

## IOT BASED SHUTTER ALARM SECURITY SYSTEM

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### ABSTRACT:

An unauthorized entry in to the Bungalows, Banks and warehouses by breaking open the Shutter is the most common modus operandi noticed in the case of theft, loot, robbery and riots. Till very recently we had no direct solution for this and we had to depend entirely on the security guards. As we all know due to its centralized nature & dependence on individuals such security system has never been so effective. Protection of Shops, God owns etc. has always been a point of great worry & pain for the owners. Shutter Alarm provides solution for present problem. Shutter Alarm is a typically designed tailor-made safety device for the total protection of unauthorized entry into your Shops, Go down etc. by breaking open the shutter, even by few inches. Now, we may surprise to how our Shutter Alarm Security System can interact with you while we are miles away. Well, the unit comprises of a control panel device, which can wirelessly communicate with our GSM in Cell phone. Therefore, the intruder and thieves can't tamper with it, and various sirens and sensors are connection to the central control device as well.

### 1.0 INTRODUCTION

The Security nowadays had become one of the major and important problem in private institutions in which certain security structures have been proposed and transferred to some set of processes. The Security frameworks are essential to guarantee data, ownership and the desire for theft or terrible behavior. From server features to banks, security frameworks are essential. IOT is a course of action for physical materials, tools, structures, vehicles, and various objects that have been introduced from sensors and system configurations that leverage the use of hardware and software to collect business information.

### Internet of things (IOT):

The Internet of Things can be represented as the relationship of physical things or electronic objects or software programming, detection circuits, and allows openness to circulate information between a product, employees, or tools related to the Internet of Things or in an instant called IOT. In general, the IOT authorizes items to be distinguished and controlled in a circular fashion across the foundations of the current system, creating open avenues for progressive direct coordination of the material world in PC-based structures, and an acknowledgment of improved productivity, accuracy and cash-related breath.



Fig 1.1 Internet of things

- The tool can be anything related to the Internet and has the information that need to access the cloud.
- Devices can perceive application requests.
- The devices themselves are surprisingly separate with the IoT organization with a recognizable choice code for that tool.
- Devices must be selected before they can communicate with the IoT.

### **Managed and unmanaged options with the devices**

In general, the managed devices which represented as tools that contain the president of an association. The Link Master is a great hypothesis that enables syringes to collaborate with the IoT Device Management Association through device management display technologies. Tools supervised by can perform on-board functions including region strengthening, firmware download and restore, rebooting, and factory reset care.

### **Applications**

- The application is everything that has to do with the Internet and the needs to cooperate with the information of the alternatives and the control, in addition to directing these tools to a great extent.
- You view the applications in IOT using the API key and the unique application ID.
- Applications must not be selected before they can interact with the IOT Foundation.

### **Proposed system**

The proposed system is installed or displayed at the base of the screen. For the proposed system, Installation time only takes 15-20 minutes for any shutter. The base and chassis have full access to the door sensor attached to the door. If a broken screen switch tries to break the screen, the sensor is released, frames start and alarm sounds, and at the same time you can get the connection from your side with reliable reconnect and SMS messages through the unit GSM to which the ESP8266 wifi adheres. We provide shade safety frames resist tes, our deeply configurable structures adapt to other manufactured sensors and our Android applications are interchangeable with other security architectures such as Honeywell, Zicon, ADT, etc.

### **Advantages of the proposed system**

- First of all the proposed system will be highly secured system
- Siren with versatile alert when opening the screen.
- Easy to render on any screen.
- Very solid against impact.

### **System analysis**

The existence of the company's mind is investigated at this point and a critical understanding is provided with a comprehensive mission strategy and two interpretations. During the evaluation of the system, the accessibility of the proposed system is evaluated. This is to ensure that the proposed system is not a membership heap. To evaluate practical application, an idea of the massive needs of the system is necessary.

Three main aspects that needs to be covered in the feasibility study are as follows,

- Technical Feasibility
- Economic Feasibility
- Social Feasibility

### Technical feasibility

This feasibility is carried out to verify the specific sensitivity, that is, the basic requirements identified for the system. No system should have an interest in open open assets. This will increase the high demands for accessible free assets. This will result in large customer orders being placed. The manufactured system must be in urgent need, as minor or fundamentally invalid changes are required to implement this system.

### Economic feasibility

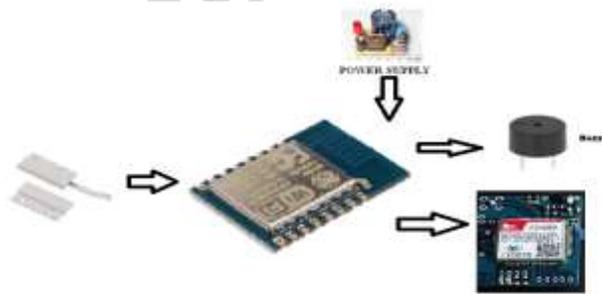
This feasibility is carried out to verify the financial impact that the system will have on the association. The degree of emptiness with which affiliation can fill the imaginary work of the regime is limited. The uses must be legalized. Since the requirements are also in the system also designed within the spending plan, this has been refined in light of the fact that, with a remote possibility, most of the improvements used are directly accessible. Basically you have to buy things.

### Social feasibility

Finally the social feasibility is to verify the degree of insistence of the system by the client. This links the path to customer readiness to use the system productively. The customer should not feel vulnerable by the system, but remember it as a need. The degree of guarantee of the client depends exclusively on the techniques used to guide the client on the system and familiarize him. Her confirmation must be high, so she is willing to carry out some support tests, which are invited, since she is the last client of the system.

### Hardware components and its description

The section quickly explains about the mission hardware implementation. Talk about the structure and workflow of a work path with the help of a square diagram, a circuit diagram, and a detailed illustration of the shape of the circle. Highlights, time, scheduling, progressive correspondence, ESP8266. It comparatively illustrates the units used in this task.



**Fig. Block Diagram**

Entry sensors (everything often referred to as a photoelectric or infrared section, electrical safety entry edges, a door sign, electrical converging edges, or an electrician) is a lifting device that sees a traveler or something on the door that protects the entrances from closing (Respond is usually shown). If an individual or item irritates the entrance and senses the individual or object, then the portal revives and remains open and will not close until the individual steps away or the item is ejected from the door

### Working process of Door sensor

Door sensors mostly come in two separate pieces. One piece fits on the door or window, while its accessory is attached to the edge of the window. The national security of the United States does not require any additional mechanical assembly to establish itself. Depending on your trend, liberal

base glue will hold the sensors in place. If you need sensors, they can be horribly horrible in the rays or around the window for extra help, ignoring how decent they are. Actually put the sensor pieces together, keeping in mind how they interact when moving a door or window. Sensors use attractive fields to track progress between a door or window and an edge. When disconnected, for example, when the door or window is opened, the sensors give a hint to the alert panel. The council will evaluate the condition and inform you of the unusual improvement in your home. If a burglary event should arise, a professionally supervised home security system will contact the nearest crisis center for assistance.

### Access to the GSM network:

To get to the GSM Associations, the client needs three things:

- The fault relationship for the PDA officer. This generally occurs when associations are paid for the time they take (prepayment) or when invoices are sent and settled after the association is spent (postpaid).
- A remote control suitable for the GSM system and works similarly to the official one. Most phone affiliates sell phones from unacceptable manufacturers.
- A personal support unit (SIM card), which is required by the administrator once the stimulus relationship has been established. After starting, the card is changed using the MSISDN number (phone number). Certain data, for example, measures to contact loved ones on a SIM card, can be handled by the certification authority.

### System Design:

Software design is in the specific part of the software construction process and is applied by pushing a little to the perspective of progress and location of use. The arrangement is the primary stage in the progression stage of anything or organized system. The designer is likely to design a model or illustration of a component to be collected later. Initially, when the platform is resolved and detached, the system order is the first of three specific activities: the structure, code, and testing required to collect and commit programs.

The necessary can be connected to the word "quality". Preparation is developing a quality place in program improvement. The configuration gives us images of programs that can evaluate the quality. Configuration is the primary way in which we can accurately understand a customer's opinion of a final software or system.

### System Architecture

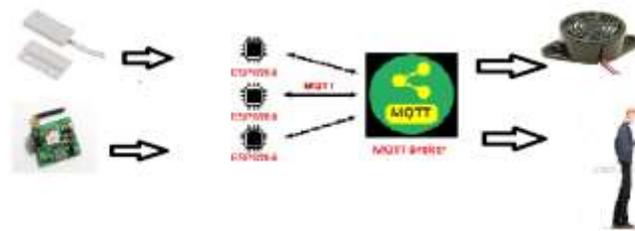
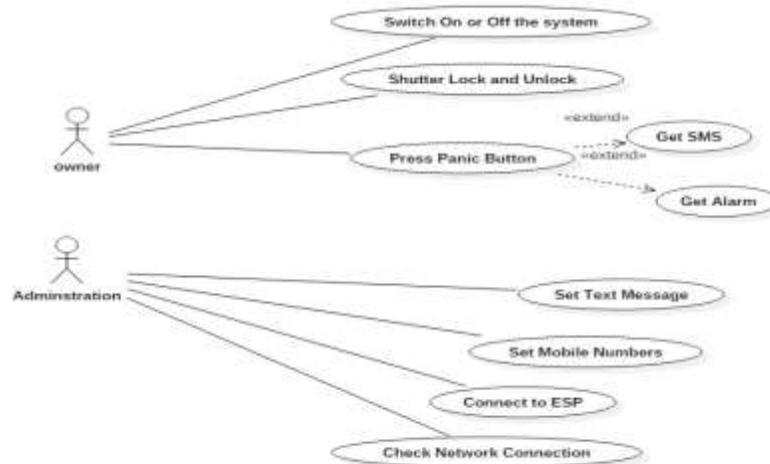


Figure: Architecture design

## Use case Diagram



**Figure: Use case diagram for shutter alarm security system.**

### IMPLEMENTATION

The implementation phase is one of the important phases for any project. It is the time of the task when the theoretical structure is changed to a working system. Therefore, it can be considered the most important stage to achieve a new profitable system and to bestow on the customer, ensuring that the new system works and amazes. The implementation phase incorporates a careful analysis, evaluation of the current system and its objectives in the implementation, provision of strategies to achieve the transformation and evaluation of the transformation techniques.

- Providing Shutter Lock
- Warning alert With Alarm
- Passing Message to GSM

### Provide shutter lock

The store / publishing center owner will continually impact the screen. We need to turn on the system and use the door lock sensor that is connected to the shade base to identify the open and close screen. The door lock sensors have a switch and a magnet, which makes the circuit closed. If someone opens a tight shutter, the magnet detaches from the switch, which breaks the circuit and trips.

### SYSTEM IMPLEMENTATION

Here in the below the Arduino tool is a Popular Software, combines project management, source code Editing, Program Debugging and powerful environment.



Figure: Opening the Arduino tool from the Start menu.

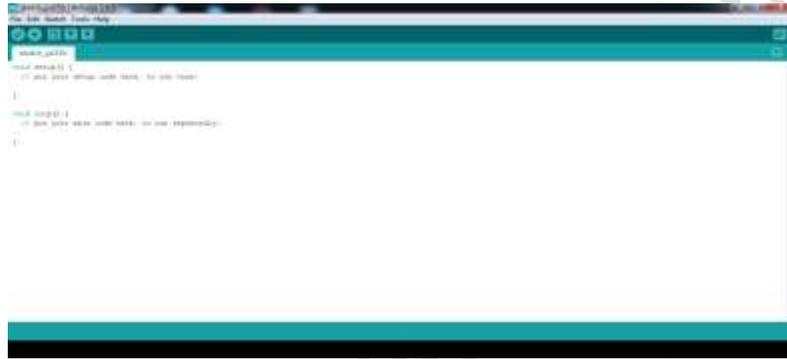


Figure: Opening a project in Arduino Tool

## CREATING A NEW PROJECT

For Creating a New Project click on the Tools → click on New File

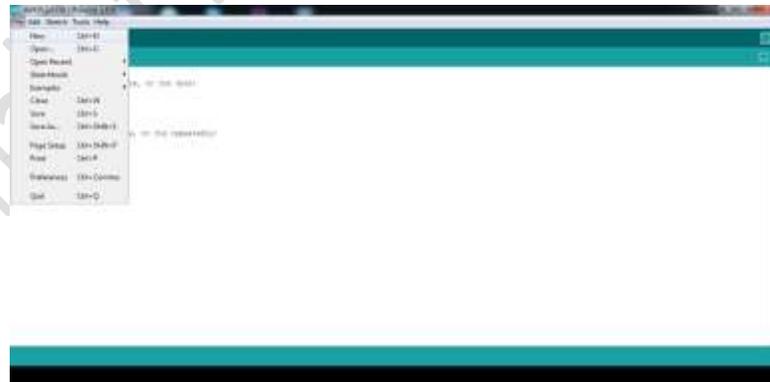
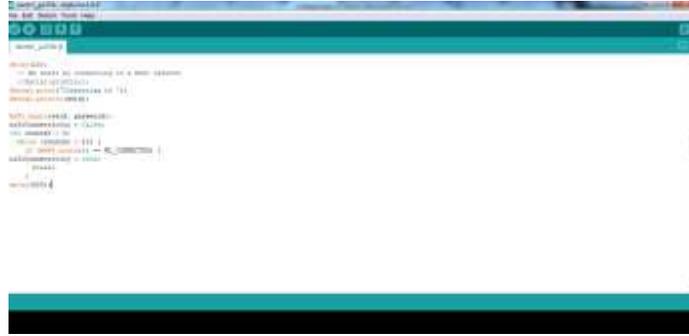


Fig. Creating a New Project click on the Tools → click on New File

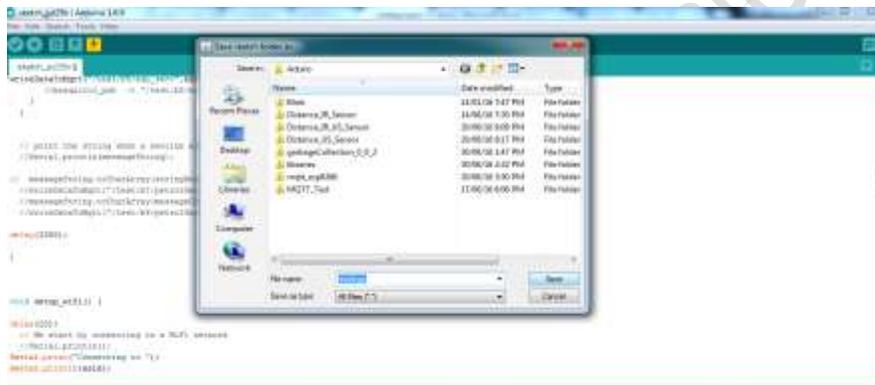
## WRITING THE SOURCE CODE

Developing source code using Arduino Tool



**Figure: Developing source code using Arduino Tool**

SAVING THE CODE:



**Figure: Saving the Code**

ASSEMBLING

To convert your program to machine language click on arrow mark which is provided in Toolbar. Click on arrow mark icon in the Toolbar.



**Figure: Upload Code**

The below table represents the testing phase of the project

TEST CASE	CONDITION BEING CHECKED	EXPECTED RESULT	OBSERVED RESULT	RESULT
Door Lock sensor	Check whether the door lock sensor which is attached to the shutter touching the ground or not	Door lock sensor should be attached to the shutter for providing security by identifying the status of the shutter.	Observed that door sensor is attached to the shutter for providing security.	Pass
ESP WIFI	Check when the shutter breaks then the information passes to ESP or not.	ESP should get the status of shutter lock as opened when unauthorized persons breaks the shutter.	Observed that information of shutter opening status is received by ESP.	Pass
GSM Module	Check whether it receives information from ESP and sends message to the owner.	Message or sms should be sent to owner.	Observed that Message sent to the owner.	Pass
Buzzer Module	Check whether Buzzer gives alarm When shutter is opened.	Buzzer should give an alarm as an alert to the owner, when the shutter is open.	Observed that buzzer gives alarm as an alert to the owner, when shutter is open.	Pass
Panic button	Check when pressed gets alarm sound and sms	When pressed should get alarm and sms to owner	Got alarm sound by pressing	Pass

Table. 6.1 Test cases of pass condition

TEST CASE	CONDITION BEING CHECKED	EXPECTED RESULT	OBSERVED RESULT	RESULT
Door Lock sensor	Check whether the door lock sensor which is attached to the shutter touching the ground or not	Door lock sensor should be attached to the shutter for providing security by	Observed that door sensor is not attached to the shutter for providing security.	Fail

		identifying the status of the shutter.		
ESP WIFI	Check when the shutter breaks then the information passes to ESP or not.	ESP should get the status of shutter lock as opened when unauthorized persons breaks the shutter.	Observed that information of shutter opening status is not received by ESP.	Fail
GSM Module	Check whether it receives information from ESP and sends message to the owner.	Message should be sent to owner.	Observed that Message is not sent to the owner.	fail
Buzzer Module	Check whether Buzzer gives alarm When shutter is opened.	Buzzer should give an alarm as an alert to the owner, when the shutter is open.	Observed that buzzer did not give alarm as an alert to the owner, when shutter is open.	fail
Panic button	Check when pressed gets alarm sound and message	By pressing should get alarm sound and SMS	Did not get alarm sound by pressing	Fail

**OUTPUT RESULT:**



Figure: Connections of The door sensor



**Figure: Output of the door sensor**



**Figure: Message Send to The Mobile**

## CONCLUSION

As per the conclusion, it is clear the present project had been implemented and developed successfully. The present project have its own unique features as the name suggests that after putting the system on any unauthorized entry can be restricted or our valuables property can be protected the hooter went on immediately upon any entry. This will prevent theft by sounds of hooter, Which not only tries to prevent the theft and loot and it takes the necessary steps like informing the nearby police station as well as after buzzing loud siren, so that it can reach at the place before anything major incident happened at the places such as commercial places or homes.

## FUTURE SCOPE

There is always place for improvement and future scope. There are several features those will be integrated in the future aiming to solve many problems and advancements. The features to be integrated in future are a camera is to be fixed outside the shutter and record the entry of intruder and make the video as MMS to the owner. The other feature is to make an android application and frequently check the status of the shutter. The final one is the impact detection sensor, which is

capable of detecting any kind of physical impact made on the shutter and an alarm on the owner's mobile device.

#### REFERENCES

1. Huang H, Xiao S, Meng X, Xiong Y (2010) A Remote Home Security System Based on Wireless Sensor Network and GSM Technology, Second Int. Conf. on Networks Security, Wireless Communications and Trusted Computing.
2. Zhu A, Lin P, Cheng S (2012) Design and Realization of Home Appliances Control System Based on The Android Smartphone, IEEE Int. Conf. on Control Engineering and Communication Technology.
3. Rana GSM, Khan AAM, Hoque MN, Mitul AF (2013) Design and Implementation of a GSM Based remote home security and appliance control system, in Proc. IEEE Int. Conf. on Advances in Electrical Engineering.
4. Sharma RK, Ayub Mohammad, Kalita H, Kalita D (2014) Android Interface based GSM Home Security System, IEEE, Inter. Conf. on Issues and Challenges in Intelligent Computing Techniques.
5. Teymourzadeh R, Ahmed SA, Chan KW, Hoong MV (2013) Smart GSM Based Home Automation System, IEEE Conf. on Systems, Process & Control (ICSPC2013), Kuala Lumpur, Malaysia.