Real-time Heart Beat Monitoring System with Display on Graphical LCD and voice based alerting system

The project aims in designing a system which is capable of continuously displaying the heart beat of a person on GLCD and alerting emergencies through voice based alerts. Technology is being used everywhere in our daily life to fulfill our requirements. We are employing different sensors for different applications sometimes we may even use same sensors differently for different applications. Whatever it may be the final output is life has increased its speed with the technology boosters. We can not only increase the speed of life but also increase security with good ideas to make use of this technology. One of the ideal ways of using technology is to employ it to sense serious health problems so that efficient medical services can be provided to the patient in correct time. This idea to provide efficient health service to patients has given birth to the project heart beat monitoring system with voice alerts and display on LCD.

Heart beat monitor and display system is a portable and a best replacement for the old model stethoscope which is less efficient. The heart beat rate is calculated manually using stethoscope where the probability of error is high because the heart beat rate lies in the range of 70 to 90 per minute whose occurrence is less than 1 sec, so this device can be considered as a very good alternative instead of a stethoscope.

The functioning of this device is based on the truth that the blood circulates for every one heart beat which can be sensed by using a circuit formed by the combination of an LDR and LED. Depending upon the rate of circulation of blood per second the heart beat rate per minute is calculated. This device consists of a micro controller which

takes the input from the heart beat sensor and calculates the heart rate of the patient. The micro controller also takes the responsibility to display the same on the Graphical LCD which is interfaced to it through LCD drivers.

The major advantage of the device is it provides a voice based alert when irregular heartbeats are recorded. For this the microcontroller is interfaced with voice based IC circuitry. This circuit is driven by the controller dynamically when ever required.

The main objective of this project is:

1. Monitoring the heart beat.
2. Produces voice based alerts whenever necessary.

The project provides learning's on the fallowing advancements:

1. Developing a sensor based on LED and LDR.
2. LDR characteristics.
3. Design of voice based IC circuit.
4. Conversion of AC supply to DC supply.
5. Embedded C programming.
6. PCB design.

The major building blocks of this project are:

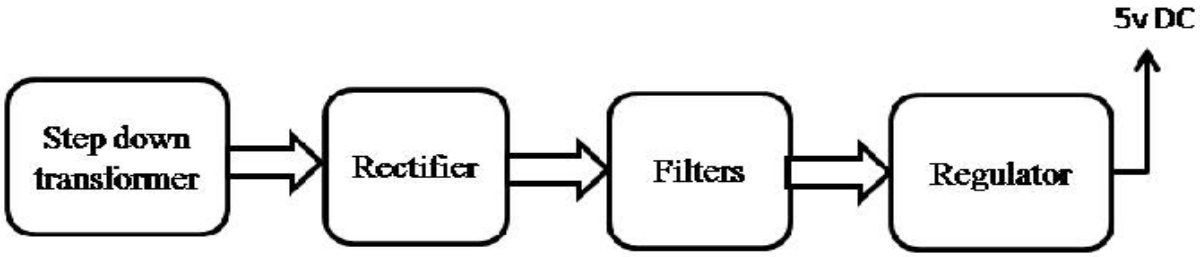
1. Regulated power supply.

2. Micro controller.
3. Heart beat sensor.
4. Reset.
5. Graphical LCD with driver.
6. Crystal oscillator.
7. LED indicators.
8. Voice circuit.

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:



Block diagram:

Real-time heartbeat monitoring system with GLCD and alerting system