DESIGN AND SIMULATION OF A WIRED EMERGENCY ALARM SYSTEM

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Abstract: This paper provides an overview of wired emergency alarm system, their components, and their importance in occurring in the same period of time security infrastructure are given in this paper. Residential, commercial, and industrial locations are just a few of the many environments that security alarm systems are intended to monitor and safeguard. These systems are made up of a number of interconnected parts, including sensors, control panels, communication tools, and alerting systems..

1. **Introduction:** A security alarm system is a device that detects unauthorized entry into a building or other areas and alerts the occupants or authorities [1] It is designed to protect against burglary, theft, property damage, and intruders Keeping our homes and assets safe and secure is of utmost importance in today's world of growing unpredictability. Security alarm systems are essential for protecting our belongings and giving us piece of mind [2]. We shall discuss the idea of a security alarm system project and its importance in contemporary society in this introduction. Security alarm systems are intended to identify potential threats or invasions and notify homeowners or authorities. These dangers can include everything from environmental dangers and fire to unlawful access into a building. A security alarm system's main objective is to deliver prompt and reliable alerts so that people can react properly [3]

2. **Literature Review:** Author Harshal hemane published a paper based home security alarm system in August 2022 And he concluded that,We ultimately created the wired emergency Alarm system on a tight budget. It had been completely secured. Prior to

being a standard feature of home protection for the wealthy, laser security systems were considered high-tech. It is a simple alarm unit with manually switch dependant sensors. When a human passes in front of a motion sensor on a laser security system, the person's body heat sets off the alert. Additionally, the security monitoring provider and local legal enforcement are alerted by the alarm. Additionally, the basic alarm unit will emit a loud Alarm.[4] Author R veeramani,Sameer hiramani,Shubham Arora pablished a book on February 2019and they concluded that The use of a camera connected to the microcontroller may assist the client in making decisions about whether to activate the security system or greet the visitor, since the framework is dependent on the client's caution and judgment of the situation (regardless of whether it is a visitor or an intruder entering his home).Once the visitor or gatecrasher's face has been verified, the client may receive the captured image. If the client so desires, he may also forward a copy of the same picture to the police headquarters. By integrating the voice call feature with a comparable sophisticated mobile application, the user can even operate their home appliances without using a voice call, further harmonizing the system.[5] Author Muhammad Ahmad Baballe and Mukhtar ibrahim Bello published a paper on march 2022 where they concluded Design and installation of a highly effective, portable, and reasonably priced security alarm system utilizing an Arduino with a motion sensor and GSM module. Because of the aforementioned properties, the supplied system can prove to be beneficial and effective. These alarm systems are highly sought after for security needs.[6] Author M. S. Ahmed and Abubakar Mohammed published a paper on july 2006 and he concluded We've developed, built, and tested a basic sound-activated burglar alarm system. It is appropriate for interior protection, particularly for objects in museums, jewelry stores, and art galleries, as well as compact spaces. Thus, this burglar alarm is excellent for protecting valuables.[7] The paper titled "Method and Device to Communicate via SMS After a Security Intrusion" was presented by Karri. V and Daniel Lim. J. S at the 1st International Conference on Sensing Technology held in Palmerston North, New Zealand from November 21-23, 2005.The paper describes a security device that can be used to protect vehicles, offices, homes, and other locations where foreign access is of concern. The device consists of three components: one or more sensors set up

in a remote array depending on the application, a PIC micro-controller, and a GSM module.[8] The paper titled "Home Video Security Surveillance" was presented by Bing Z, Yunhung G, Bo L, Guangwei Z, and Tian T at the Info-Tech and Info net, Proceedings, ICII Beijing International Conference in 2001.The paper describes a video-based security system that can be used to monitor homes and other locations. The system consists of a camera, a video recorder, and a computer.The camera is placed in a location that provides a clear view of the area to be monitored, and the video recorder records the images captured by the camera.The computer is used to analyze the images and detect any unusual activity [9].

1. **Design and Implementation:** Two switches, S1 and S2, are utilized in the design so that they can both be put in two distinct locations, i.e., one on the front door and the other in front of the cabinet. The transistors T1 and T2 linked to the resistor conduct when the switch S1 is depressed, but the diode D1 attached to it does not. Capacitor C1 provides positive feedback to transistors T1 and T2 for oscillation. When switch S1 is depressed, a low sound frequency that indicates the presence of intruders is heard. When switch S2 is depressed, a comparable circumstance takes place. The diode D2 attached to switch S2 begins to conduct and provides current to the awake transistors T1 and T2, resulting in.
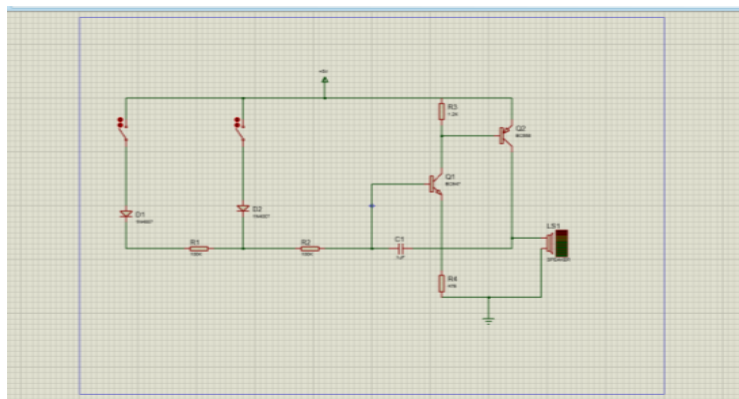

Figure 1: Connection of different parts of circuit

2. **Simulation Parameter:** In this project we have taken different types of component as per required for the project .Such as 4 resistor,2diode, 1speaker,&wire as per the required. with this above component. With using this above component we can be able to create our project named as design & implementation of a wired emergency alarm system..

Table 1: Parameter of different devices

Sl. No	Components	Quantity
1	Resistor	4
2	Diode	2
3	Transistor	2
4	Speaker	1
5	Connecting Wires	As per Required

3. **Result Analysis:** Wired emergency alarm system, provide a number of advantages, including the ability to deter potential criminals, instantly notify authorities and property owners, and give the people they are guarding peace of mind. Thanks to technology advancements like remote monitoring, smartphone integration, and compatibility with smart home devices, modern alarm systems are more approachable and user-friendly. Alarm systems are a useful tool for enhancing safety and security, but their effectiveness is reliant on proper installation, routine maintenance, and user understanding. Additionally, in today's world, when security risks are constant, a well-designed and properly monitored security alarm system is crucial. An essential element in guaranteeing the safety and security of a specified region or facility is a wired emergency alarm system. An evaluation of this kind of system's efficacy, dependability, and performance in diverse emergency situations is part of its outcome analysis. Analyze how quickly the system reacts after detecting an emergency occurrence and

before the alarm goes off. Since it enables the emergency response teams to be mobilized more quickly, a shorter reaction time is often preferred. Evaluate the alarm system's ability to distinguish between real crises and false alarms. Reducing false alerts is essential to guarantee emergency situations and prevent needless disruptions. Think about how simple it is to maintain and how much total maintenance the system needs. To guarantee that the system continues to function at its best throughout time, regular maintenance is required.
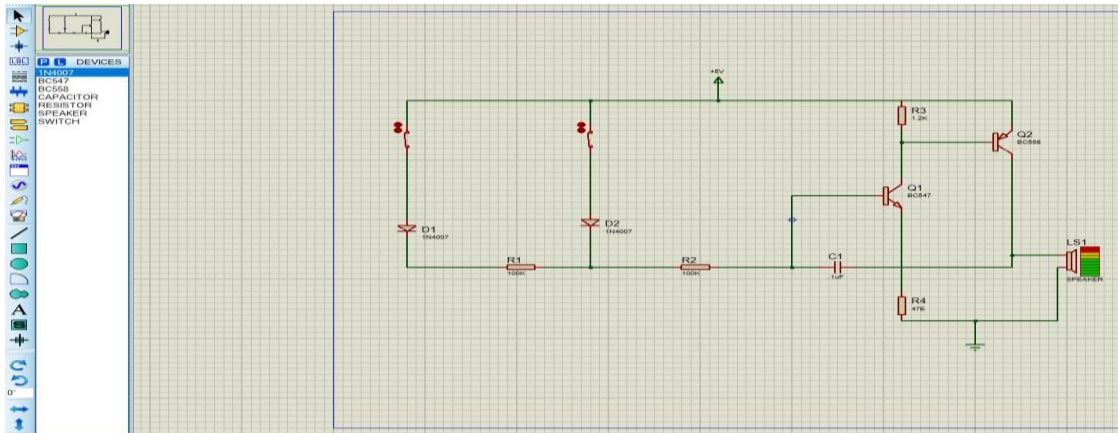

Figure 2: Result after the connection

4. Conclusion: Hence, the temperature measurement device, formulated using an LM358 operational amplifier and a thermistor, emerges as a versatile and dependable solution for gauging temperature across diverse applications. This uncomplicated yet efficient sensor capitalizes on the temperature-sensitive attributes of the thermistor, coupled with the amplification capabilities inherent in the LM358, resulting in precise and responsive temperature readings. The straightforwardness of this sensor design, combined with its cost-effectiveness, renders it accessible to students, enthusiasts, and industry professionals engaged in electronics and temperature management. By exploiting the distinctive characteristics of the thermistor and the amplification features of the LM358, this sensor delivers a dependable and effective means for accurate temperature measurement and regulation. Its efficacy lies in its capacity to translate

alterations in environmental temperature into practical and actionable data, establishing it as an indispensable tool in contemporary electronics and automation.

5. Reference:

1. Harshal hemane , 2022. "Design and Construction of an Automatic Home Security System Based on and GSM Technology Embedded Micro controller Unit", American Journal of Electrical and Computer EngineeringKamat, R.K. and Naik, G.M. (2002), "Thermistors – in search of new applications, manufacturers cultivate advanced NTC techniques", _Sensor Review_, Vol. 22 No. 4, pp. 334-340

2. Rveeramani,Sameerhiramani,Shubham Arora 2019. "A Simple and Reliable Touch Sensitive Security System", International Journal of Network Security & Its Applications, ISSN 0975-2307, Volume: 4; Issue: 5; pp. 149-165.Rahman, Arifur. (2018). Assignment on Temperature Sensors.10

3. Huynh, Thu. (2015). Fundamentals of Thermal Sensors. 10.1007/978-1-4939-2581-02.

4. Karri. V, Daniel Lim. J. S, 2005, "Method and Device to Communicate via SMS After a Security Intrusion", 1st International Conference on Sensing Technology, Palmerston North, New Zealand, November 21 -23

5. Author M. S. Ahmed and Abubakar Mohammed,"Perimeter Security Sensor Technology handbook", Electronic Security Systems Engineering Division, North Charleston, U.S.A, pp. 67-86Shi-Wen Chen, Ming-Hung Chang, Wei-Chih Hsieh, and Wei Hwang Department of Electronics Engineering & Institute of Electronics, and Microelectronics and Information System Research Center (MIRC) National Chiao-Tung University, Hsin-Chu 300, Taiwan .

6. Karri. V, Daniel Lim. J. S, 2005, "Method and Device to Communicate via SMS After a Security Intrusion", 1st International Conference on Sensing Technology, Palmerston North, New Zealand, November 21 -23 Greenslade Jr, Thomas B. "The potentiometer." _The Physics Teacher_ 43.4 (2005): 232-235

7. Mahmud. S.A, Mohammed. G.A, 9, July-Dec 2006, "Development of a Simple Sound Activated Burglar Alarm System" Leonardo Journal of sciences. Issue.

8. Elfasakhany. A Hernández. J, García. J. C, Reyes. M, Martell. F, December 2011. "Design and Development of a House-Mobile Security System.

9. Sowjanya. G, Nagaraju. S, 2016, "Design and Implementation of Door Access Control and SecuritySystem Based On IoT Inventive Computation Technologies Gasperi, M., Hurbain, P.". (2009). Potentiometer Sensors. In: Extreme NXT: Extending the LEGO MINDSTORMS NXT to the Next Level. Apress. https://doi.org/10.1007/978-1-4302-2454-9_6

10. ayashri. B, Arvind. S, 2013, "Design and Implementation of Security for Smart Home based on GSM technology International Journal of Smart Home"Soloman, Sabrie. *Sensors handbook*. McGraw-Hill, Inc., 2009.

11. Hasan. R, Khan. M. M, Ashek. A Rumpa. I. J, 2015, "Microcontroller Based Home Security System with GSM Technology" Open Journal of Safety Science and Technology.