



UNIVERSITI TEKNOLOGI MARA

SIMPLE CODE LOCK

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ABSTRACT

Final project is a part of a course structure for the student in their final year. The project is compulsory to us as a final year student for Dip. In. Electrical Engineering. The purpose of project is to produce a student a main power with high skill and able to handle a responsibility given like a project. They should be prepared to deliver creative ideas and good interpersonal image to their future employer.

It makes students use all of their knowledge, creative skills to propose, create, and troubleshoot the projects. It is because all of the theories and have learned from the project one to project two are used.

This project has an electronic combination lock for daily use. It responds only to the right sequence of our digital that are keyed in remotely. If a wrong key is touched it resets the locks.

This circuit project can be divided into three sections. First section is switch line, second section is integrated circuit and last section is relay as an output.

For example of this operation, we can lock at the door lock. First we push the correct code or codeword to the lock number. Then if the right code is pushed, the door will open, otherwise if the wrong key is touched, the door will not open and the siren will be activated. Another example, this circuit can be usefully employed in cars so that only when the correct code sequence is keyed in via the pad. This circuit can also be used in various other applications, our devices can be usefully employed as safety system.

THE CIRCUIT OPERATION

The circuit here is of an electronic combination lock for daily use. It response only to the right sequence of four digits that are keyed in remotely. If a wrong keyed is touched, it reset the lock. The lock code can be set by connecting the line wires to the pads a, b, c, and d in the figure (circuit). For example, if the code is 1756 connect line 1 to a, line 7 to b, line 5 to c, line6 to d , and rest of the lines 2, 3, 4, 8, and 9 to the reset pad as shown by dotted lines in figure (circuit).

The circuit is built around two cd4013 dual-d flip-flop ics. The clock pin of four flip-flop are connected to a,b,c and d pads. The correct code sequence for energisation of relay r1 is realised by clocking point a, b, c, and d in that order. The five remaining switches are connected to reset pad which reset all the flip-flops. Touching the key pad switch a/b/c/d briefly pull the clock input pin high and the state of flip-flops 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 pin 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.