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REMOTE HEALTH MONITORING USING ANDROID APP

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OBJECTIVE:

Itis accepted that telemedicine is the use of advanced communication technologies and methods to exchange vital information.The main objective of our project, is to device a set up, which is integrated in order to help the aged people during the time of medical emergency situations using Internet of Things (IoT).

ABSTRACT:

Health care applications which uses IoT base are being increased day by day in collision with sensors. IoT healthcare system works on existing wireless sensor networks, embedded device technologies etc. The recent scenario all around the globe is monitoring health parameters continuously and accurately. Devices which continuously records patients' vital parameters, used in this paper are sensors. This paper explains about certain physiological parameters that can be analyzed with the help of them on patients from either remote areas or urban cities. Following are the parameters, a) Temperature, b) Blood Pressure, c) Heart Beat Rate, d) ECG, e) Pedometer, f)GPS ,g)Accelerometer

The sensor output is kept in track with the help of ESP8266 Wi-Fi module, which transfers data from sensor output to an online IoT platform coined "ThingSpeak". ThingSpeak software is applicable for both computers and smart phones, it is also paired with an androidapplication called,"ThingView" which can be installed from Google play store. ThinkView assists to help the user or the doctor to visualize the data with a smart phone. Each time it is refreshed, it shows the sensors' output data at that instant.

INTRODUCTION:

Healthcare system are facing new challenges due to the increasing elderly population and due to increase in medical facilities. According to the Census, the number of old people is predicted to double from the millions by 2025. Furthermore, overall healthcare facilities was trillion during 2000, and this number is projected to be double by 2020, which is equivalent to 20% of the gross Domestic Product. The impending health crisis attracts economists, peoples towards optimal and quick health facilities or solutions. The online health monitoring of patients data with real time updates of medical register via the problems health care system.

Many of the healthcare systems in today's life are not much reliable. Nowadays,internet has influenced people to develop on all platforms at

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a greater extent. Our project "Remote Health Monitoring Using Android application" will provide the online healthmonitoring to the patient. Doctors can check the completedetails of patients from remote location and canrecommend suitable medication.

To monitor the patients in their natural environments is not practical possible when devices or sensors are connected through a wire that is why we use android application that is associated along with the sensors which saves the patient data and can be visualized whenever necessary. This technology can provide very cheaper, easier and quick respondent history of patient.

LITERATURE REVIEW:

There are various techniques which are available, through which doctors can check a patients' health conditions. But the most classical method followed is the manual method (i.e.) by mercury thermometer and sphygmomanometer. The well known existing disease that reflects death in human life is Heart attack, which could be detected through various means. The traditional method followed was placing their fingers on wrist. Initially the measurement of heart rate were assisted by wearable techniques, this served a disadvantage of uncomfertness for the patient.ECG, then served a main purpose of signaling the heart rate wave on a computer screen or an oscilloscope also called PQRS wave. Then an advancement arrived by placing the miniature of the medical set up or sensors within wristwatches or wristbands. This would automatically sense the pulse rate and intimate the patient. Also mobile phones with flash were able to count the heart rate.

PROPOSED SYSTEM:

TEMPERATURE MEASUREMENT:

Now-a-days any unusual disease is characterized by increase in body temperature. Normal body-thermometers are available, whereas the accurate temperature reading can be obtained by digital thermometers. The normal human body temperature range is 37 degree Celsius (or) 98.6 degree Fahrenheit. In this paper the determination of body temperature is done by digital thermometers and the output data is manually entered via 4*4 matrix keypad, the output is visualized with 16*2 LCD - display.

Fig. 1, Digital Thermometer

PRESSURE MEASUREMENT:

Many people are affected by Heart Diseases due to the variation of blood pressure according to their surrounding and circumstances. They may be affected from either high or low blood pressure level. Blood Pressure is a vital parameter that has to be obtained for each patient. This paper utilizes digital sphygmomanometer to obtain pressure values. The acquired data output is also entered

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manually to the LCD display using 4*4 matrix keypad and the patients are updated with their blood pressure when they are physically present. The value is displayed on LCD.

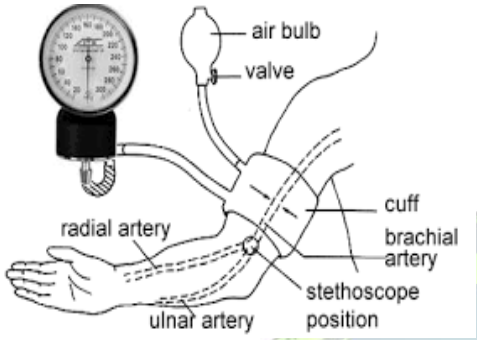

Fig. 2, Manual Sphygmomanometer

The readings of temperature and blood pressure are obtained manually and the data is fed to the display via appropriate programming codes.

HEART BEAT RATE:

The heart rate usually varies from people to people based of age factors and also physical fitness. Heart Beat might reach a larger value during anxiety, high blood pressure and also during exercising. The usual count of heart beat ranges around 60 -100 based on the persons' intrusion at that instance.

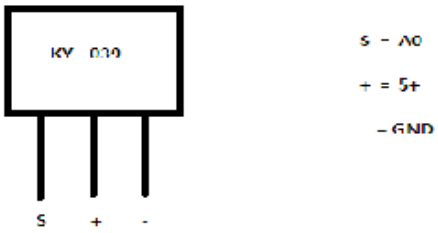

Fig. 3, Heart beat module

Health experts obviously place their fingers on the patients wrist to find pulse rate, Heart Rate module KY-039is employed in this paper to estimate the heart rate. The code is written accordingly, which uses ESP8266 Wi-Fi module in order to transfer the output data from the hardware module to online platform - ThingSpeak. The patient will be notified with his heart beat in the mobile application ThingView. Each time the user refreshes his page he gets the consolidated value of heart rate in a graphical form. [6] discussed about an eye blinking sensor. Nowadays heart attack patients are increasing day by day."Though it is tough to save the heart attack patients, we can increase the statistics of saving the life of patients & the life of others whom they are responsible for.

KY- 039 uses Infra Red LED and Photo-Transistor to detect pulse from the quantity of blood flowing through the finger.

ELECTROCARDIO GRAM:

The electrical activity of a human body is detected by Electro Cardio graph. If any abnormality is detected, the patient is treated appropriately. The conventional method of identifying the traces of ECG is by using electrodes along with electrode gel to fix them in the human body. Even minute variations are recorded by ECG; this image is called as Electro Cardio Gram. All heart patients are advised to undergo a test initially, if any varied results are obtained, the disease is treated.

ECG module AD8232 which is available at stores is used to determine the output data. The module comprises of three electrodes one as

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reference electrode one electrode for left arm and one for right leg. The output in is connected to the analog pin of ESP8266 that displays the pulse as a waveform- data varying according to the individual. ESP8266 board is loaded with the program; therefore the information is fed to the online platform- ThingSpeak. The same output can be monitored by the doctor who is present far away from the patient.

PEDOMETER:

Pedometer is a device which determines the number of steps taken by a person. Now-a-days, young people are more concerned towards their physical fitness and most importantly women- about losing weight. Pedometer helps them to perform it in more easier method. Pedometer is a portable device which can be even affixed to the patient. A healthy, physically fit human is accounted to take 10,000 steps which is equivalent to 8 km per day.

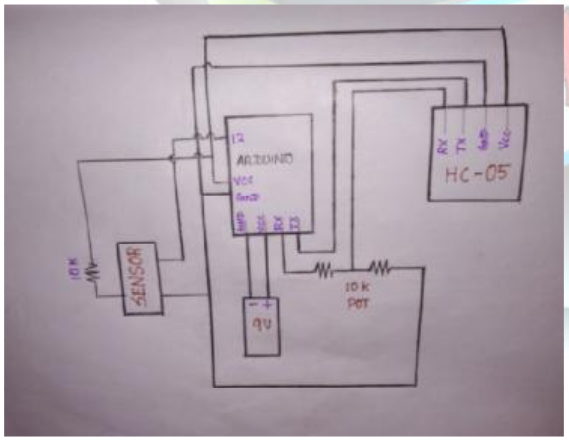

Fig. 4, Pedometer circuit connection

Pedometer in this paper is designed without an accelerometer. Instead, a sensor is made using aluminum foil sheets and cardboard. Three connections are made where one lead goes to supply other o ground and the central pin is taken as output along with a resistor. The output is sent to ThingSpeak through the Wi-Fi module ESP8266. It is advised that the person must place the feet properly on the sensor respectively. Hence the sensor plays the important role of interpreting the accurate output.

IOTSERVICES:

IOTFOR ANDROID APPLICATION:

Internet of Things is an expanded form of internet in many networks, together to serve many applications. IoT has its influence in industrial environment, domestic environment etc., The connectivity between various platforms are brought together by IoT.

Mobile phones are enabled with large connectivity over decades. Connectivity's such as Bluetooth, WI-Fi, Mobile data etc., are built in within the smart phones. This has a great role to play in future advancements. The growth of mobile applications is at its high pace. Lot of opportunities is being provided to users for developing an android application may be for industrial or educational purposes.

IOTON INSTRUMENTATION:

Sensors are employed for wide range of applications in instrumentation science. Sensors are most cost effective also they need less quantity of supply to work. Therefore it is very efficient. IoT works effectively with sensors by retrieving data from the sensors and storing them online. Each sensor is given certain code for

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coherent operation of the same. The code must be executed for accurate output.

ESP8266Wi-Fi Module:

ESP8266 is a hardware module which connects the total hardware for the interpretation of the hardware's' output on the online platform. It is a low cost microcontroller. The chip is enabled to be programmed by any user through software development kits, certain kits are open source. Such an open source kit is NodeMCU.

Fig. 5, NodeMCU module

NodeMCU is integrated with GPIO; PWM; IIc 1 wire and ADC all in a single board. The power source to ESP8266 – NodeMCU is given from USB cable.

ThingSpeak:

ThinkSpeak is a cross field online platform where the data can be monitored and reviewed. API keys are provided to everuser in order to read and write the Interpreteddata.

To get started with ThingSpeak, Create an account in ThinkSpeak and click on new channel. Create your own channel. You can choose the number of fields according to the users requirement. Save the channel. If any changes has to be done, again visit My Channel here you can change the settings. Channel id and the API keys are written without fail.

The monitor screen will show the corresponding output based on sensor input. The functioning of this platform requires a very good local area network for quick response of the hardware.

ThingView:

Similar to ThingSpeak where the output is analyzed in PC screen, ThingView is a mobile application that transfers the same data in a smart phone. The major requirement for its working is that – the smart phone and the circuit code execution s done with the same LAN. The application requires two important entries to get on working stage:

1) Channel id 2) API key.

If both Channel id and API key match along with Thing Speak, the data can be visualized in the smart phone. The output will be saved in the smart phone application which can be monitored at any time instant.

WORKING OF THE HARDWARE:

Temperature output and Blood Pressure output are displayed on the LCD by entering them with the help of 4*4 matrix keypad. The two working modules are connected to the Wi-Fi module adjacently. They are programmed in Arduino IDE. The suitable libraries required are installed from manage library. They are ESP8266 NodeMCU library and ThingSpeak libraries.

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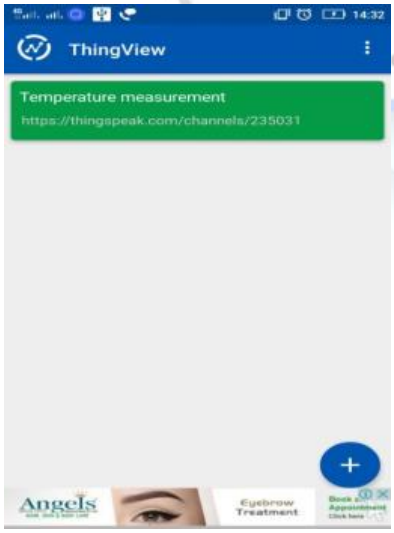
These two header files are included and the corresponding code is written under void setup() and void loop() functions.

Hence the obtained response of human physiological parameters are viewed in the system, ThingSpeak as well as a mobile application ThinkView.



CONCLUSION:

In this paper, a novel ubiquitous healthcare monitoring system has been designed and developed based on Android platform. It is convenient for users to use this system to connect smart phones, monitor screens. The system can also extract more informative results such as Temperature, Blood Pressure, Heart Beat, Pedometer display and store health data for users.

REFERENCES:

1).Nathan M Kesto for the study of Electrocardiography Circuit Design

2).AmolWanjari, Madan Mali ME Student, dept. of E & TC, SCOE, Pune, India Head, Dept. of E & TC, SCOE, Pune, India on Remote Health Monitoring & Reporting System.

3).Sreekanth K U PG Scholar Nitha K P Asst. Professor Department of Computer Science &EngineeringVidya Academy of Science & Technology (VAST) Thrissur, India

4).Sowmya G , Sandeep B Student, Department of Information Science and Engineering, MS Ramaiah Institute of Technology, Bangalore, India Asst. Professor, Dept. of Information Science & Engineering, MS Ramaiah Institute of Technology, Bangalore, India

5).Wesley Nguyen and Ryan Horjus for the implementation of Heart-Rate Monitoring Control System Using Photoplethysmography (PPG) .E.MuthuSundharaPandiyan, M.ThamaraiSelvan, M.SadhamHussian and Dr.G.Velmathi, Velammal College of Engineering and Technology, Viraganoor, Madurai, for the study of Force Sensitive Resistance Based Heart Beat Monitoring For Health Care System.

6). Christo Ananth, S.Shafiqa Shalaysha, M.Vaishnavi, J.Sasi Rabiyathul Sabena, A.P.L.Sangeetha, M.Santhi, "Realtime Monitoring Of Cardiac Patients At Distance Using Tarang Communication", International Journal of

ISSN 2394-3777 (Print)
ISSN 2394-3785 (Online)
Available online at www.ijartet.com

International Journal of Advanced Research Trends in Engineering and Technology (IJARTET)
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Innovative Research in Engineering & Science (IJIRES), Volume 9, Issue 3,September 2014,pp-15-20

7).Bandana Mallick. Ajit Kumar Patro, GIET, Gunupur, Odisha, India for HEART RATE MONITORING SYSTEM USING FINGER TIP THROUGH ARDUINO AND PROCESSING SOFTWARE.

8).Naazneen M. G., SumayaFathima, SyedaHusnaMohammadi, Sarah Iram L. Indikar, Abdul Saleem, Mohamed Jebran Department of Electronics & Communication Engineering, HKBKCE, VTU, Belgaum on the paper Design and Implementation of ECG Monitoring and Heart Rate Measurement System.

9).Denis aure, IlyaParamonov, P. G. Demidov Yaroslavl State University Yaroslavl, Russia from the paper ImprovedAlgorithm for Heart Rate Measurement Using Mobile Phone Camera.CC