

CONTACT-LESS TEMPERATURE MONITORING SYSTEM AT ENTRANCE USING IOT

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Abstract— In the recent times thermal scanning is used to check body temperature during Covid-19. The first phase to detect the covid-19 by skimming for disease. The personal are not well skilled on by means of temperature digital scanner devices. There are so many anthropoid errors in analysis ethics. To solve all the problems, we now propose a completely automatic malaise electronic scanner and entry provided scheme. It is multipurpose system that has a wide range application. This system used as a contactless temperature scanner. Automatic thermal scanner and will help to less human contact and that leads to less spread of diseases. This is a fully computerization detection system which help to reduce human efforts and save time of peoples, thermal scanning plays a key role during the time of covid-19. It can help efficiency of human in the room as we set the limit of person in the room through Bluetooth device. MLX90614 Infrared Thermometer is a smart, dense, and companionable device with Arduino [6] that can be linked to Microsoft Excel and is very suitable to use in measuring the temperature formation on machining operation in manufacturing production. This is proven after associating the measurement result between Arduino toward Fluke. The data of measurement temperature results through MLX90614 Infrared Thermometer using Arduino is smarter. Therefore, this measurement is a smart temperature measurement [7] system for the machining process in this case for the grating process. The proposed system has an advantage of low power consumption, simple hardware and temperature sensor is automatically to use and don't to handle it, it just placed at entrance and work is done to operate it. In this work, the IR temperature quantity component for the amount of physique temperature, the measurement of the outdated interaction is evaded, it is mainly appropriate for gauging body malaise for toddlers and new children. The unhurried malaise is exhibited finished the LCD component, and it has the purpose of speech transmission, it can be cast-off by the gentleman of deprived vision. Non - contact dimension, gauging speed is hasty, the body malaise is restrained in the greater movement of persons (such as positions, terminuses, etc.). Non-contact temperature sensor which is attached with the laser and LDR microcontroller IC can be operated genteelly and which is tested many times.

Index Terms— MLX90614 Infrared Thermometer, LDR microcontroller, LCD component, covid-19 by skimming for disease etc.

I. INTRODUCTION

A. OVERVIEW

The mainly focus on this project stands to detect the temperature of the body, to stop the spread of corona virus and this project will help a lot in basic time with less human effort and it will reduce the time. In this project I have use many components which I describe earlier, and they are the main component that are generally used in it, a non-contact temperature sensor is especially near ambient temperatures, in this instrument is not mandatory to measure the temperature of the human body, and to an inaccurately expected emissivity. The enterprise basically comprises of a lens to concentration the infrared warm air radiation on to an indicator, which renovates the beaming power to an electrical indication that can be demonstrated in parts of temperature after being remunerated for surrounded temperature. These authorizations to measure the malaise without any contact. A non-contact infrared thermometer is beneficial for gauging temperature under conditions where thermocouple junction or extrareview-kind sensors cannot be cast-off or do not produce precise statistics for assortment of details. Non-contact temperature sensor and Bluetooth module check the temperature of the person and send the data to the microcontroller that allow the dc motor to rotate and help the barricade to give entry to the person inside the room.

B. LITERATURE SEARCH:

Vini Madanet. al.[1]has stated that Detail study of several remote specialist care and regulators chimes have been accessible laterally with the organization grounded on several limits and the enterprise of a GSM- Bluetooth grounded inaccessible one-to-one care and control structure with Instinctive light supervisor has remained projected. This scheme has a benefit of by means of both GSM and Bluetooth skill which thus abolishes the charge of system tradition to an inordinate level by means of Bluetooth once in the variety of few tempi with the plans. The scheme is ascendable and permits any number of dissimilar plans to be additional with no chief vicissitudes in its core. But it is noneffective in conditions which have sturdy real period supplies. The scheme has its

submission in circumstances where the quantity of statistics to be shifted is not wonderful. The application facts and results resolve be obtainable in upcoming exertion. Qingshang Shan, et.al.[2] specified that the model of WTS established in this training is practicable and precise. The skill with Bluetooth and precise classical with Stein-Hart Comparison aimed at WTS are suitable. Even though the influence ingesting upsurges for the malaise device by means of Bluetooth, this upsurge is adequate for an influence basis with automobile cordless. There are IVcharities in this effort for one-to-one care malaises of vehicle freezers; voyager in exploitation Bluetooth, a new example, enhancement on precision and determination of malaise quantities, reducing code scope for a rooted scheme by means of the Stein-Hart equivalence. Upcoming effort is to extramature WTS in intellects with self-adapt, self-authentication and self-reward. Jing Zhang [3]stated that Physiological stricture of physique temperature is the further most significant and elementary anthropological life pointer, and IR thermometer is a new kind of non-interaction thermometer. It has the wild reply, care and extra features likened with the old thermometer. At the similar time, the over-malaise apprehension, LCD show and extrapurposes are intended to kind it extra flawless.After assessment, concluded the temperature trials on dissimilar portions of the body leisurely by IR thermometer and old thermometer, we can realize that the consequences of infrared thermometer are minor dissimilar through mercury thermometer, at the similar time, malaise standards of dissimilar portions of form are unlike. The universal uttered illness is near to the form's malaise. As can be gotten from the bench, the old thermometer is problematic to check the temperature of auricle, brow and other exterior temperature. At the similar period, in the difficult development, there is a malaise modification in the IR thermometer quantity, so it is optional to use numerous extents in the precise usage and to income the regular worth, IR thermometer is normally cast-off for ear check. Agus Sudianto, et. al. [4] stated that This paper presents the development of a smart crushing process temperature measurement system [10] based on MLX90614 Infrared Thermometer attached with Arduino microcontroller. The smart measurement system successfully recorded precise measurement results on AA6041 example with as much as nine times with each time as many as three processes. The measurement results were authenticated for its correctness against the Infrared Fusion Fluke Ti400 temperature sensor. The eccentricity data values of it were very small. It ranges at 0.09 to 0.48 of the deviation scales. The full design and tested MLX90614 Infrared Thermometer well-suited with Arduino form a temperature measurement tool that is acceptable and feasible to be employed by researchers in the field of manufacturing engineering. An automatic temperature measurement system with instantaneous data logging serves as a valuable tool to many researchers in the field of cutting tools for measuring the temperature operation.

C. SCOPE OF PRESENT WORK

After the covid-19 pandemic hit the world temperature scanner has made a key role in daily life, infrared temperature sensor is rummage-sale to perceive the temperature of the physique. The value of old thermometers is inexpensive, the current glitches are as shadows when it is cast-off: Only way to check the temperature from mercury thermometer is to interaction with social body, and malaise quantity procedure essential at least 5 to 10 min, astoddlers is lively, it's easy to read the temperature in this type thermometer but wrongly measured when external light effect on it; old thermometer is laidback to break when impassioned or stowed wrongly. IR temperature device is cast-off detect the illness of body. The dimension misfortune of the old thermometer is evaded. It is expressly appropriate for toddlers and fledgling broods to amount the figure illness, and the checked temperature is presented by the lcd unit, it is correct, and suitable for speech transmission and suitable for the individuals with deprive division.

II. PROPOSED WORK

A. OBJECTIVE

(i) To detect the temperature automatically for entrance usingMLX90614 non-contact temperature sensor and bluetooth device.

(ii) The non-contact temperature sensor detect the temperature of the body automatically at the entrance.

B. PROBLEM FORMULATION

The virus has made a vast effect on the society, the novel limit has been executed as in the number of manipulators allowed in a specific area in offices, shops, etc. to keep public distancing, sideways with social distancing systematic temperature patterned at appearances of malls, the workplace is compulsory. In this plan we kindle a chamber where the essential in domifications occupied, we create custom of anoptical maser diode and handset to sense the arrival of a somebody, once the system perceive appearance, it will crisscross the febricity of the somebody at entrance then the temperature is fewer than the established temperature the somebody is permissible, otherwise the entrance is deprived of. Individual a set limit of person permissible in the chamber. The permitted temperature and person limit are set through a Bluetooth app. My system tries to overcome these problems and limitation. The most important aspect of our automatic thermal scanner systems that it helps for less human efforts. I do not deal with image extraction and its manipulation. No complex segmentation and reconstructions are made here. Apart from the technique temperature sensor is connected with microcontroller along with regulators, laser, doors and LCD and Bluetooth device. The non-contact temperature sensor and the Bluetooth module are the main component of the system. It is castoff to recognize temperature of body and refer the facts to the system that enable the entry of the person if the temperature is low otherwise it denied the entry of the person.

The non-contact temperature sensor and Bluetooth module [21] plays a key role in this system. Laser diode detects the person which come close to the entrance and send the message to the microcontroller and it give the alertness to the dc motor and IR thermometer.

It is based on ATmega328 microcontroller [20]. Pin identification is much easier in this board. When it comes to

stitching, it has more space for that without the fear of accidentally colliding with other pins on board. This project is mainly for recognizing the temperature of the human body in the section consist of it and give a proper platform to it and that can be design the system with the help of the components and we try to overcome from all the problems that come in manually operation while checking the temperature.

C. CIRCUIT EXPLANATION

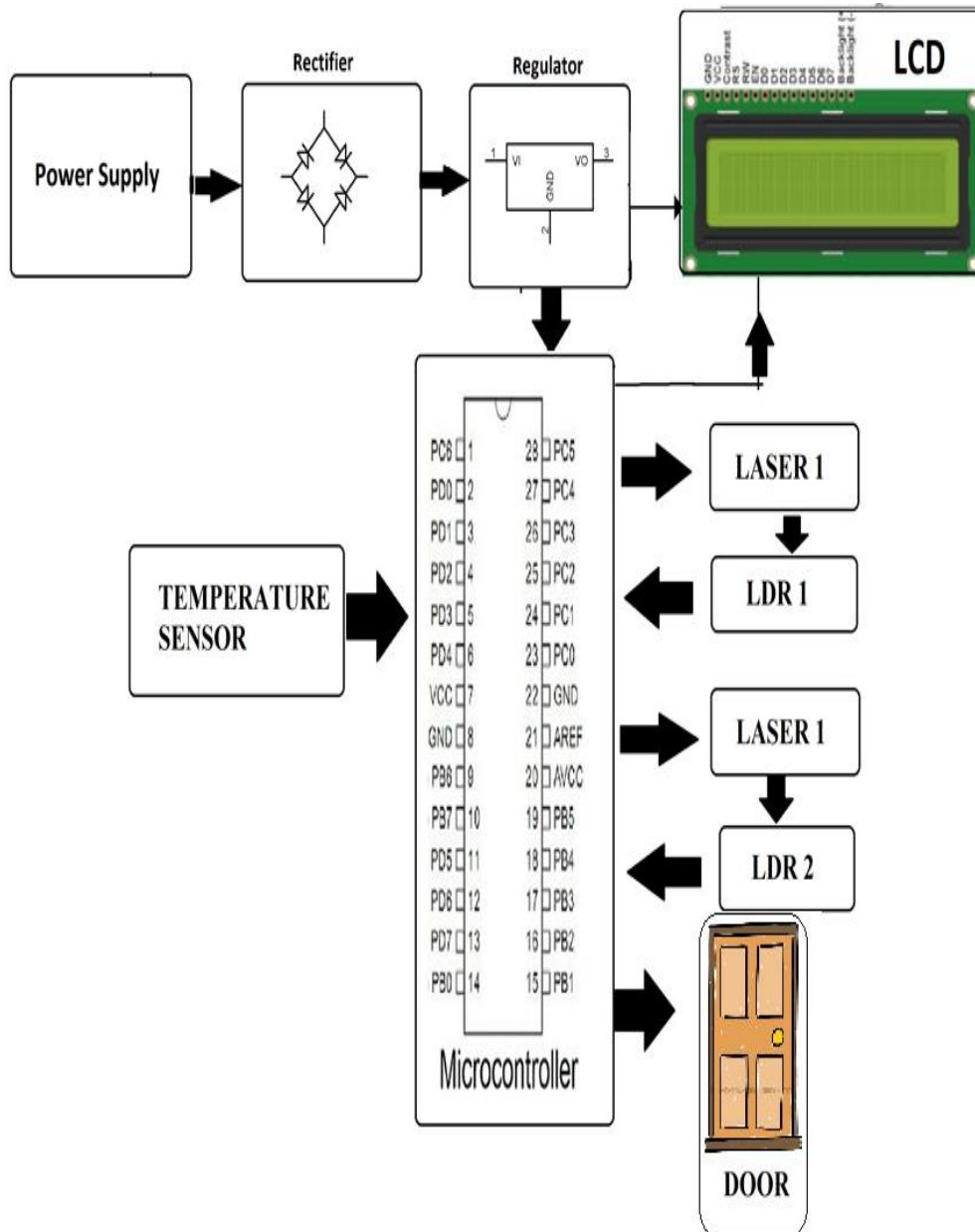


Fig 2.1: CIRCUIT DIAGRAM

In this system we use a different type of components that can help the system to work properly and made work easy. There is a MLX90614 non-contact temperature device which is used to detect the body malaise. A non-contact sensor is a type of body checker which intombed temperature from a serving of the current radiation that occasionally called black body radiation. The design of thermometer comprises of lens to emphasis the infrared light thermometer radiation on to a gauge, which renovates the beaming power to an electrical indication that can be presented in units of temperature after existence remunerated for surrounded temperature. ATmega328p microcontroller is used for a high recital, low influence supervisor from CPU. ATmega328p microcontroller is a 8 bit grounded on AVR RISC construction. This microcontroller comes in arduino which is used to code the program for the system and assemble the other languages. It supports the data up to 8 bits. This microcontroller has a lot of characteristics. The DC motors is used which is the main components used in this system that is connected with the barricade to give entry or restrict the person from entering in the room. It is most commonly actuator for producing continuous movement. When the person come near the gate laser detect the body and infrared thermometer check the body temperature and send it to the microcontroller and they started checking whether the temperature of the body is low or not. Capacitors is used to hoard an electric charge in their plates when linked to a power source. Capacitor is a inactive device that consumes a capability to hoard charge in the method of an electrical charge manufacturing a potential difference transversely its saucers. A capacitor having a 2 or more similar metal plates which are not even linked to each other, but electrically parted by air. LCD is electronically modified optical expedient that practices the light-moderating belongings of fluid crystals mutual with polarizers. LCD do not secreted direct sunlit it shows through using taillight. Reflectors is cast-off to produce image in shade. The resistors is used to generate resistance in the stream of electronic present. The confrontation is leisurely in ohms. Resistance is used to control the electric power in the circuit. Transistors is also used in this system its is used because transistor is a expedient used to intensify or shift electronics signs and electric powers transistors is three terminals semiconducting material used for connection to an peripheral circuit. Its having three terminals base, emitter, collector. Base is cast-off to active the junction transistor, collector is the self-assured main of the transistor, emitter is the undesirable chief of the transistor. Bluetooth module HC05 is module that connect with the system and allow the connection between the Bluetooth application and system. Bluetooth [13]

is connected with the successive haven of a microcontroller, which permits the microcontroller to connect with additional device concluded a Bluetooth linking. This Bluetooth component can be used popular various application then itself run on both master and slave mode. This module get precise via transmitter and receiver pins and provisions the custom of AT guidelines. For this project HC05 is very casual module which canister be add two technique wireless function to the system. we may be custom this unit to interconnectamongst2 microcontrollers similar arduino or interconnect by slightly expedient with Bluetooth objects like mobile or supercomputer. Its also use for data logging application. The main purpose use of Bluetooth module is for data logging in the system. Diode is that electronic module that behaviors current mainly in uneven conducting.

BLOCK DIAGRAM OF VOLTAGE REGULATOR:

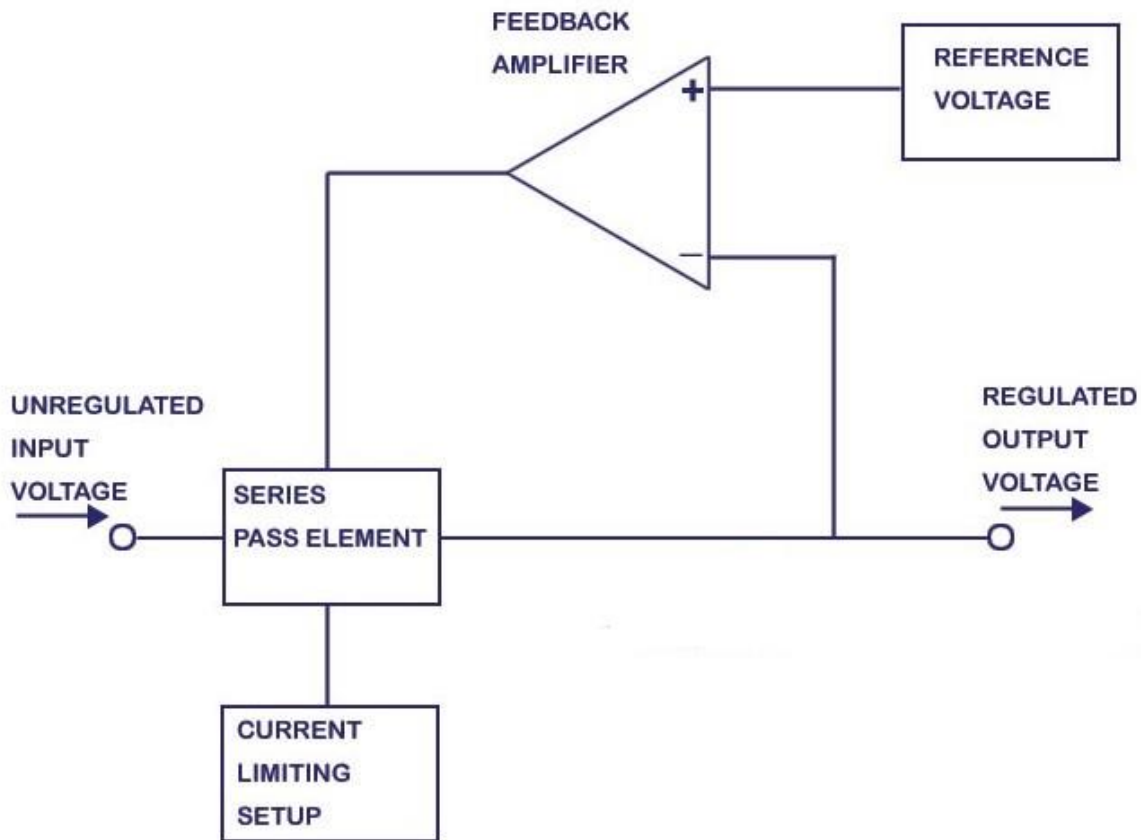


Fig. 2.2: Block Diagram of Voltage regulator

III. FINDINGS, RESULT DISCUSSION, DATA INTERPRETATION FOR CONTACT LESS TEMPERATURE MONITORING SYSTEM

A. GENERAL

In the automatic temperature detector, I have a microcontroller-based circuit. The circuit consist of MLX90614 non-contact temperature sensor, voltage regulator IC, Atmega328p microcontroller, DC motor, capacitor, transistors, PCB, transformer, buzzer, IC socket, Bluetooth, LCD display IC, resistors, diodes, LED, push buttons. Firstly, when the human body comes near the temperature sensor, it detects the temperature of the body and direct the gesture to the microprocessor it also consists the basic of the LDR laser is connected with microcontroller and DC motor which is having a barricade which allow the person inside the room if the temperature of body is low. We also have the Bluetooth device which is used to set the temperature and room capacity. We also have the lcd demonstration which is castoff to show the

malaise and utilization in the room. Voltage regulator is used for controller and regulate the current in the circuit as per need, whether the capacitor is used to store the charge, and hence the sensor when detect the temperature it happens.

B. WORKING, PROPOSED SYSTEM AND SOFTWARE

According to the projected system, I have intended the structure revealed in the circuit diagram. I have considered the perfect in such a method that its canister be reserved at a door of room. There is a portion of apparatuses and lines that I have used for the system. This is done in the easiest and low cost as possible. Though, the structure is hard and canister be modified by the operator. Altering one of the apparatuses setups takes to be well-suited by the right software program available. Each component castoff in this is tested besides correct with no error in it. Each component is connected with each other no component is separated from other.

The software of the system proposed consists of mainly the Bluetooth software. Bluetooth is that device which is used to connect different type devices in different manner. The

Bluetooth RF radio transmitter the whole thing in unrestricted ISM group centered at 2.4 GHz (the similar variety of regularities used by warms and Wi-Fi). The main structure services a recurrence-leaping radio transmitter to struggle intrusion and declining. Bluetooth components are accomplished by means of an RF network topology recognized as a "star topology." A cluster of plans coordinated in this way forms a derivates piconet, which whitethorn comprise one main and up to 7 energetic slaves, with added strives that are not aggressively contributing in the system. The corporal station is also used as a transference for one or additional reasonable

associations that sustenance synch Ronaland nonparallel traffic circulation as glowing as transmission circulation. Each kind of connection has a precise habit. Aimed at occurrence, synchronic circulation is cast-off to convey arrows allowed audio statistics, while nonparallel traffic may transport other methods of data that can resist more capriciousness in the effectiveness for transfer, such as photogravure a folder or harmonizing your chart amongst your mobile and processor. Bluetooth HC 05 device is used to join with it.

INPUT

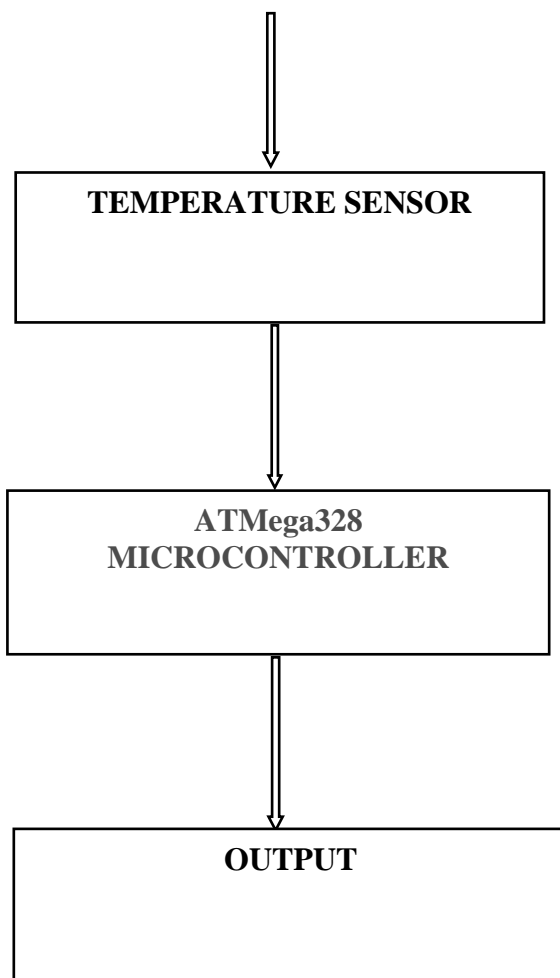


Fig 3.1: Experimental Setup of Temperature Monitoring System

The system works as a sensing the temperature of the body at various places. The input is given to the system through the temperature sensor and LDR ,laser both are connected to the various components it helps the system to work properly. Having, the different submissions that are generally used in

dissimilar form that can be used. In the contact-less temperature sensor the software that are used is Bluetooth application software that is used for data logging in the system and set the limitations in room which allow the persons inside the room.

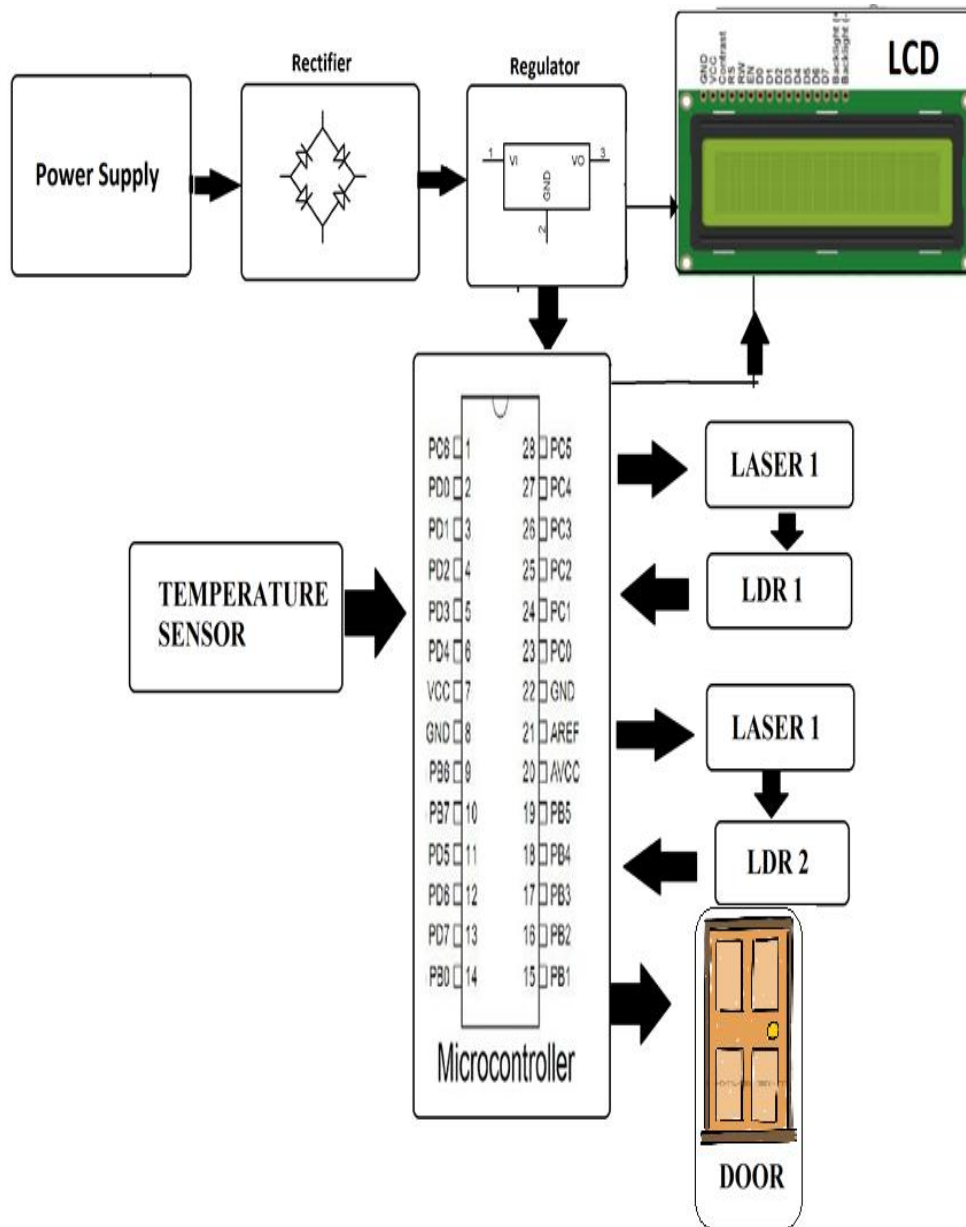


Fig.3.2 Circuit Explanation

From time to time, there is an error while reading the temperature this is due to reflection in hotter body to a wrongly supposed absorptivity. The enterprise basically comprises of a lens to emphasis the infrared current radiation on to a sensor, infrared thermometer coverts radiant power to an digital unit and display it in thermometer. This allow temperature quantity from a reserve without interaction with the entity to be restrained. A non-contact infrared thermometer is beneficial for gauging temperature under conditions where thermoelectric or other probe-type beams cannot be used because they do not produce precise data for an assortment of motives. There are some different type of condition where the object is measured

are in moving condition, and the moving object is enclosed by electromagnetic field, as in initiation heating; where the entity is confined in an emptiness or alternative precise ether; or in applications wherever a fast rejoinder is compulsory, the correct superficial temperature is selected or the entity temperature is overhead the suggested use opinion for contact devices, or interaction with a beam would bar the entity or the device, or introduce a substantial temperature rise on the object's superficial. LCD is connected with the voltage regulator and microcontroller that it can take data from both side and that should be done very carefully and that help the system to work the perfectly. The laser and LDR are connected

to the door that are allow the body to enter in the room. The Bluetooth module HC05 is the key components which is connected externally to the circuit and helps the for-data logging and which is connected to microcontroller and then the structure having a infrared temperature checker which are generally show the data of the body and allow the form of the figure to different path and can be possible of the value in the system.

IV. CONCLUSION

The goal of my project is to stop spreading of disease at various places because this system is placed at the entrances of different places. Having, a non-contact temperature sensor at the entrance of room, mall, railway stations, airport, etc. The system was trained and tested for multiple users successfully. The proposed system has an advantage of low power consumption, simple hardware and temperature sensor is automatically to use and don't to handle it, it just placed at entrance and work is done to operate it. In this thesis, the IR temperature extent component for the measurement of physique temperature, the extent of the outdated contact thermometer is evaded, it is chiefly appropriate for measurement body malaise for babies and early children. The leisurely temperature is presented concluded the LCD component, and it takes the purpose of speech transmission, it can be castoff by the chap of deprived vision. Non - contact extent, measure rapidity is rapid, the body temperature is leisurely in the higher stream of individuals (such as positions, terminals, etc.). Non-contact temperature sensor which is attached with the laser and LDR microcontroller IC can be operated genteelly and which is tested many times. This system can be use in future and it has many future scopes.

V. FUTURE SCOPE

The next phase for the automatic temperature detector for entrance using Bluetooth devices souk will arise grounded on a rare key enhancement in the skill obtainable in sensor, this system is not only for the covid but also for the various like Ebola virus and Swin flu. There are some improvements in temperature sensor, in normal sensor you have to take it in hand but in this sensor, you have to just placed at entrance of any place

1. Large gathering places like railways, airport, mall entrance, it will help there a lot to stop spreading the virus.
2. Solutions contributions will gradually interchange to an added accessible enterprise, where sideways from a rare

key gear, user will be gifted to buy and usage the sensor things themselves without the help of any practical proficient.

3. Some distant countries has already implement's this technology to stop the spread of different type of viruses.

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