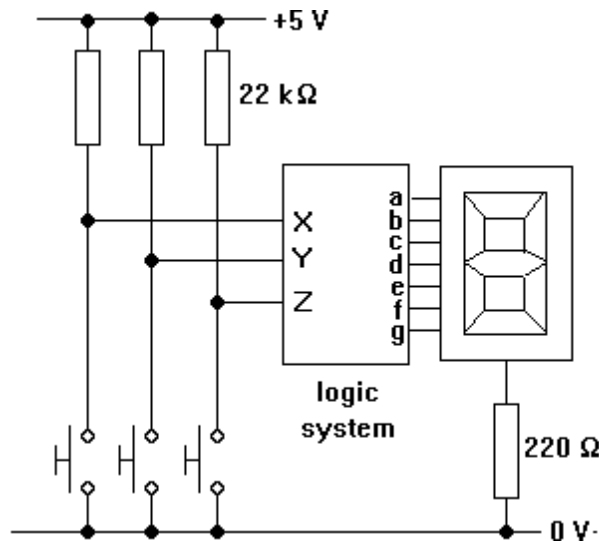


Switch counter

Three switches control the state of three inputs X, Y and Z in the circuit below.



The logic system obeys this truth table.

number of pressed switches	number displayed
0	0
1	1
2	2
3	3

1. Write out a truth table to show how the state of the outputs (a to g) depend on the state of the inputs (B, A).
2. Write down Boolean algebra expressions for each output in terms of the inputs.
3. Design NAND-gate circuits to generate the seven output signals (a to g). Bear in mind that any gate output which is used to make an LED glow will not provide a reliable logic 1 when connected to the input of another gate.
4. Assemble your design and test it.