International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 06 Issue: 07 | July - 2022 Impact Factor: 7.185 ISSN: 2582-3930

Heart Beat Monitoring and Disease Analysis

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Abstract: This topic portrays a heartbeat sensor system with a database connection to the hospital which might be a part of a project called heartbeat sensor for the hospital management with database connection. The database stores the whole details of the patient which enables the doctor to watch the patient accordingly via the offline. The heartbeat sensor device with a database links to the hospital network is beneficial to patients and also the community where the introduction of such a tool can reduce the chance of the patient likewise as save hospital bills, waiting time and reduce hospital traffic. Wireless sensors for heart rate and temperature are incorporated within the proposed health program but this paper focuses only on heartbeat sensors for hospital management with a database communication system. Arduino is that the primary element that's convoluted during this project. This paper highlights the sensor health monitoring system which establishes a selection model for sensor automation to search out the smallest amount, cost-effective sensor component and builds an energy-efficient, automated detection scheme supported the sensor selective method.

Introduction: It acts as a pump that circulates the blood, carrying oxygen and nutrients within the body to stay it functioning.

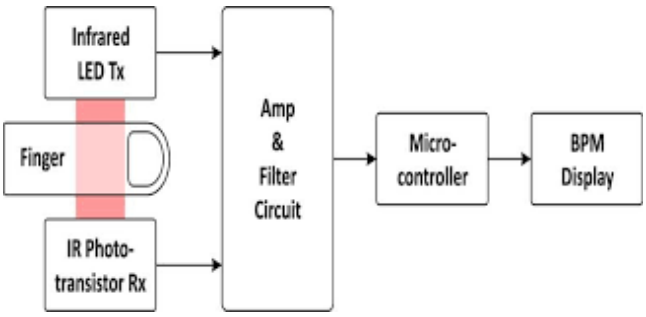
A few intense sicknesses and problems for instance coronary cardiopathy wishes close and continual monitoring technique after prognosis, if you would like to save lots of mortality or in additionally damage as secondary to the mentioned diseases. Monitoring those types of sufferers, commonly, arise at hospitals or healthcare facilities. Heart arrhythmias for instance, in many cases, want chronic lengthy-time period tracking. However, the patients are regularly too early released, because to want of sanatorium bed for any other patient at the waiting listing, who must be hospitalized right away.

Today, several advanced methods have emerged in the field of medicine, which aim to improve the efficiency of the medical services provided by the Department of Medicine, the Department of Surgery, the Department of Coronary Heart Disease Management Department and the Department of Drugs. And these new methods are corresponding to a technical identification of the disease with high precision, a brand new radiological technology and a fashionable identification of medical health. Within the medical department, several studies are underway to provide the latest technologies. It also provides this information via Bluetooth and exposes it within the Arduino application platform to make sure the knowledge isn't corrupted and recalled on demand.

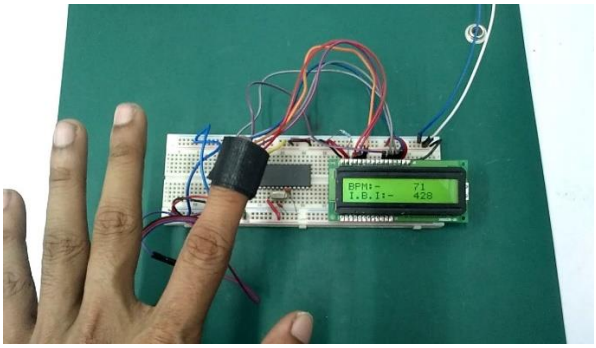
Methodology:

1. System Architecture: Our development system is split into two: Hardware and Software parts. The hardware module is embedded on Microcontroller.

Microcontroller is the most control of all the operations of the hardware components. GSM module acts as an intermediate between the sensor and therefore the smartphone, providing a two-way communication, and connects the hardware and software modules of the system to the Android.



2. Hardware Design: We've got assembled the hardware and electronics needed for this project. A number of the components needed for installation are Arduino Uno, Bluetooth module, Pulse Sensor, LED screen and USB cable.



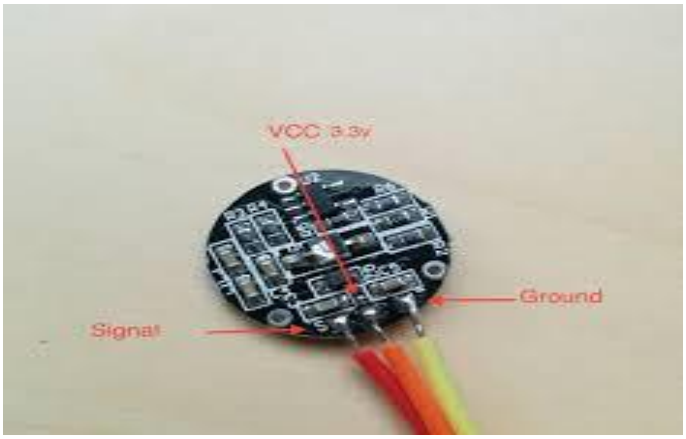
the module of the Microcontroller circuit which may be a media interface for data digital communication between the Arduino Uno and smartphone in an exceedingly real time. The brief description as follows:

- Pulse the sensor may be a sensor to detect heart rate disturbances which will be forwarded to the Arduino Uno Microcontroller.
- Arduino Uno Microcontroller, functions as a controller processor which is accommodate vital sign detection results by pulse sensors.

a) Arduino: The 8051 Microcontroller was designed in 1980's by Intel. Its foundation was on Harvard Architecture and was developed principally for bringing into play in Embedded Systems. Initially It absolutely was created by means of NMOS technology but as NMOS technology needs more power to function therefore Intel re-intended Microcontroller 8051 employing CMOS technology and a brand new edition came into existence with a letter 'C' within the title name, for illustration: 80C51.

These most up to date Microcontrollers need fewer amount of power to function in comparison to their forerunners(Agarwal 2014).There are two buses in 8051 Microcontroller one for program and other for data. As a result, it has two storage rooms for both program and data of 64K by 8 size.

Maximum Ratings	VCC	3.0 – 5.5V
	I Max (Maximum Current Draw)	< 4mA
	V Out (Output Voltage Range)	0.3V to Vcc
	LED Output	565nm
	Sensor Input	525nm
	L x W (PCB)	15.8mm (0.625″)
	Lead Length	20cm (7.8″)



b) Pulse Sensor: The front of the sensor is that the side with the center logo. This is often where you place your finger. On the front side you may see a little round hole, from where the Kingbright's reverse mounted green LED shines.

Just below the LED could be a small ambient light photo sensor – APDS-9008 from Avago, almost like that employed in cell phones, tablets and laptops, to regulate the screen brightness in different light conditions

c) Other Component:

Component	Use
9v DC Battery	Required for circuit component
Battery Clips Connector	Required For Battery
Button Switch	Required by the fingertip sensor and microcontroller
LCD Display	Display

Conclusion: During this technique a real time heart rate monitoring and coronary failure detection system is realised by using IoT. The proposed design is advantageous to patients of different age groups by providing real time heart health monitoring. It also provides security and privacy to the data of the patient. The proposed design is implemented because the real time monitoring system which helps in providing immediate health care facilities to the patient by using MQTT protocol and IFTTT protocol, alert system and placement monitoring are other features of the planning.