COMPLETE VOICE ENABLED RESIDENTIAL SECURITY SYSTEM

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Abstract:-One of the fastest-growing sectors with the potential to change people's lives is home automation. Some of these home automation systems are designed for people who want high-end, complex platforms, while others are designed for people who have specific needs, such as the elderly and disabled. Users can manage household appliances using a wireless central operating unit in a typical wireless home automation system. Most commercially available home automation systems demand that these components be created specifically to work with each other and with the control device. This project will create a complete voice-enabled house monitoring system using an Android smart phone.

Keywords: Arduino UNO, Home Automation System, Speech recognition, Smart home, Internet of Things.

I.INTRODUCTION

Home automation is often known as smart houses or homes. Lighting, heating, ventilation, air conditioning, and security, as well as home appliances, are all controlled and automated. By 2025, the number of people over the age of 65

760 million . Home automation is a type of home business or hobby. For greater comfort, convenience, energy efficiency, and security, home automation may involve centralized management of lighting, heating, ventilation, and air conditioning, appliances, and other systems. For the elderly and disabled, home automation can improve their quality of

been around for decades, and while there isn't a single mainstream solution, it can also provide an audio-based interface for home appliances. Home appliances become part of the system when they are remotely monitored and

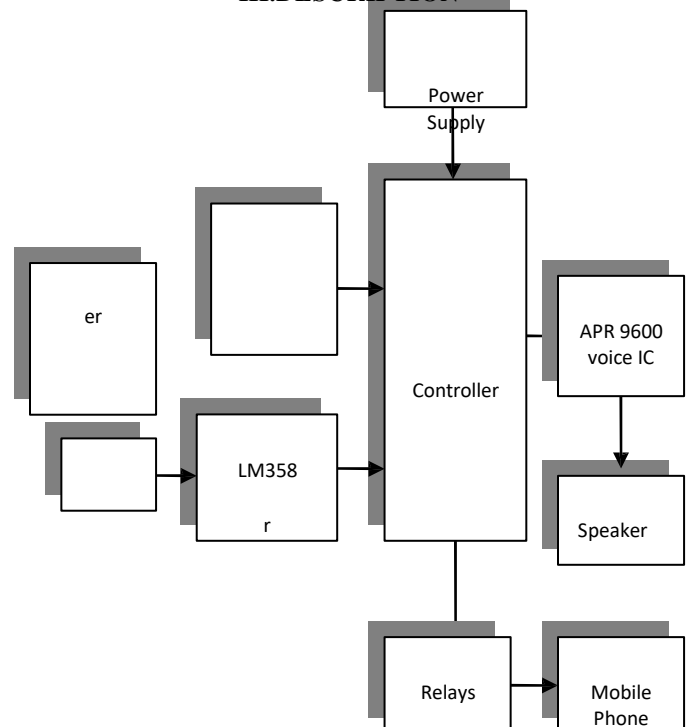The majority of modern systems are made up : A central hub

interface is accessed through a system-controlled gateway. Communicates with a mobile phone, tablet, PC, or the internet interface, which is frequently but not always done using cloud services . The Home automation is an idea that has been around for a long time.

II.PROPOSED SYSTEM

Safety in the home is intimated by a voice message to the owner through mobile phone. In order to detect the unknown persons in home IR sensors is used. The IR signals are continuously transmitted and its corresponding input voltage is given to the microcontroller. If the IR signal gets cut means it produces some voltage difference. This difference voltage was accessed by the microcontroller unit and it gives the voice message through APR voice IC and also it automatically dials the number and intimates as voice message to the owner through mobile phone.

A **Passive Infrared Sensor** is used to detect the motion of the object that moves in or out of the sensor's range. It comes with two trim pots for adjusting the sensitivity and the delay time. You can adjust them according to usage. When the sensor detects someone's movement in its range then HIGH output is generated otherwise LOW output is generated.
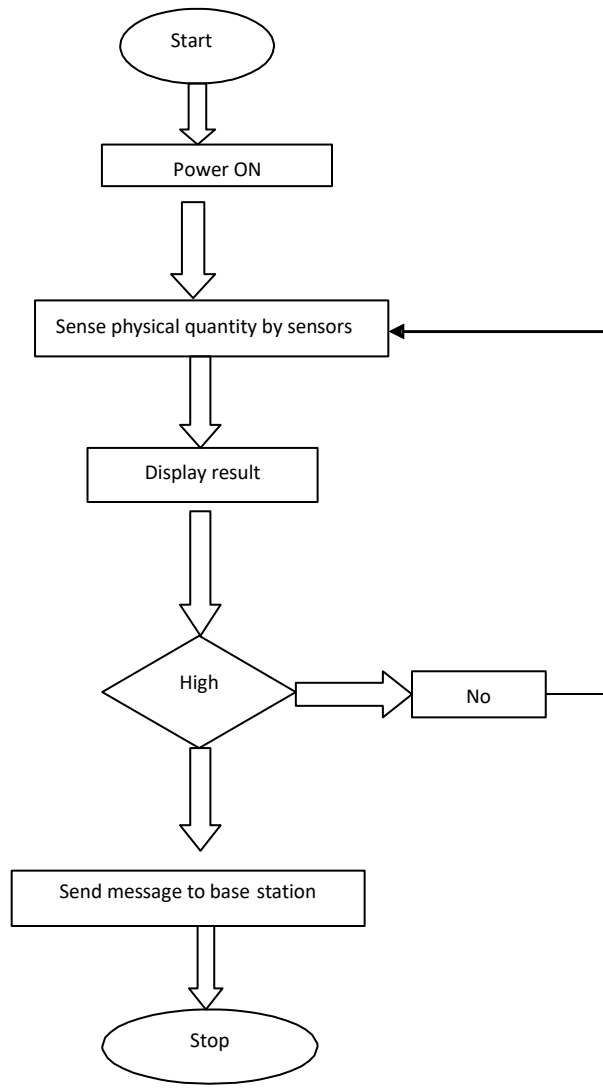
III.DESCRIPTION

Transmitter Section

This paper presents residential machine automation using voice via Google Assistant and VOICE. The project is aimed at providing integrated voice based control of technologically smart systems of an industry using microcontroller with visual basic interface. Radio frequency identification based multilevel user access provide high security authentication. Staff attendance and data logger were added to the main features of the project. In case any fire accident occur in that place means it's sensed by LM 35 Temperature sensor and gives the intimation by the same way, in order to access the temperature sensor over the microcontroller.

IV. DESIGN ENHANCEMENT AND OPTIMIZATION

The motion detector sensor system developed in this project is based on the Prototyping Methodology as shown. This model has four main phases namely planning phase, analysis phase, design phase and implementation phase. The testing phase is combined together in the implementation phase for the purpose of simplifying the application and the circuit developed. The work flow process for the prototype model is as follows.

Flowchart of proposed methodology

In case of Fire in the house the temperature will automatically rise, in order to detect this a temperature sensor is being used which will detect the temperature of the surroundings and send to the microcontroller which will alarm in case of very high temperature. An Arduino microcontroller is used to carry out all the computation and control. It has an in-built analog to digital converter, hence an external ADC is not required for converting the analog temperature into digital value. An inexpensive temperature sensor LM35 is used for sensing the ambient temperature.

The system will get the temperature from the sensor IC and will display the temperature on LCD. The temperature is compared with the set point temperature declared by the user, if its more than that then the buzzer is activated else not. Analog voltage from LM35 in fetched to ADC of microcontroller and converted to temperature using following conversion.

V. HARDWARE DESCRIPTION

1. POWER SUPPLY

In most of our electronic products or projects we need a power supply for converting mains AC voltage to a regulated DC voltage. For making a power supply designing of each and every component is essential.

A bridge rectifier consists of four p-n junction diodes connected in the above shown manner. In the positive half cycle of the supply the voltage induced across the secondary of the electrical transformer i.e. VMN is positive. Therefore point E is positive with respect to F. Hence, diodes D_3 and D_2 are reversed biased and diodes D_1 and D_4 are forward biased. The diode D_3 and D_2 will act as open switches (practically there is some voltage drop) and diodes D_1 and D_4 will act as closed switches and will start conducting. When voltage induced in secondary i.e. VMN is negative than D_3 and D_2 are forward biased with the other two reversed biased and a positive voltage appears at the input of the filter.

The output generated from the unregulated DC output is susceptible to the fluctuations of the input signal. IC voltage regulator is connected with bridge rectifier in series in these project so to steady the DC output against the variations in the input DC voltage. To obtain a stable output of 5V, IC 7805 is attached with 6-0-6V along with 500mA step down transformer as well as with rectifier.

2. PIR SENSOR

The term PIR is the short form of the Passive Infrared. The term "passive" indicates that the sensor does not actively take part in the process, which means, it does not emit the referred IR signals itself, rather passively detects the infrared radiations coming from the human body in the surrounding area. The PIR sensor range is up to 10 meters.

Fig:1 PIR Sensor

The detected radiations are converted into an electrical charge, which is proportional to the detected level of the radiation. Then this charge is further improved by a built in FET and fed to the output pin of the device which becomes applicable to an external circuit for further triggering and amplification of the alarm stages. [9] discussed about a project, in this project an automatic meter reading system is designed using GSM Technology. The embedded micro controller is interfaced with the GSM Module. This setup is fitted in home. The energy meter is attached to the micro controller. This controller reads the data from the meter output and transfers that data to GSM Module through the serial port.

3. RELAY CIRCUIT

A relay is an electromagnetic switch that is used to turn on and turn off a circuit by a low power signal, or where several circuits must be controlled by one signal.

Fig:2 Relay circuit

The main operation of a relay comes in places where only a low-power signal can be used to control a circuit. It is also used in places where only one signal can be used to control a lot of circuits. The high end applications of relays require high power to be driven by electric motors and so on. One of the most useful things you can do with an Arduino is control higher voltage (120-240V) devices like fans, lights, heaters, and other household appliances. Since the Arduino operates at 5V it can't control these higher voltage devices directly, but you can use a 5V relay to switch the 120-240V current and use the Arduino to control the relay.

4. LM35

LM35 is an integrated analog temperature sensor whose electrical output is proportional to Degree Centigrade. LM35 Sensor does not require any external calibration or trimming to provide typical accuracies. The number specifically does not have any significance but 35 is assigned for Centigrade scale temperature sensor. If it **is** LM34, it **is** also a temperature sensor with same 10mV/degree calibration in terms of Fahrenheit.

The LM35 output voltage is linearly proportional to the Celsius temperature. The LM35 is operates at -55˚ to +120˚C. As the LM35 device draws only 60 µA from the supply, it has very low self-heating of less than 0.1°C in still air.

[1] proposed a novel method for secure transportation of railway systems has been proposed in this project. In existing methods, most of the methods are manual resulting in a lot of human errors. This project proposes a system which can be controlled automatically without any outside help.

5. LM358

The LM358 contains two independent high gain operational amplifiers, low power, dual channel op-amp, high gain with internal frequency compensation. Single power supply will be required to operate both op-amps in LM358. We can also use a split power supply. [5] discussed that the activity related status data will be communicated consistently and shared among drivers through VANETs keeping in mind the end goal to enhance driving security and solace. By using 0.3V we cannot ON/OFF led or relay. The LM-358 IC get signal from the sensor and compare to the reference voltage. Then this IC will decide whether the voltage is greater or less than reference voltage by giving high or low output.
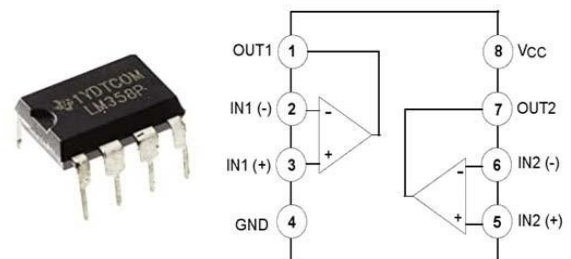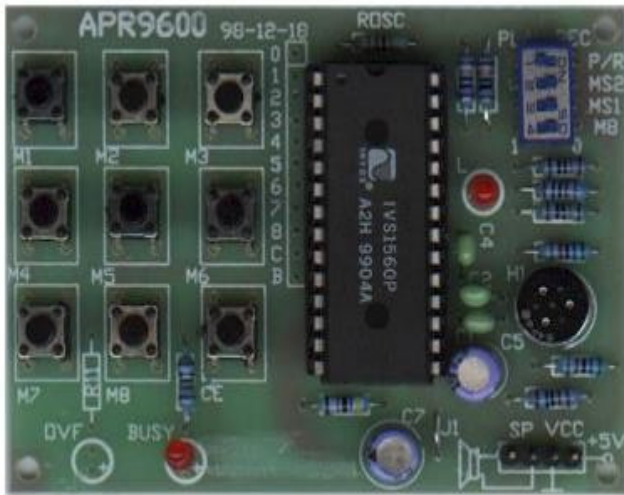

Fig:3 LM358

6. APR 9600 Voice IC

APR9600 is a low-cost high performance sound record/replay IC incorporating flash analogue storage technique. Recorded sound is retained even after power supply is removed from the module. The replayed sound exhibits high quality with a low noise level. Sampling rate for a 60 second recording period is 4.2 kHz that gives a sound record/replay bandwidth of 20Hz to 2.1 kHz.

[7] emphasized that people who are visually impaired have a hard time navigating their surroundings, recognizing objects, and avoiding hazards on their own since they do not know what is going on in their immediate surroundings.. The IC can be controlled

simply using push button keys. It is also possible to control the IC using external digital circuitry such as micro-controllers and computers. The APR9600 has a 28 pin DIP package. Supply voltage is between 4.5V to 6.5V. During recording and replaying, current consumption is 25mA. In idle mode, the current drops to 1mA.

APR9600 Experimental board

Fig:4 APR 9600

VI.CONCLUSION

The main advantage of the realized system over various security and control systems is that it is a bidirectional control system. It contains both control circuit to turn on/off electrical devices from remote locations and warning system to inform dangerous situations such as fire, flood, etc.

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