SIMPLE CODE LOCK

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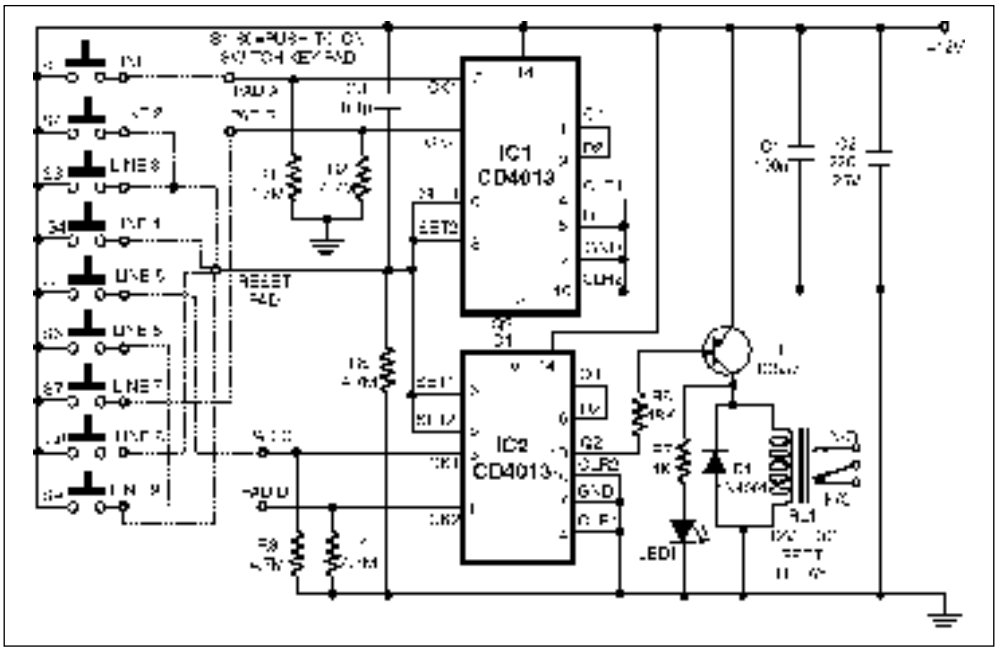
The circuit described here is of an electronic combination lock for daily use. It responds only to the right sequence of four digits that are keyed in remotely. If a wrong key is touched, it resets the lock. The lock code can be set by connecting the *line* wires to the pads A, B, C, and D in the figure. For example, if the code is 1756, connect line 1 to A, line 7 to B, line 5 to C, line 6 to D and rest of the lines—2, 3, 4, 8, and 9—to the reset pad as shown by dotted lines in the figure.



The circuit is built around two CD4013 dual-D flip-flop ICs. The clock pins of the four flip-flops are connected to A, B, C, and D pads. The correct code sequence for energisation of relay RL1 is realised by clocking points A, B, C, and D in that order. The five remaining switches are connected to reset pad which resets all the flip-flops. Touching the key pad switch A/B/C/D briefly pulls the clock input pin high and the state of flip-flop is altered. The Q output pin of each flip-flop is wired to D input pin of the next flip-flop while D pin of the first flip-flop is grounded. Thus, if correct clocking sequence is followed then low level appears at Q2 output of IC2 which energises the relay through relay driver transistor T1. The reset keys are wired to set pins 6 and 8 of each IC. (Power-on-reset capacitor C1 has been added at *EFY* during testing as the state of Q output is indeterminate during switching on operation.)

This circuit can be usefully employed in cars so that the car can start only when the correct code sequence is keyed in via the key pad. The circuit can also be used in various other applications.