SNAP INDICATOR

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This simple project will supply a visual indication of who pressed a button first. It's suitable for games, and can also be used by teams by wiring several switches in parallel with those provided for single players. It also serves to demonstrate the function of the SCR, a member of the thyristor family (semiconductor power switches).

The project uses two, SCR1 and SCR2. These are usually found in AC circuits (motor controllers, etc), but in DC circuits they have the useful property that an input pulse to the gate connection causes the SCR to latch and conduct a current between cathode and anode until the DC supply is removed.

This means that we can use the SCR as a memory. When the SCR conducts, the voltage drop across the anode and cathode is virtually zero, so we can design the circuit so that the SCR both switches on an indicator and switches off the trigger voltage, which would be passed to the gate of the other SCR. This gives us a method of detcting who was first to answer.

Circuit Description

In the initial state no current flows. If the player who's represented by D1 is first to press his or her switch (S2), a small current is made to flow through diode D2, R2, R3 and R5 into the gate of SCR1, firing it and illuminating D1. Since the voltage drop across SCR1 is virtually zero, pressing S3 would not cause a sufficiently large voltage to the gate of SCR2 for it to be fired.

The SCR will remain latched and the SCR lit until the circuit flow is interrupted momentarily. This is done by pressing normally-closed switch S1. The circuit is then reset and ready for another round.

The circuit is constructed on perfboard or stripboard, 11 strips by 17 holes.

PARTS LIST

R1-3: 330, .25W, **R3-6:** 33k, **SCR1-2:** 106D SCR or equiv., **D1-2:** red LED, **S1:** push-to-break pushbutton, **S2-3:** push-to-make pushbutton, **B1:** 9V battery.