PRACTICAL ATTACK SCENARIOS ON SECURE ELEMENT-MOBILE ENABLED DEVICE

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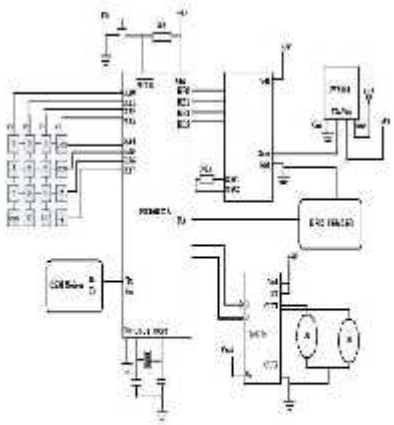
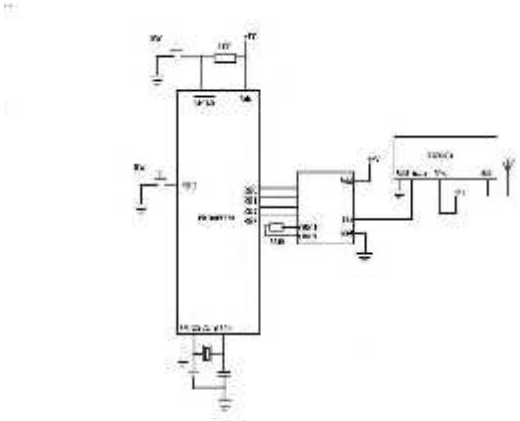
ABSTRACT

The scope of this paper is to develop the prevention of theft of the ATM card and to control the usage of the ATM card by unauthorized person. The additional feature of this project is that no transaction can be done without the knowledge of the respective card holder. For the cause of NFC transactions are being implemented. This approach is that user interfaces are very nice and data are strongly protected in the applets. Whenever the transaction has to be done, the RFID card is inserted inside the ATM machine and NFC devices are made to interact with some of the legacy systems. Granting that both RFID and NFC device is found to be accurate, a message is received to the mobile phone of the rightful proprietor with a pin number of four digits .This number is entered in the ATM machine. In case of password being correct it moves on to the next level of money transaction, asking for the money withdrawal. Scenario like, the password is found to be defective, next in locked. CIRCUIT DIAGRAM:

RF TRANSMITTER



RF RECEIVER



KEYWORD: RF TRANSMITTER & RECEIVER, RFID READER, UART, MOTOR, PIC MICRO-CONTROLLER, RELAY

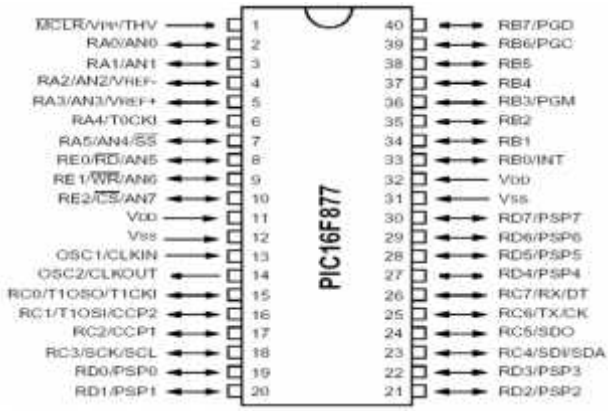
INTRODUCTION

Mobile phones are used not only as communication but also as information distribution and sometimes even as a computing device. This project is based on same concept only where mobile phones are used as information distribution and sometimes even as computing device. The main objective of this project is to develop an embedded system which is used for security system the specific persons can only enter by using this embedded system we can give access to the authorized people through the finger print modules and keypad. The system is programmable we can change the data of the authorized people in the data base of the embedded system we can access the data on the embedded system on to computer. The complete code for the embedded system is going to be developed using C- language. The embedded system is going to be developed based on micro controller whenever the person puts his finger on the reader the system will detect the authorized persons

then it ask for pin and gets the message to authorized persons mobile through the GSM Technology.

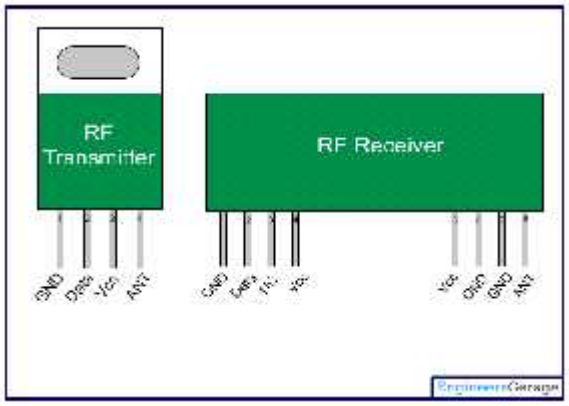
2. PIC MICRO CONTROLLER

The microcontroller that has been used for this project is from PIC series. PIC microcontroller is the first RISC based microcontroller fabricated in CMOS (complementary metal oxide semiconductor) that uses separate bus for instruction and data allowing simultaneous access of program and data memory.



Various microcontrollers offer different kinds of memories. EEPROM, EPROM, FLASH etc. are some of the memories of which FLASH is the most recently developed. Technology that is used in pic16F877a is flash technology, so that data is retained even when the power is switched off. Easy Programming and Erasing are other features of PIC 16F877.

RF TRANSMITTER &RECEIVER



A radio transmitter is an electronic circuit which transforms electric power from a battery or electrical mains into a radio frequency alternating current, which reverses direction millions to billions of times per second. The energy in such a rapidly-reversing current can radiate off a conductor (the antenna) as electromagnetic waves (radio waves). The transmitter also "piggybacks" information, such as an audio or video signal, onto the radio frequency current to be carried by the radio waves. When they strike the antenna of a radio receiver, the waves excite similar (but less powerful) radio frequency currents in it. The radio receiver extracts the information from the received waves. A practical radio transmitter usually consists of these parts: A power supply circuit to transform the input electrical power to the higher voltages needed to produce the required power output. An electronic oscillator circuit to generate the radio frequency signal. This usually generates a sine wave of constant amplitude often called the carrier wave, because it serves to "carry" the information through space.

UART (Universal Asynchronous Receiver/Transmitter)

A Universal Asynchronous Receiver/Transmitter, abbreviated UART (is a piece of computer hardware that translates data between parallel and serial forms. UARTs are commonly used in conjunction with communication standards such as EIA, RS-232, RS-422 or RS-485.

A UART is usually an individual (or part of an) integrated circuit used for serial communications over a computer or peripheral device serial port. UARTs are now commonly included in microcontrollers. A dual UART, or DUART, combines two UARTs into a single chip. Many

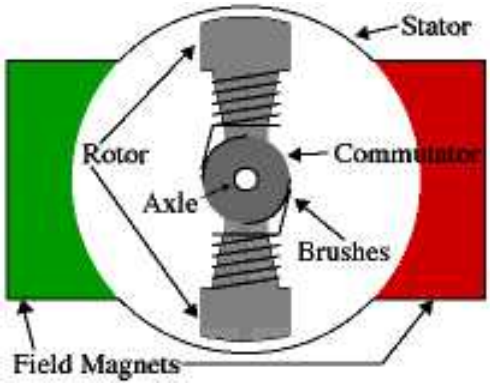
modern ICs now come with a UART that can also communicate synchronously; these devices are called USART**s** (universal synchronous/asynchronous receiver/transmitter).

RFID (RADIO FREQUENCY IDENTIFICATION) READER

Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tag contains electronically stored information which may be read from up to several meters away. RFID systems typically come in three configurations: One is a **Passive Reader Active Tag** (**PRAT**) system that has a passive reader which only receives radio signals from active tags (battery operated, transmit only). The reception range of a PRAT system reader can be adjusted from 1-2,000 feet.

DC MOTOR

The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.



DC motor has six basic parts -- axle, rotor (a.k.a., armature), stator, commutator, field magnet(s), and brushes. In most common DC motors (and all that BEAMers will see), the external magnetic field is produced by high-strength permanent magnets[1]. The stator is the stationary part of the motor -- this includes the motor casing, as well as two or more permanent magnet pole pieces. The rotor (together with the axle and attached commutator) rotates with respect to the stator. The rotor consists of windings (generally on a core), the windings being electrically connected to the commutator.

CONCLUSION

The proposed system based on PIC microcontroller is found to be more compact, user friendly and less complex, which can readily be used in order to perform. Several tedious and repetitive tasks. Though it is designed keeping in mind about the need for industry, it can extended for other purposes such as commercial & residential applications. Due to the probability of high technology used this is" **practical scenarios on secure element"** fully software and hardware controlled circuit. The feature makes this system is the base for future systems.

The principle of the development of science is that "nothing is impossible". So we shall look forward to a bright & sophisticated world.

RELAY:

Relay is a switch controlled by a power to the electromagnet. When the switch is on, the electromagnet is on, and it attracts the armature. The armature is acting as a switch in the second circuit. When the electromagnet is energized, the armature completes the second circuit and the light is on. When the electromagnet is not energized, the spring pulls the armature away and the circuit is not complete.

When a current flows through the coil, the resulting magnetic field attracts an armature that is mechanically linked to a moving contact. The movement either makes or breaks a connection with a fixed contact. When the current to the coil is switched off, the armature is returned by a force approximately half as strong as the

magnetic force to its relaxed position. If the coil is energized with DC, a diode is frequently installed across the coil, to dissipate the energy from the collapsing magnetic field at deactivation, which would otherwise generate a spike of voltage and might cause damage to circuit components. . If the coil is designed to be energized with AC, a small copper ring can be crimped to the end of the solenoid. This “shading ring” creates a small out-of-phase current, which increases the minimum pull on the armature during the AC cycle

FUTURE ENHANCEMENTS

Improve the consumer’s shopping experience. Improved accuracy of records and collection of customer data. Transactions happen quickly.

REFERENCES

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