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E.R System for Unconscious Patients

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Abstract: *This Project implements Emergency Retrieval(ER) system for unconscious patients using Medical Bracelets offers an empowering option for individuals affected with chronic illnesses or medical conditions who may present more frequently to the Emergency Medical Service. The project is trying to provide medical help at correct time to an unconscious patient or patient who is unable to communicate can lead to delays in treatment. With Medical Bracelets emergency departments improve efficiency while enhancing the level of patient care. If you have a medical condition such as a life threatening food or medicinal allergy, a pre-existing medical condition or maybe even a rare blood type, a medical bracelet may be the only communication you have to let emergency medical staff know so that they can provide the proper treatment for you without potentially doing more harm. RF Transmitter is used as Medical Bracelet. Receiver section is equipped with RF receiver.*

Keywords: *Emergency Medical Service(EMS),Radio Frequency(RF),radio frequency identification (RFID),Emergency retrieval(E.R)*

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I. Introduction

EMS is an important part of overall healthcare system of any country. In spite of tremendous development has been made in the medical care over the past decade, India has to establish a single, comprehensive EMS that can be available all over the country. It is the emergency medical organisation that will work with other services during a casualty to provide emergency medical care.Emergency medical care may save anyone's life without delay. In modern EMS systems patient is brought to the doctor or doctor is brought to the patient which is an early idea. It may delay the treatment for the patient who needs emergency care due to many reasons. In India many people will die due to inadequate EMS .India should have better EMS to meet the growing number of emergency mass casualties, natural disasters or national emergencies. Pre-hospital care during any emergency medical situations, is the key for saving lives.

In the case of road accidents the patient may be unknown to the one who is taking them to hospital. In such case even though the patient reached the hospital without any delay, the treatment can be delayed because of ignorance about the patient's pre existing medical condition like medicinal allergy,heart disease,levels of glucose,pressure,cholesterol, etc. And also the patient has to come back to conscious state if the situation has to be informed to the relatives. These all conditions will delay the EMS to the concerned patient. Some times if the patient requires immediate surgery, the consent has to be filled and signed by the relatives to proceed with the surgery.All these cases will be delayed because of what EMS we are following now.

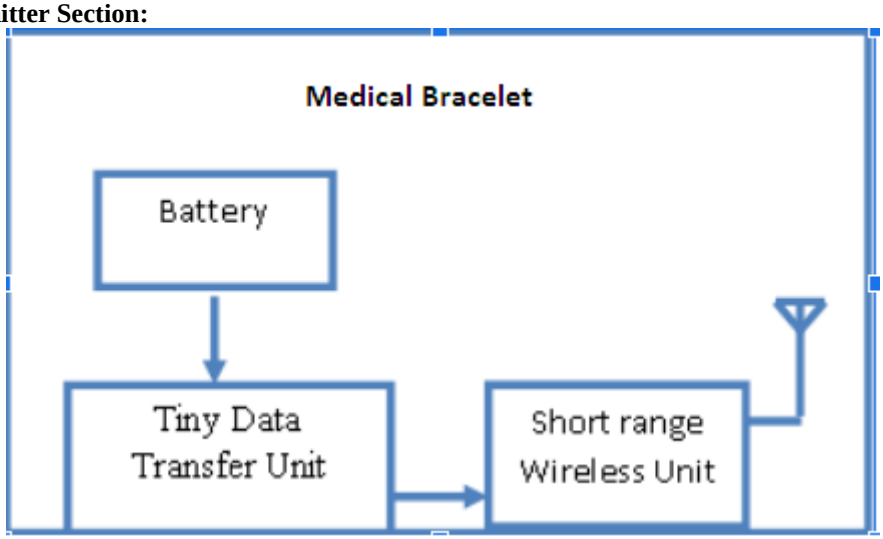
The proposed system offers an empowering option for individuals affected with chronic illnesses or medical conditions who may present more frequently to the Emergency Medical Service.The proposed system will be having a bracelet in which all the medical conditions like levels of glucose, cholesterol, pressure ,Rh grouping, heart condition etc will be recorded. With the help of all these recorded data medical practitioner will be able to give medical support immediately without enquiring anyone about the medical condition of the patient.

According to proposed project even though the patient is in an unconscious state, the practitioner doesn't need to wait to give emergency care as everything regarding the patient will be recorded in the bracelet.Each bracelet will be having a unique ID number and the practitioner have to enter the ID number in the database to search for the pre-existing medical condition about the patient.For making this to happen all hospitals in India should have a database which should be connected to each other so that the patient details will be visible to any practitioner as soon as possible after entering the unique ID number of medical bracelet.Medical bracelets also should be available to each citizen in India through any government scheme so that no one will die due to inadequate treatment.

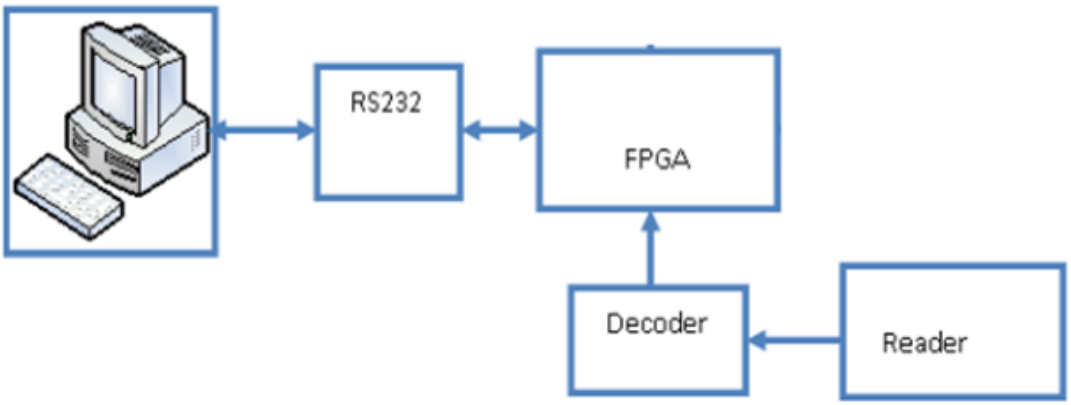
II. Proposed System

The proposed system is working under RFID technique which describes a wireless identification technology that communicates by using radio waves. RFID is now generating significant interest in the marketplace because of its robust application capabilities. Thus, RFID can provide a number of benefits to the healthcare industry, thereby improving overall safety and operational efficiency because it operates without line-of-sight while providing read/write capabilities.The proposed system comprises of RF module, and Interfacing RF Module with Spartan 3AN FPGA kit.

A)RF Transmitter Section:



B)RF Receiver section



The RF module,operates at Radio Frequency. The corresponding frequency range varies between 30 kHz & 300 GHz. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK).Amplitude shift keying is also known as ON-OFF keying technique in which we will be able to recognise whether the medical condition is present or not.

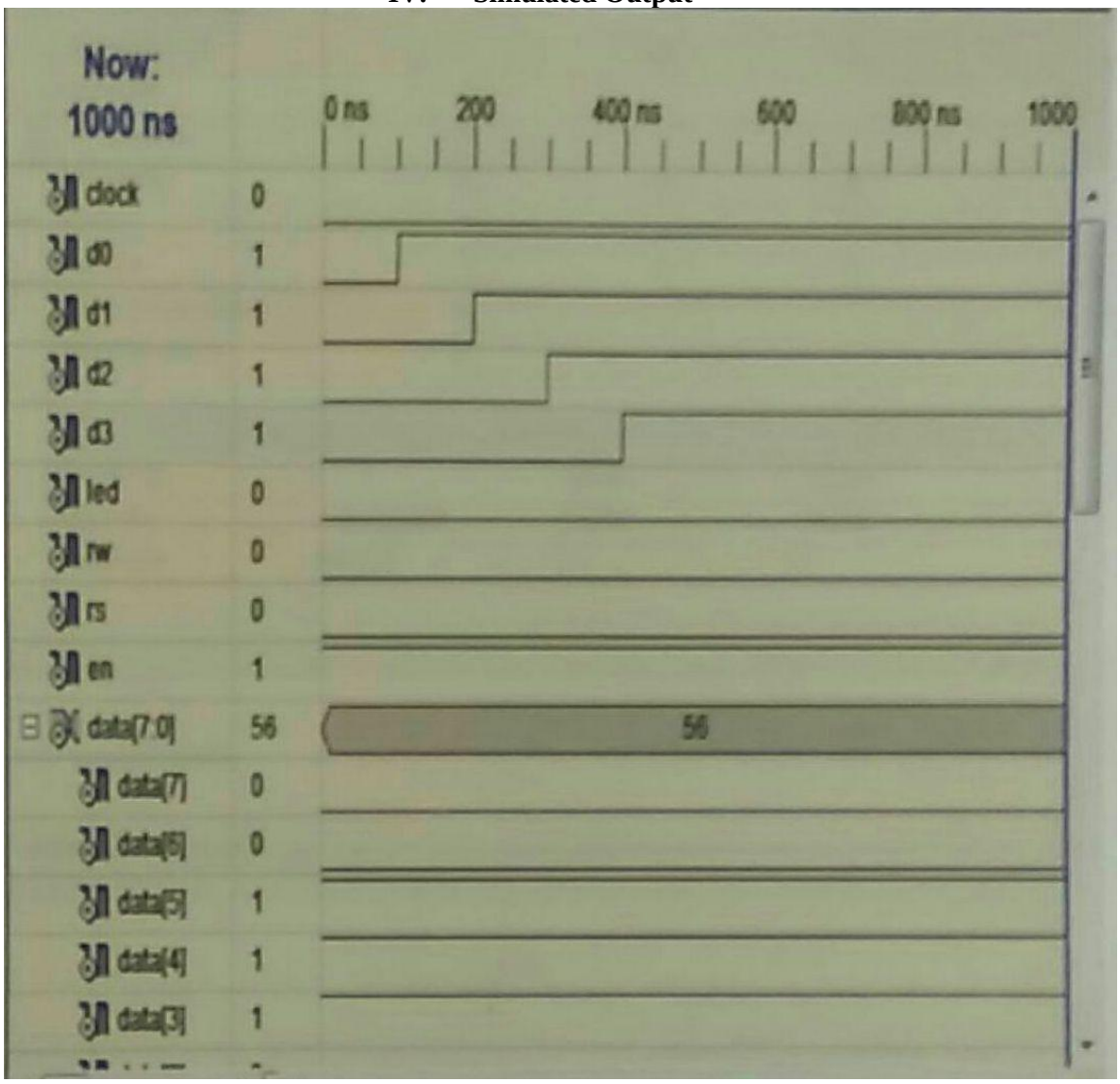
The medical bracelet will be having a power unit which will be rechargeable, a data transfer unit and a short range wireless unit which is called as RF transmitter section. RF receiver section will be having a Reader,a decoder,an FPGA unit, a PC,and a serial communication unit.RS232 will act as serial communication protocol where the data can be sent sequentially over a computer bus which means data can be transmitted bit by bit.It is used for connecting computer and its peripheral devices to allow serial data exchange between them.It is used for serial communication with a rate of 1.492kbps.RS232 is used for connecting data transmission equipment(DTE) and data communication equipment(DCE)

As soon as the unique ID is entered in the system the short range wireless unit will transfer the data regarding the patient to the reader unit and it will be decoded and sends to the FPGA unit thereby displaying the details regarding the patient in the monitor. And by seeing that the practitioner will get a complete picture of the patient.

III. Limitation

The proposed system is having the following limitations
1)The patient has to do regular check ups and should update the details from time to time
2)The battery unit present in the system has to be recharged properly
3)The system is not having the facility to pass the information as soon as possible in case of road accidents

IV. Simulated Output



V. Conclusion and Future scope

Proposed System is implemented using VHDL and output is transferred through RS232 and monitored in PC with VB GUI.The proposed system is possible to read the pre-existing medical condition of a patient in case the patient is in an unconscious state which helps in providing emergency medical care without delay.

In future the project can be extended by recording the personal details of the patient including aadhar number,contact number of any relatives which will help the officials to pass the information about the patient to the near ones.The project can also be extended by attaching a camera to the bracelet so that it can capture the video in case of accidents which will provide a hint to find out the culprits,and also by using GPS, the information can be passed to a nearby police station and hospital.

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