SECURE AUTOMATIC DOOR

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ABSTRACT

The design of this project implements a system whereby a door lock can be opened using wireless communication after entering a key. In this system, a call from a mobile phone to a telephone line has to be made in order to open the door lock. When a call is made to the landline phone attached to the system, a ring detector circuit detects the ring and informs the microcontroller to activate a relay to pick-up the call automatically. Following this response, caller has to key-in a four-digit code to unlock the door lock. The code is in form DTMF signals sent to the landline that require decoding by a DTMF decoder into BCD (binary coded decimal) which is fed to PIC 16F877A microcontroller.

The microcontroller processes the BCD code and compares with a preset value, after which the door unlocks or alarm sounds, depending on the authenticity of the code. A voice recording IC (APR 9600) allows playback of message segments to the phone that alert user when to enter password and whether it is correct or incorrect. The system has one relay to control the opening of the lock. The lock is imitated by a solenoid that plunges in and pulls the door lever whenever the right code is keyed-in.

The programming of microcontroller was achieved by using mikroC. The activation of relay, alarm and interface to APR and LCD is controlled by programming through the microcontroller.

The test and results of the project depict that this project has been completed successfully by meeting all the objectives and satisfying the aim. The design can be improved by adding a Bluetooth module to it so that a close range communication is possible without having to call the system.

Keywords: Ring detector, Relay, DTMF decoder, PIC 16F877A microcontroller, APR 9600.