**SMART ANTI-BURGLAR ALARM SYSTEM**

**“SABAS”**

**ABSTRACT**

Security has become an alarming issue in the past half a decade, the cases of identifying and tracking of burglary and theft are difficult. Thus there a necessity of security devices that provide security breach alarm to the owner even if the owner is not present in the building.

The most reliable technology that is being used these days are CCTV that can be only used to identify thieves after the crime has taken place. Thus there is a need of technology that alerts the owner of the building also alerts the surrounding as soon as the thieves enter the building. So that the thieves can be caught red handed without causing much damage to the assets.

Our Device incorporates the latest technology and provides a reliable alarming and alerting device that can be used to protect assets inside the building in the absence of the owner.

The device consumes a lot less power and expenditure compared to a CCTV and relies on highly reliable network i.e. GSM rather Wi-Fi and Internet, thus our device provides larger connectivity area and a reliable connectivity to the main control unit of the device.

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**CHAPTER 1**

**1.Introduction:**

**1.1 Purpose**

Rapid growth in world population with incommensurate employment opportunities and pressures of a more complex society, the incidences of human intrusion and burglaries and crime in private and public places are on the increase. Heightened security concerns at homes, banks, shopping malls, schools, offices, etc. Have led to continue search for different and improved security gadgets.

Search concerns are apparent in the form of installation of remote cameras, the presence of security guard and other monitoring devices and alarm systems which are in constant use. However, many such devices and services are relatively costly and usually require a high end steady power supply for their operation. An infrared sensor security alarming system which has been constructed and tested, offers the advantages of low cost and low power consumption in its operation.

Not so long ago an alarm was a fairly rare sight, however now almost every house has an alarm of some kind. one common kind of security system is an infrared home security system. These are so popular because they are easy to install without having to drill holes and lay cables infrared radiation is invisible to human eyes but can be detected by electronic devices designed for such a purpose.

These sensors are set at the door and some supervised area and an alarm is triggered when an intruder passes within its range of coverage to notify the people to report personal

**1.2 Document Conventions**

|  |  |
| --- | --- |
| SABAS | smart anti burglar alarm system |
| PIR | Passive Infrared |
| GSM | Global System for Mobile communication |

**1.3 Intended Audience and Reading Suggestions**

The intended audiences for this document are:

1.3.1 The Client

1.3.2 The Project Guide/ Coordinator Mr. Rajib Bag and the Principal of Dr. B.R. Ambedkar institute of technology.

**1.4 Product Scope**

1.4.1 Helps to make the society safer in terms of crime related to burglary.

1.4.2 Reduces the damage done by the burglars.

1.4.3 Helps to secure large buildings easily.

**1.5 About software’s**

**ARDUINO IDE**

The Arduino Integrated Development Environment (IDE) is a cross-platform application (for Windows, macOS, Linux) that is written in functions from C and C++. It is used to write and upload programs to Arduino compatible boards, but also, with the help of 3rd party cores, other vendor development boards.

The source code for the IDE is released under the GNU General Public License, version 2. The Arduino IDE supports the languages C and C++ using special rules of code structuring. The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program stub main() into an executable cyclic executive program with the GNU toolchain, also included with the IDE distribution. The Arduino IDE employs the program avrdude to convert the executable code into a text file in hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.

Arduino Pro IDE

Developer(s) Arduino Software

Written in C, C++

Operating system Windows, macOS, Linux

Platform IA-32, x86-64, ARM

Type Integrated development environment

License LGPL or GPL license

Website blog.arduino.cc/2019/10/18/Arduino-pro-ide- alpha-preview-with-advanced-features/

In October 2019 the Arduino organization began providing early access to a new Arduino Pro IDE with debugging and other advanced features.

**CHAPTER 2**

**2. Overall Description:**

The project aims at building a smart anti burglar alarm system that can detect an intruder and turn on a buzzer that will alert the neighbors and also a message would be sent to the owner of the building. The Product can be controlled from anywhere with any cellphone with any cellular network provider. This allows larger coverage area as compared to WIFI or Internet based similar products that require RF module to control the device that works within a range of 10-20mts.

**2.1 Product Perspective**

SABAS is a security oriented device that is to be used by the owners of offices, warehouses, Houses, Shops etc. to prevent theft of goods as early as possible.

**2.2 Product Functions**

2.2.1 SABAS provides real-time theft detection alert to the user and will sound an alarm as soon as an intruder is detected.

2.2.2 SABAS will also alert the police if required by the user.

**2.3 Operating Environment**

|  |  |
| --- | --- |
| Operating System | Window XP/7/8/10 |
| Software Used | Arduino IDE |
| Network Connection | Minimum 2G Connection. |

**Table-1**

**2.4 User Documentation**

A copy of user manual will be supplied along with the application to the client on delivery of the product.

**2.5 Assumptions and Dependencies**

2.5.1 SABAS will be installed in indoor environment.

2.5.2 At minimum a 2g network connection will be provided to the device.

2.5.3 After Implementation device will be controlled by the user.

2.5.4 User has a cellular phone that can send and receive messages.

**CHAPTER 3**

**3.Development of the System**

**3.1 Project Methodology (Iterative Waterfall model)**

Study of existing system

Survey/Requirement gathering/ Feasibility analysis

Requirement analysis

Designing

Coding\implementation

Hardware Integration

System Development

System Testing

Deployment

Maintenance

**3.2 Flow Chart**

START

MSG From

User

Msg==off

true

Turn off the device

False

Turn Off the Buzzer

true

Msg==reset

true

Msg==on

False

Turn on the buzzer

Burglar detected

true

False

Alert the user

**Description of Flow Chart-**

1. The Device runs in an infinite loop statement which performs all the functionality of the device in a recursive manner.
2. First the device checks if message is received by the GSM module that is instructing it to shut down. If yes, the device shuts down and waits for an ‘on’ message from GSM module. If an ‘On’ message is received, then the device turns on the device by entering the main loop function.
3. Secondly device checks if a reset message is received by the GSM module. If yes, the device turns off the buzzer and returns to the main loop function.
4. Third the device checks if the PIR sensor has detected any Intruder. If yes, then the buzzer is turned on and the owner is alerted using messages. Then statement again enters the main loop function.

**3.3 Use Case Diagram**

TURN OFF DEVICE

ALERT THE OWNER

RESET THE DEVICE

TURN ON THE DEVICE

USER

**Description of Use Case Diagram**

1. **TURN OFF DEVICE-**  By using this the owner can turn off SABAS and can work in the proximity range of SABAS.
2. **ALERT THE OWNER –** If an intruder is detected by SABAS the device will inform the user with messages.
3. **RESET THE DEVICE-** If the user wants to turn off the buzzer without turning off the whole device and making it ready for Intruder detection. A reset message can be sent to SABAS.
4. **TURN ON THE DEVICE-** If the user wants to turn on the SABAS after leaving the proximity range of the SABAS. Then the user can send a ‘turn on’ message to the SABAS to turn it back on.

**CHAPTER 4**

**4.Other Nonfunctional Requirements**

**4.1 Performance Requirements-**

• The timeline of this project must be in our mind.

• The performance of the Product and every interface must be well and accurate.

• The risk factor must be taken at initial step for better performance of the product.

• The overall performance of the product will be reliable and enable the users to work efficiently.

**4.2Software Quality Attributes**

Our software has many quality attribute that are given below:

Adaptability: This software is adaptable by most kind of user requirement.

Maintainability- After the deployment of the product if any error occurs then it can be easily maintained by the developers.

Portability-The product can be deployed at any indoor location with ease.

Reliability-The performance of the product is good which will increase the reliability of the app.

Cost effective-This product is less in cost and bearable by any user.

**CHAPTER 5**

**5. Safety:**

1. Before usage read the Manual Carefully.
2. Don’t open the device without contacting the developers.
3. Do not operate the equipment with damaged power cord.
4. Keep out of reach of children.
5. Do not place appliance near the sunlight.
6. Unplug the appliances before cleaning.
7. If appliance is creating noise unnecessarily, then immediately reset it.
8. Always contact to the developers for setting up the device.
9. Don’t operate in an extremely humid environment.
10. Don’t operate in extreme temperatures.
11. Unplug the device before reallocating the device to reduce the risk of shock injury.
12. Keep away from fire and water.
13. If device is heating too much unplug the device and contact the developers.

**CHAPTER 6**

**6.** **CONCLUSION & FURTHER ENHANCEMENTS**

**6.1 Conclusion**

Through this project, we have developed device that will benefits to our society by reducing the crime related to burglary and providing a cheaper alternative to home security devices. That next batch can carry forward in this field for developing other smart devices for the society.

**6.2 Future Scope**

The device can be made more intelligent.

**CHAPTER 7**

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