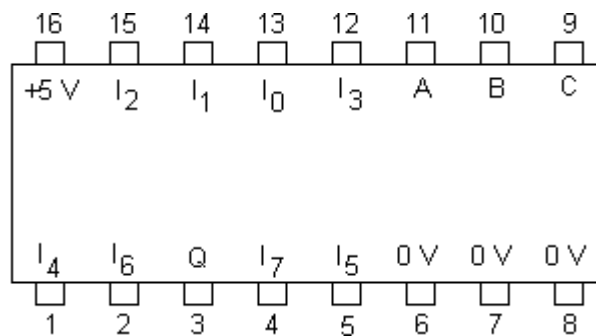


Programmable logic gates

You are going to use a 4051 multiplexer i.c. to make a logic system which obeys this expression.

$$Q = \overline{(A+B)} + \overline{(B+C)} + \overline{(C+A)}$$

1. Reduce the expression to standard form.
2. Write out a truth table for the system.
3. By connecting the eight inputs (I_0 to I_7) of the multiplexer to the supply rails, force the multiplexer output Q to obey the truth table.



4. With the help of three switches, pulldown resistors and an LED (with a series resistor), test the system.
5. Reprogram the multiplexer so that it feeds out a 1 only when any two or more of its inputs are held high.