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DEVELOPMENT OF IOT BASED HEALTH MONITORING SYSTEM INCLUDING COVID

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ABSTRACT: Monitoring and Recording of various medical parameters of patient outside hospitals has become Widespread phenomenon. Many innovative applications with mobile phones were implemented apart from the conventional voice data transfer. Health monitoring system is designed in this paper for monitoring the patient's body at any time using internet connectivity. The function of this system is to measuring biological parameter of the patient's body like Temperature, Heartbeat, Oxygen, by using sensors and the sensors will sense the body temperature, heartbeat and oxygen of the patient and sends the values to system. When the heart beat increases then automatically buzzer will be ON and give indication and send SMS and tracks location to the corresponding phone number. When the temperature sensor exceeds the threshold level then automatically the buzzer will be ON and give indication and send SMS and tracks location to the corresponding phone number. At last when oxygen level sensor detects the less percentage of oxygen in the environment, then by using stepper motor ventilator will be ON and send SMS and tracks location to the corresponding phone number. Hence by using this paper effective result is obtained.

KEY WORDS: Health Monitoring System, Buzzer, Temperature Sensor, Heart Beat Sensor, Oxygen Level Sensor, Stepper Motor, GSM, GPS, RS-232.

I.INTRODUCTION

A patient may enter it direct, either by forming into fields or moving/transmitting data from a record or another site. The second is the time when the Personal Health Monitoring System is affixed to an electronic prosperity record, which subsequently invigorates the personal health monitoring system. Not all personal health monitoring systems have comparable limits, and individual personal health monitoring systems may support one or these techniques [1].

However, putting away a person's close to home wellbeing data, some personal health monitoring systems give included worth administrations, for example, tranquilize medicate cooperation checking, electronic informing among patients and suppliers, overseeing arrangements, and updates.

The data will be accessed by the personal health monitoring system and in the same way it will secure the data in effective way. Generally, to provide security for the data which is transformed, attribute based encryption process is introduced. Here for the owner and the user some private keys are generated [2]. By using this keys the both owner and user will be protect the data which is transformed. This system consists of complexity which is manageable in the linear way.

But in some cases high complexity is obtained to solve that one new management security domains are introduced to both user and owner. There will be a personal domain to both the user and owner for better communication. Some authorities are provided to the user and owner which are attributed

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systematically. This attributes are governed by the users from the distribution form. Hence there will be security provided for the information which is travelling between user and owner.

In personal health monitoring system framework model, there are different proprietors who may scramble as per their very own particular propensities, perhaps utilizing various plans of cryptographic keys. Enabling every client to get keys from each proprietor. Personal health monitoring system is to investigate would restrain the responsiveness since patients are not generally on the web. An option is to utilize a focal position to do the key the authorities to help all personal health monitoring system proprietors, in any case this requires a huge amount of trust on a solitary control (i.e., cause the key escrow issue) [3].

Key escrow (generally called a "sensible" cryptosystem) is a plan wherein the keys expected to unscramble mixed data are held fortified so that, in explicit circumstances, an affirmed outcast may get to those keys. These untouchables may fuse associations, which may require access to delegates private trades, or governments, who may wish to have the choice to see the substance of mixed correspondences [4-5].

II.BACKGROUND

S. J. Jung and W. Y. Chung thought about the Flexible and adaptable patient's prosperity watching. The standard favored stance of this enabling element is the mix of a couple of advancements and trades course of action. The delayed consequences of Internet of Things are synergetic activities aggregated in various fields of learning like media interchanges, informatics and equipment.

K. S. Shin and M. J. Mao Kaiver mulled over a cell phone based prosperity watching system with self examination which unites IoT another perspective that uses wise things which are not only prepared for get-together the information from the earth and coordinating the physical world, yet furthermore to be interconnected with each other through web to exchange data similarly as information.

Gennaro tartarisco and Tabilo Paniclo had concentrated a Maintaining identifying consideration and accessibility in enormous sensor arranges prevalently fuses the information about how to develop or develop another computational advancement subject to clinical decision genuinely strong systems, information getting ready, remote correspondence and moreover data mining kept in new premises in the field of individual therapeutic administrations.

Cristina Elena Turcua pondered Health care applications an answer reliant on the Internet of Things study intends to display a point by point information about how radio repeat ID, multi-authority and Internet of Things advances can be used to make and improve people's passageway to quality and therapeutic administrations organizations and to upgrade the human administrations process.

Gubbi, Jayavardhana, Buyya, Rajkumar, Marusic, Slaven, Palaniswami, Marimuth thought about the Internet of Things (IoT): A fantasy, designing parts, and future course which proposes on enthusiasm arranging and following structure. It relies upon Global Positioning enabled contraptions and sensible for sweeping conditions. Propelled cells between two terminals are utilized for making

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beginning correspondence. The fundamental correspondence is performed by synchronization arrange.

Reza S. Dilmaghani in their assessment found the structure of Wi-Fi sensor sort out that is fit for watching patient's consistent sicknesses at their home itself by methods for a remote checking system. So immerging of remote sensor innovation singular test like just circulatory strain, pulse, temperature and so forth can be estimated however this exploration venture empowers this parameter together to be estimated under single framework, and furthermore accordingly all can be worn by understanding and prepared information send toward web through Internet of things (IOT).

III. PROPOSED SYSTEM

The below figure (1) shows the block diagram of proposed system. In this ARM7, Heart Beat Sensor, Temperature sensor, Oxygen Sensor, Stepper Motor, Buzzer, LCD Display, crystal oscillator, RS-232. GSM and GPS are used. When the heart beat increases then automatically buzzer will be ON and give indication and send SMS and tracks location to the corresponding phone number. When the temperature sensor exceeds the threshold level then automatically the buzzer will be ON and give indication and send SMS and tracks location to the corresponding phone number. At last when oxygen level sensor detects the less percentage of oxygen in the environment, then by using stepper motor ventilator will be ON and send SMS and tracks location to the corresponding phone number. The description of each component is given below.

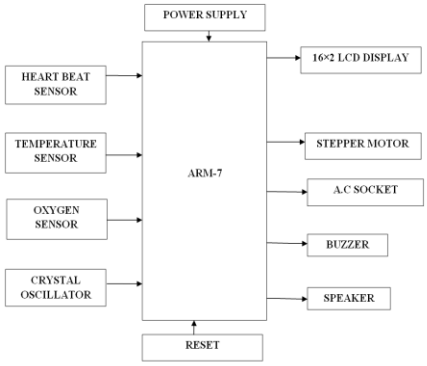

Fig. 1: PROPOSED SYSTEM

TEMPERATURE SENSOR

The internal heat level can be controlled by putting sensor in contact with body. In the blueprint the internal heat level sensor is used LM35.The LM35 is pickiness consolidated circuit temperature sensor, whose yield voltage is legitimately to the Celsius (centigrade) temperature. It can measure temperature accurately than the thermistors and it have low self-warming limit.

POWER SUPPLY

A power supply is an electrical device that arrangements electric ability to an electrical weight. Here 5V is given from the power supply section to all components.

HEART BEAT SENSOR

Heartbeat sensor gives a clear strategy to consider the limit of the heart which can be assessed subject to the rule of psycho-physiological banner used as an overhaul for the PC produced reenactment system. In order to register the beat subject to the circulation system to the fingertip, a heartbeat sensor is amassed with the help of LM358 OP-AMP for checking the heartbeat pulsates.

BUZZER

The main intent of buzzer is to give indication when the person is in need. In this paper when the heart beat sensor is

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varied then the buzzer will be rang automatically as an indication.

OXYGEN LEVEL SENSOR

The MQ-135 gas sensor senses gases like ammonia nitrogen, oxygen, alcohols, aromatic compounds, sulfide, and smoke. MQ-135 gas sensor can be implemented to detect the smoke, benzene, steam, and other harmful gases.

GSM

Global System for Mobile Communications (GSM) modems are specific kinds of modems that work over membership based remote systems, like a cell phone. A GSM modem acknowledges a Subscriber Identity Module (SIM) card, and essentially acts like a cell phone for a PC. Such a modem can even be a devoted cell phone that the PC utilizes for GSM arrange capacities.

RS-232

RS-S232 is a standard convention utilized for sequential correspondence, it is utilized for associating PC and its fringe gadgets to permit sequential information trade between them. As it acquires the voltage for the way utilized for the information trade between the gadgets.

ARM

The LPC2148 microcontrollers are engaged around a 16-piece or 32-piece ARM7TDMI-S CPU with consistent emulating and embedded follow help, which combine microcontroller with embedded high speed streak memory stretching out from 32 kb to 512 kb. A 128-piece wide memory interface and stand-out stimulating specialist building configuration enable 32-piece code execution at the most extraordinary clock rate. For segregating code size applications, the alternative 16-piece Thumb mode diminishes code by in excess of 30 percent with immaterial execution discipline.

GPS

The Global Positioning System (GPS) is a U.S. space-based worldwide route satellite framework. It gives solid situating, route and timing administrations to overall clients consistently in all climate, day and night, anyplace on or close to the Earth.

V. RESULTS

The below figure (2) shows the basic circuit diagram of proposed system.

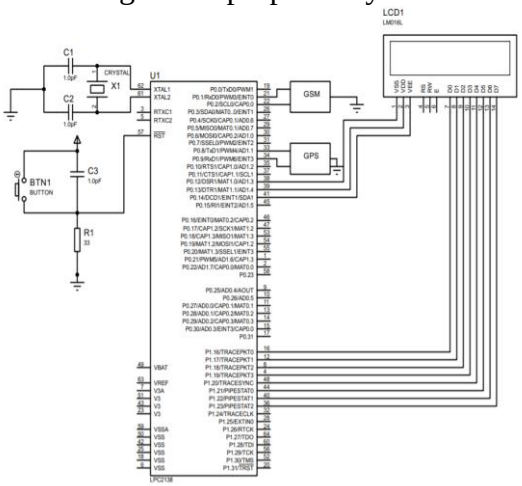

Fig. 2: BASIC CIRCUIT DIAGRAM

The below figure (3) shows the complete circuit diagram of proposed system.

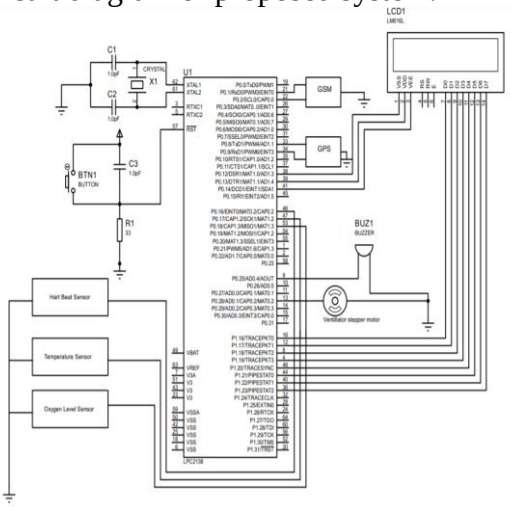

Fig. 3: CIRCUIT DIAGRAM OF ADVANCED PATEINT HEALTH MONITORING SYSTEM

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The below figure (4) shows the circuit diagram when oxygen sensor is activated.

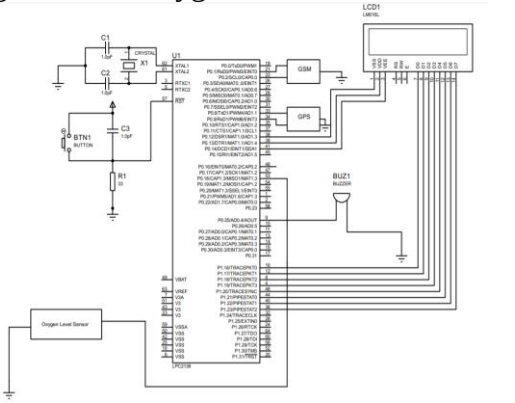

Fig. 4: WHEN OXYGEN SENSOR IS DETECTED

The below figure (5) shows the circuit diagram when heart beat sensor is detected.

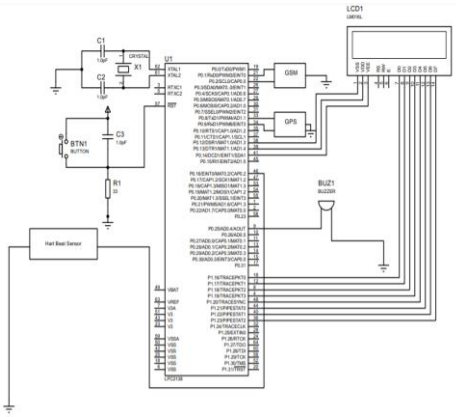

Fig. 5: WHEN HEART BEAT SENSOR IS DETECTED

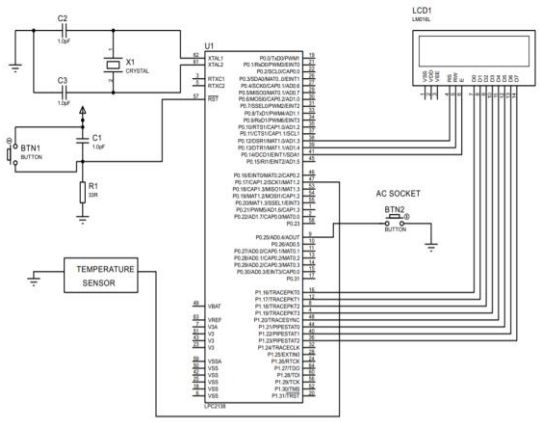

Fig. 6: WHEN TEMPERATURE SENSOR IS DETECTED

VI. CONCLUSION

In this paper, the development of IOT based health monitoring system including covid is implemented. We have outlined the main components of the proposed system and explained their implementation detail. This current designed system provides low Complexity, low power consumptions and highly portable for health care monitoring of patient's and it can eliminates the need of utilization of expensive facilities.

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