IR PULSE RATE DETECTOR

**INTORDUCTION**

In this project we demonstrate the idea of heart beat monitoring and patient heart analyser system. In this project we check the patient parameter such as heart beat. In this project we measure the heart beat that sense and measure the heart beat and display in lcd, and it plot the wave on serial plotter.

In this project we take different mode

Heart beat measure mode: in this mode we measure the heartbeat and display in lcd and this condition plot the graph wave on serial plotter .

The heart is one of the most vital organs within the human body. It acts as a pump that circulates oxygen and nutrient carrying blood around the body in order to keep it functioning. The circulated blood also removes waste products generated from the body to the kidneys. When the body is exerted the rate at which the heart beats will vary proportional to the amount of effort being exerted. By detecting the voltage created by the beating of the heart, its rate can be easily observed and used for a number of health purposes An electrocardiogram (ECG) is a graphical trace of the voltage produced by the heart. A sample trace of a typical ECG output for a single beat is shown below. There are 5 identifiable features in an ECG trace which corresponds to different polarisation stages that makes up a heart beat. These deflections are denoted by the letters P, Q, R, S and T.

By detecting the R peaks and measuring the time between them the heart rate can be calculated and then displayed. A persons heart rate before, during and after exercise is the main indicator of their fitness. Measuring this manually requires a person to stop the activity they are doing in order to count the number of heart beats over a period of time. Measuring the heart rate using an electrical circuit can be done much quicker and more accurately.

We will be implementing an ECG and Digital Heart Rate counter. The main challenge of the project would be to amplify the desired weak signal in the presence of noise from other muscles and electrical sources. A display of the heart rate will be obtained by measuring the time between signal peaks and then calculating the frequency of the peaks in units of beats per minute. The device is most useful if it is portable. This requires a battery to be able to power all of the necessary components as well as the power output of the battery to be regulated.

TECHNOLOGY USED IN THIS PROJECT :-

[Arduino](http://arduino.cc/) is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a [microcontroller](http://en.wikipedia.org/wiki/Microcontroller)) and a piece of [software](http://arduino.cc/en/Main/Software), or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.

**Need and significance of this project**

Around 2 million people are at high risk of heaving heart attack.

It would be be helpful if there was a way for these people to monitor their heart.

So we have a problem. This is the way our project focuses on how we can utilize this problem and find the solution.

**These parameters can be measured using this project**

**Bradycardia**

Bradycardia is a very slow heart rate of less than 60 beats per minute. It happens when the electrical impulse that signals the heart to contract is not formed in your heart’s natural pacemaker, the sinoatrial node (SA node), or is not sent to the heart’s lower chambers (the ventricles) through the proper channels.

Bradycardia most often affects elderly people, but it may affect even the very young. It may be caused by one of two sources: The central nervous system does not signal that the heart needs to pump more, or the SA node may be damaged. This damage might be related to heart disease, aging, inherited or congenital defects, or it might be caused by certain medicines—including those used to control arrhythmias and high blood pressure.

#### Tachycardia

Tachycardia is a very fast heart rate of more than 89 beats per minute. The many forms of tachycardia depend on where the fast heart rate begins. If it begins in the ventricles, it is called ventricular tachycardia. If it begins above the ventricles, it is called supraventricular tachycardia.

**PROJECT PRAPOSAL METHODOLOGY**

We make a project in different mode:

* **Ist mode:**

In this mode we design over all frame script such as

* Idea of project,
* Components list,
* Circuit diagram.
* **2nd mode:**

In this mode we calculate the value of

* Components.
* Decide the component rating.
* Name of components that may be use in project.
* Purchase the components.
* **3rd Mode:**
* In this mode we design a circuit on pcb.
* Assemble the components.
* Test the soldering dry or not.
* **4th mode:**

in this mode we software for coding.

* We use keil software.
* We design a code in assembly or embedded c.
* We create the hex file.
* **5th mode**:
* in this mode we design a circuit diagram on proteus for simulation
* try to simulation on proteus.
* **6th mode:**
* In this mode we use the top-win software.
* We programmed the ic.
* **7th mode :**
* in this mode we test the features of project.

**SOFTWARE/HARDWARE REQUIRED FOR THE DEVELOPMENT OF THIS PROJECT**

**COMPONENTS**

* ARDUINO UNO,
* Transformer(9-0-9),
* Diode(in4007),
* Resistor(1k,470ohm,10k,270ohm),
* Capacitor(10uf,1000uf,27pf),
* Regulator(7805),
* Npnbc-547,and bc-557pnp,
* WLed,
* Pcb,

**SOFTWARE USED**

* ARDUINO IDE,
* Topwin for ic programming,
* Proteus software for ckt design,
* Coding lan: assembly language.

ON

IR PULSE RATE MONITOR

BSC(H)INSTRUMENTATION

3RD YEAR

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