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Electronics Projects

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RFID Based Access Control Campus Management System

For companies, where security is vital and access to certain areas must be controlled and monitored, there should be an access control system that allow companies to manage and monitor all access points and locks, allowing for auditable security and quick responses to any security breaches.

When we consider about Security the distinct ways are Authentication, Authorization and Access Control.

Authentication is any process by which you verify that someone is who they claim they are. This can be of any method of demonstrating identity, such as a smart card, retina scan etc. Authentication is equivalent to showing your drivers license at the ticket counter at the airport.

Authorization is finding out if the person, once identified, is permitted to have the resource. This is usually determined by finding out if that person is a part of a particular group, if that

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person has paid admission, or has a particular level of security clearance. Authorization is equivalent to checking the guest list at an exclusive party, or checking for your ticket when you go to the opera.

Finally, access control is a much more general way of talking about controlling access to a resource. Access can be granted or denied based on the privileges granted to him. Access control is analogous to locking the gate at closing time, or only letting people onto the ride who are more than 48 inches tall - it's controlling entrance by some arbitrary condition which may or may not have anything to do with the attributes of the particular visitor.

Campus management:

Here, in our project we have used an RFID Card Reader, Keypad and a PIC Micro controller (PIC16F877) for authentication of a person. The data from the RFID Reader is transmitted to a remote computer through a RS232 Interface.

A centralized computer determines the authorization and Access control rights.

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After The validation process is over, The user will be allowed to enter the premises and his entry date and time is marked into the database. Using Vb software we can generate reports like how many days the students are present and much more.

All user access information is gathered by a central PC-based workstation where the administrators can retrieve and analyze the information.

THE 125 KHZ RFID CARD

The card used in our project is a passive Radio Frequency Identification (RFID) device for low-frequency applications (100 kHz-400 kHz). The device is powered by rectifying an incoming RF signal from the reader. The device requires an external LC resonant circuit to receive the incoming RF signal and to send data. The device develops a sufficient DC voltage for operation when its external coil voltage reaches approximately 10 V_{pp}.

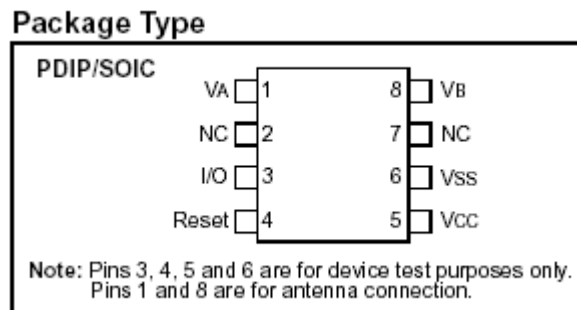
This device has a total of 128 bits of user programmable memory and an additional 12 bits in its configuration register. The user can manually program the 128 bits of user memory by using a contact less programmer. The device is a One-Time Programmable (OTP) integrated circuit and operates as a read-only device after programming.

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TYPICAL PIN DETAILS OF THE CHIP INSIDE THE RFID CARD



FEATURES

- Factory programming and memory serialization.
- One-time contactless programmable (developer kit only)
- Read-only data transmission after programming
- 96 or 128 bits of One-Time Programmable (OTP) user memory (also supports 48 and 64-bit protocols)
- Typical operation frequency: 100 kHz-400 kHz
- Ultra low-power operation (5 μ A @ VCC = 2V)
- Modulation options:
 - ASK, FSK, PSK

Advantages:

- 1) Unique ID for each Person
- 2) Fool proof system
- 3) Easy Access
- 4) Faster Access time compared to other systems such as fingerprint, retina scan.

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- 5) Supports large number of users
- 6) Alarm on wrong pin entry for more than 3 times

Hardware Requirements:

- 1) PIC Microcontroller PIC16F877
- 2) LCD Display
- 3) RFID Reader With Card
- 4) Keypad
- 5) Alarm
- 6) Max232 for PC Interface

Software requirements:

- 1. Visual Basic 6.0
- 2. MS Access 2000
- 3. MPLAB
- 4. Hitech C Compiler

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Campus Management – Student Information				
Student Information & Management System				
				PHOTO
First Name		Last Name		
Card ID No				
Issue Date		Issue Time		
Present Address				
Permanent Address				
Phone		Mobile		
E-Mail				
Access Control				
Lab	Yes / No	Auditorium	Yes / No	
Library	Yes / No	Conference Hall	Yes / No	
ADD	MODIFY	DELETE	PRINT	CLOSE

Block Diagram

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