

## SENSITIVE SECURITY SYSTEM WITH AUTO DIALER AND IMAGE CAPTURE USING ARM11 BASED RASPBERRY PI

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**Abstract:** Protection is an important situation of concern for each one. This assignment describes a design of effective protection alarm machine which can monitor an industry with eight unique sensors. Unauthorized get admission to, fire twist of fate, wall breaking, IR detection, and fire detection can be monitored by way of the reputation of every character sensor and is indicated with an LED. This LED shows whether or not the sensor has been activated and whether the wiring to the sensor is so as. glaringly, this burglar alarm additionally has an enter to 'arm' the alarm, a tamper enter and a couple of outputs to control a siren and car dialing machine. The alarm is also geared up with a so-referred to as 'panic button'. The burglar alarm is built around the microcontroller from ARM. This micro controller presents all the functionality of the burglar alarm. It also looks after filtering of the alerts at the inputs. best after an input has remained unchanged for 30 milliseconds, is that this new signal degree surpassed on for processing by means of the micro controller application. This time can be various by adopting small changes within the source code. most of 8 sensors can be linked to the burglar alarm. these sensors need to have their contacts closed whilst within the inactive state (i.e. normally Closed). in addition, every sensor desires to have its tamper

connection stressed as properly. A power supply voltage of +five VDC is available for every sensor on the corresponding wiring terminals. Eight LEDs suggest the popularity of the corresponding sensors. when the alarm has been activated, the LED of the sensor that triggered the alarm will mild up, or flash within the occasion of a cable failure. while the alarm is armed, the LED 'alarm armed' will flash for the duration of the go out-postpone. After the exit-delay, the LED will light continuously. The LED 'alarm triggered LED' flashes in the course of the entry-put off and will switch on continuously once an real alarm has been generated. 'Alarm induced LED' turns off simplest while the alarm is switched off with key transfer Sw1. whilst an alarm has taken area, it could be determined afterwards which sensor (or tamper enter) triggered the alarm to cause. The LED 'tamper' lighting up when the tamper input is opened. This LED will even stay on until the alarm is switched off. The uniqueness of this mission isn't handiest alerting the acquaintances by siren, it also dials a cellular wide variety that is already programmed into the gadget. A cellular quantity or a land line range may be programmed into the device. As this device works on present cellphone line, it could dial the range even the subscriber is out of station. The Raspberry Pi is a credit-card-sized single-board

computer advanced in the uk with the aid of the Raspberry Pi foundation . The Raspberry Pi has a Broadcom BCM2836/2837 device on a chip. It does now not consist of a integrated difficult disk or strong-country force, however uses an SD card for booting and lengthy-time period garage. A camera is also interfaced to discover the individual seemed at that instant. there may be additionally a facility to get the mail of image when a few sensor were given sensed. This assignment makes use of regulated 5V, 1A strength supply. 7805 3 terminal voltage regulator is used for voltage regulation. Bridge kind complete wave rectifier is used to rectify the ac out positioned of secondary of 230/12V step down transformer.

**Keywords:** *Raspberry pi ,LAN*

### INTRODUCTION

Safety is the circumstance of being included in opposition to danger or loss. in the standard sense, security is a idea just like protection. The nuance among the two is a brought emphasis on being blanketed from risks that originate from outside. people or moves that encroach upon the situation of safety are answerable for the breach of safety. The phrase "safety" in general usage is synonymous with "safety," however as a technical term "protection" manner that something no longer most effective is cozy but that it has been secured. one of the excellent alternatives for imparting appropriate security is by way of the use of a generation named EMBEDDED systems.

**Micro controller:** This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller

forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

### HARDWARE SYSTEM

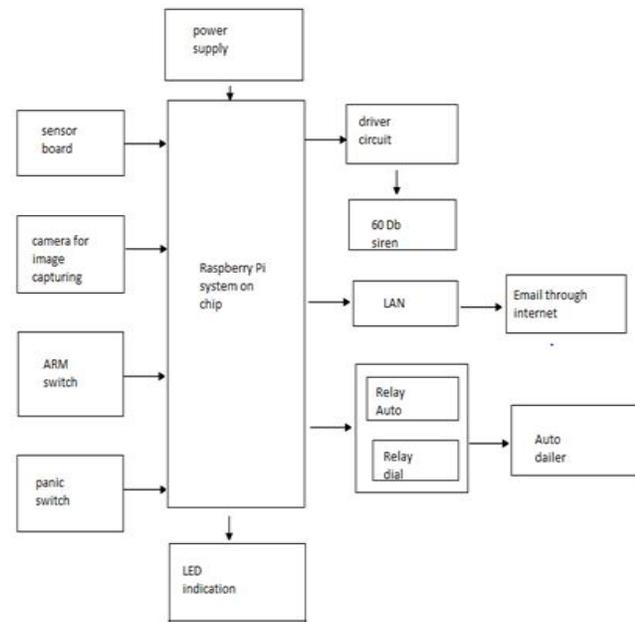


Fig .1: Block Diagram

**Raspberry Pi :** The Raspberry Pi delivers 6 times the processing capacity of previous models. This second generation Raspberry Pi has an upgraded Broadcom BCM2836 processor, which is a powerful ARM Cortex-A7 based quad-core processor that runs at 900MHz. The board also features an increase in memory capacity to 1Gbyte.

**Liquid-crystal display (LCD)** is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

## METHODOLOGY

### WEBCAM

"Webcam" refers to the technology generally; the first part of the term ("web-") is often replaced with a word describing what can be viewed with the camera, such as a netcam or streetcam. Webcams are video capturing devices connected to computers or computer networks, often using USB or, if they connect to networks, Ethernet or Wi-Fi. They are well-known for low manufacturing costs and flexible applications. **Video capture** is the process of converting an analog video signal—such as that produced by a video camera or DVD player—to digital form. The resulting digital data are referred to as a digital video stream, or more often, simply video stream. This is in contrast with screen casting, in which previously digitized video is captured while displayed on a digital monitor. Webcams typically include a lens, an image sensor, and some support electronics. Various lenses are available, the most common being a plastic lens that can be screwed in and out to set the camera's focus. Fixed focus lenses, which have no provision for adjustment, are also available. Image sensors can be CMOS or CCD, the former being dominant for low-cost cameras, but CCD cameras do not necessarily outperform CMOS-based cameras in the low cost price range. Consumer webcams are usually VGA resolution with a frame rate of 30 frames per second. Higher resolutions, in mega pixels, are available and higher frame rates are starting to appear. The video capture process involves several processing steps. First the analog video signal is digitized by an analog-to-digital converter to produce a raw, digital data stream. In the case of composite video, the luminance and chrominance are then separated. Next, the chrominance is demodulated to produce color difference video data.



Fig.2: Webcam

At this point, the data may be modified so as to adjust brightness, contrast, saturation and hue. Finally, the data is transformed by a color space converter to generate data in conformance with any of several color space standards, such as RGB and YCbCr. Together, these steps constituted video decoding, because they "decode" an analog video format such as NTSC or PAL. Support electronics are present to read the image from the sensor and transmit it to the host computer. The camera pictured to the right, for example, uses a Sonix SN9C101 to transmit its image over USB. Some cameras - such as mobile phone cameras - use a CMOS sensor with supporting electronics.

#### FEATURES:

- Smallest wireless video & audio camera
- Wireless transmission and reception
- High sensitivity
- Easy installation & operation
- Easy to conceal
  
- Light weight
- Low power consumption
- Small size

#### SPECIFICATIONS:

- Output frequency: 900MHZ 1200MHZ
- Output power: 50mW 200mW

- Power supply: DC +6~12v
- Distance covered: 10m

**Ethernet:**

Ethernet is a family of computer networking technologies for local area networks (LANs) and metropolitan area networks (MANs). It was commercially introduced in 1980 and first standardized in 1983 as IEEE 802.3, and has since been refined to support higher bit rates and longer link distances. Over time, Ethernet has largely replaced competing wired LAN technologies such as token ring, FDDI, and ARCNET. The primary alternative for contemporary LANs is not a wired standard, but instead a wireless LAN standardized as IEEE 802.11 and also known as Wi-Fi. The Ethernet standards comprise several wiring and signaling variants of the OSI physical layer in use with Ethernet.



Fig. 3: Ethernet module

The original 10BASE5 Ethernet uses coaxial cable as a shared medium, while the newer Ethernet variants use twisted pair and fiber optic links in conjunction with hubs or switches. Over the course of its history, Ethernet data transfer rates have been increased from the original 2.94 megabits per second (Mbit/s) to the latest 100 gigabits per second

(Gbit/s), with 400 Gbit/s. Systems communicating over Ethernet divide a stream of data into shorter pieces called frames. Each frame contains source and destination addresses and error-checking data so that damaged data can be detected and re-transmitted. As per the OSI model, Ethernet provides services up to and including the data link layer.

**Relay Section:**

Relays are switches that open and close circuits electromechanically or electronically. Relays control one electrical circuit by opening and closing contacts in another circuit. As relay diagrams show, when a relay contact is normally open (NO), there is an open contact when the relay is not energized. This section consists of an interfacing circuitry to switch ON / OFF the system whenever any unhealthy conditions i.e. overload is detected. This circuitry basically consists of a Relay, transistor and a protection diode. A relay is used to drive the 230V devices.



Fig.4: Relay

**LED:** A light-emitting diode (LED) is a semiconductor light source. LEDs are used as indicator lamps in many devices, and are increasingly used for lightning. Introduced as a practical electronic component in 1962, early LEDs emitted

low-intensity red light, but modern versions are available across the visible, ultraviolet and infrared wavelengths, with very high brightness.



Fig.5: LED

### RESULT



Fig.6: Overview of Hardware kit

### CONCLUSION

Therefore with the aid of this mission we can design a powerful protection alarm system that can reveal a enterprise with eight special sensors. The individuality of this undertaking is not best alerting the neighbors by means of siren, it also dials a cell number which is already programmed into the system. A cell variety or a land line range may be programmed into the system. As this system works on existing cellphone line, it can dial the range even

the subscriber is out of station. In addition there is the facility of receiving the mail of image which the camera has captured after the detection of thief or any other out break.

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