# Final Year Project Report

## *GSM Based Access Control System With Live Database*


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Project Advisor

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Submitted By


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## *GSM Based Access Control System With Live Database*

Project Report submitted to the

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In partial fulfillment of the requirements for the degree of

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In

Electrical Engineering

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# DEDICATION

First of all we are very thankful to ALLAH ALMIGHTY who has given us enough courage to complete. Then it is dedicated to our kind teacher **Sir Syed Mohsin Ali** & **Our Parents** who enlightened our minds with Knowledge, tried to include the spirit of hard work and dedicational us so that we could have a bright future in terms of being good human and turn out to be competent Engineers with powers to take challenging engineering problems.

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# GSM BASED ACCESS CONTROL SYSTEM WITH LIVE DATA BASE

## ABSTRACT

The project Advanced security system consists of micro controller as the main controlling unit. The keypad is interfaced with the microcontroller. The keypad takes the input of the given code and gives its corresponding success or failure signal to microcontroller. The micro controller is in turn connected with the GSM modem through MAX 232 for the pre-defined data transmission & reception.

The keypad scanner at first holds/saves the data of the various code or mobile numbers of the valid persons provided by its internal memory. This state of the unit is called as “Stable mode”. Now we can switch to the “execution mode” for the authentication check.

When a person enters his given code for the authentication, the keypad reader compares the code with the previously stored codes. Upon success, keypad scanner sends success signal to the microcontroller. Microcontroller transmits the pre-defined message to the user mobile number, which is saved in the memory through GSM modem. Upon failure access is not granted for that person. After message reception the user has the liberty to take decision for providing the access to that concerned person. He can send a reply message to the GSM modem unit for accessing, and then the controller provides access to him. If he doesn’t send a message or the sent message is invalid the control unit waits for some pre-defined time after which it doesn’t grant the access to the concerned person.

By this précised technique we can provide complete security for safe guarding our offices, houses, banks etc.

# CHAPTER-I

## 1. *INTRODUCTION*

An embedded system is a special-purpose computer system usually built into a smaller device. An embedded system is required to meet very different requirements than a general-purpose personal computer.

Programs on an embedded system often must run with real-time constraints with limited hardware resources often there is no disk drive, operating system, keyboard or screen. A flash drive may replace rotating media, and a small keypad and LCD screen may be used instead of a PC's keyboard and screen. Embedded systems are routinely expected to maintain 100% reliability while running continuously for long periods, sometimes measured in years. Firmware is usually developed and tested to much stricter requirements than is general purpose software which can usually be easily restarted if a problem occurs.

One common configuration for embedded systems is the system on a chip, an application-specific integrated circuit, for which the CPU was purchased as intellectual property to add to the IC's design.

## 2. *Important features of embedded system:*

- Embedded systems perform a very specific task and they cannot be programmed to different things.
- Embedded systems have very limited resources, particularly the memory. Generally they do not have secondary devices such as CD-ROM , FLOPPY DISK.
- Embedded system has to work against some deadlines. Here deadline indicates that a specific job has to be completed within some specific time.
- Embedded systems are constrained for power. As many embedded systems operate through a battery , the power consumption has to be very low.

### i. Application areas of Embedded Systems:

- **Consumer appliances**: They include Digital camera, Microwave oven, Remote Controls, TV, and Air - Conditioner, VCD player, Video game consoles, and Video recorders. Even Wrist watches are now becoming embedded systems.
- **Office automation:** The office automation products using embedded systems are

Copying machines , Fax - Machines , Key telephone , Modem , Printer , Scanner.

- **Industrial automation:** Today lot of industries use embedded systems for process control. They include pharmaceutical , cement , sugar , oil exploration , nuclear energy ,electricity generation and transmission.
- **Medical electronics**: Almost every medical equipment in the hospital is an embedded system. These equipments include aids such as ECG , EEG , Blood pressure measuring devices , X-RAY Scanners , equipment used in blood analysis .
- **Computer networking**: Computer networking products such as Bridges , Routers , Integrated Services Digital Networks (ISDN) , Asynchronous Transfer Mode ,X.25 and Frame Relay Switches are embedded systems which implement the necessary data communication protocols.
- **Tele communications:** In the field of telecommunications , the embedded systems can be categorized as Subscriber terminals and Network equipment. The subscriber terminals include key telephones , ISDN phones , Terminal Adaptors, Web cameras are embedded systems. The network equipment includes Multiplexers , Multiple access Systems , Packet Assembler Dissemblers ,Satellite Modems .
- **Wireless technologies:** They include Mobile Phones .The Mobile Phone is one of the marvels .It is a very powerful embedded system that provides voice communication .

The main aim of the project is to provide the high security system. The microcontrollers are embedded inside some other device so that they can control the features or actions of the product. Microcontrollers are dedicated to one task and run one specific program. The program is stored in ROM and generally does not change. Microcontrollers with reasonable software are available for computations and simulations so that many tedious details can be left to the microcontroller. These are often low powered devices. A battery operated microcontroller might consume 50 mill watts. A micro controller has a dedicated input device and often has a small LED or LCD display for output. Microcontroller also takes input from the device it is controlling and controls the device by sending signals to different components in the device.

The path chosen to provide the security is the “KEYPAD SCANNER OR CODE”.

## ii. KEYPAD:

A **keypad** is a set of buttons arranged in a block or "pad" which usually bear digits, symbols and usually a complete set of alphabetical letters. If it mostly contains numbers then it can also be called

a **numeric keypad**. Keypads are found on many alphanumeric keyboards and on other devices such as calculators, push-button telephones, combination locks, and digital door locks, which require mainly numeric input.

There are three types of keypads:

1. **Tactile keypads** - the numeric keypads available conventionally in old cell phones. there are only 12 keys on keypad i.e. numbers 0-9 and # and *. You can type alphabets by pressing each key continuously for the desired number of time.
2. **QWERTY keypads** - similar to an alpha numeric keyboard with a key assigned for each of the number and alphabetic digit. More useful for texting and browsing.
3. **Touch Screen keypads** - they are available in most of the high end cell phones where user can interact with the phone using touch screen technology. Both of the tactile and QWERTY kinds are available in touch screen.

Here for this purpose a keypad is being used along with a processing board. For this purpose VSM DLL model keypad is used. Virtual System Modeling (VSM) is a software circuit simulator; Keypad Identification Device with many excellent features. It provides benefits such as high identification performance, low power consumption and two RS-232 serial interfaces with the simple protocol for easy Integration into a wide range of applications. This is interfaced with the microcontroller which acts as an input device.

The advancement done in this project is the wireless communication system .This enables a single person to control the whole unit. For this wireless communication, Global System for Mobile communications (GSM) is used i.e. ANALOGIC gsm/gprs smart modem is used. A SIM (subscriber identity module) is inserted into the GSM and depending on the signals coming from microcontroller it sends the message to the person's mobile number which has been already stored in the microcontroller..

The output of the microcontroller is given to the Relays for which it is used to connect to the lock. For the whole system power supply is given using step down transformers, rectifier circuit and 5v regulator. This whole combined system gives user a high security system.