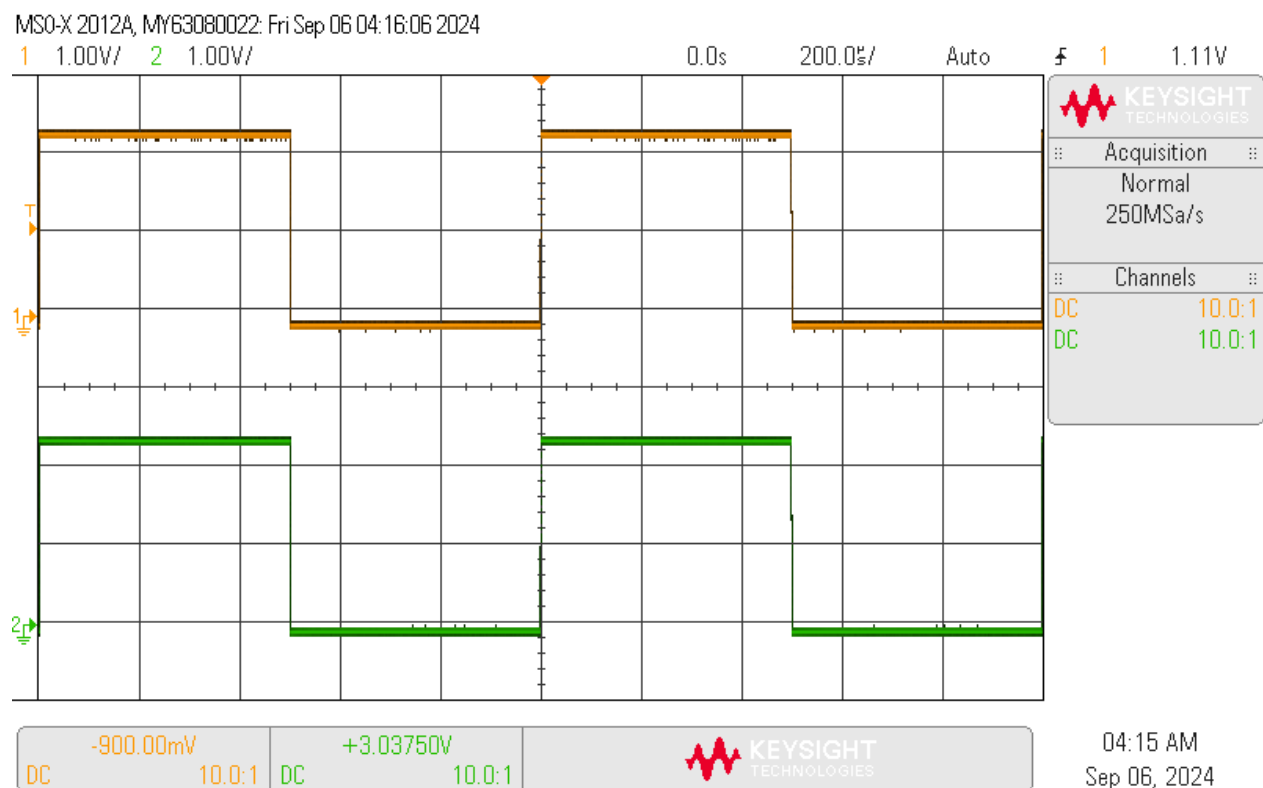


Figure 4. Screen capture of oscilloscope showing clean square waves on both channels indicating the probes are working.