

NFC BASED SECURE MOBILE HEALTHCARE SYSTEM

ABSTRACT

An embedded system is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use today.

Modern embedded systems are often based on microcontrollers (i.e. CPUs with integrated memory and/or peripheral interfaces) but ordinary microprocessors (using external chips for memory and peripheral interface circuits) are also still common, especially in more complex systems. In either case, the processor(s) used may be types ranging from rather general purpose to very specialized in certain class of computations, or even custom designed for the application at hand. A common standard class of dedicated processors is the digital signal processor (DSP).

With the recent increase in usage of mobile devices especially in developing countries, they can be used for an efficient healthcare management. In this work, we have proposed a novel architecture for improving healthcare system with the help of Android based mobile devices with NFC and Bluetooth interfaces, smartcard technology on tamper resistant secure element (SE) for storing credentials and secure data, and a Health Secure service on a hybrid cloud for security and health record management.

The main contribution of this paper is proposal of applications for Secure Medical Tags for reducing medical errors and Secure Health card for storing Electronic Health Record (EHR) based on Secure NFC Tags, mobile device using NFC P2P Mode or Card Emulation Mode.

We have also briefly mentioned a basic security framework requirement for the applications. Since NFC NDEF format is prone to security attacks, we have utilized low level APIs on Android based mobile devices, to securely access NFC tags. Simple touch of NFC enabled mobile devices can benefit both the patient as well as the medical doctors by providing a robust and secure health flow.

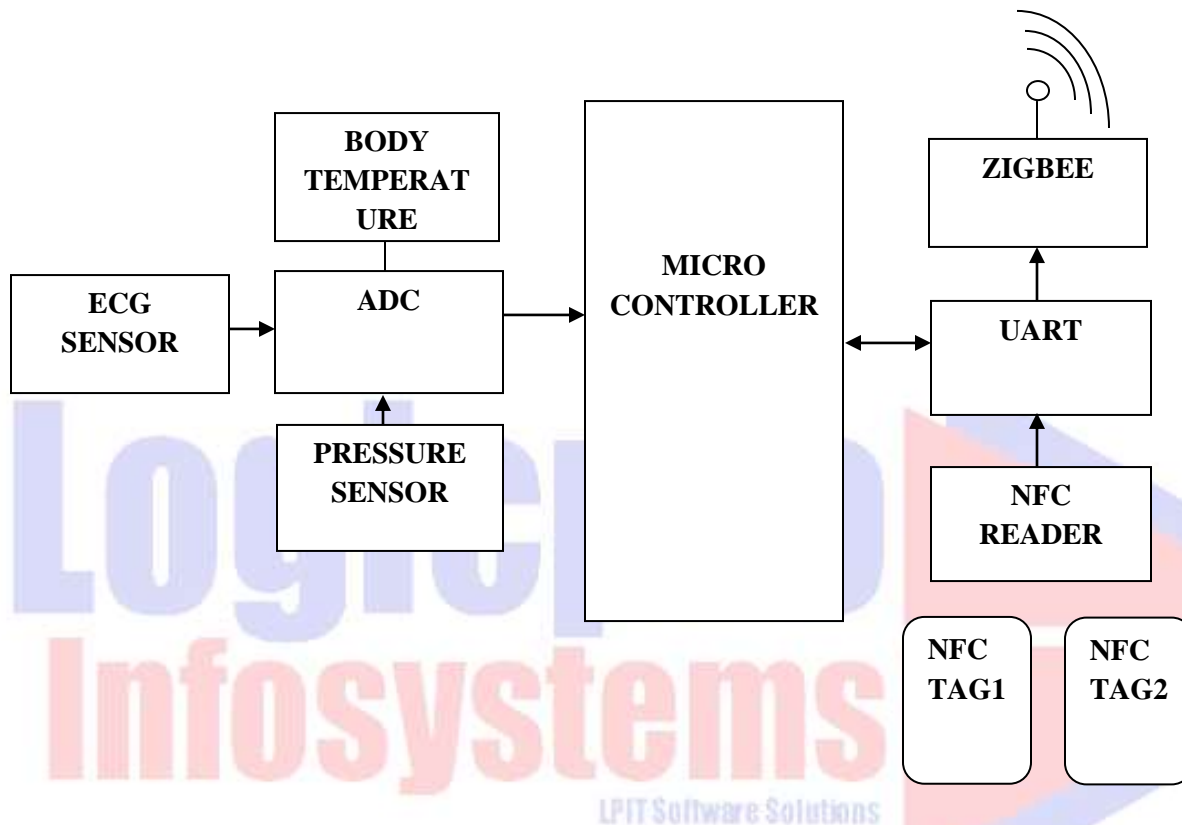
It can also provide portability of devices and usability for health management in emergency situation, overpopulated hospitals and remote locations.

PROPOSED SYSTEM

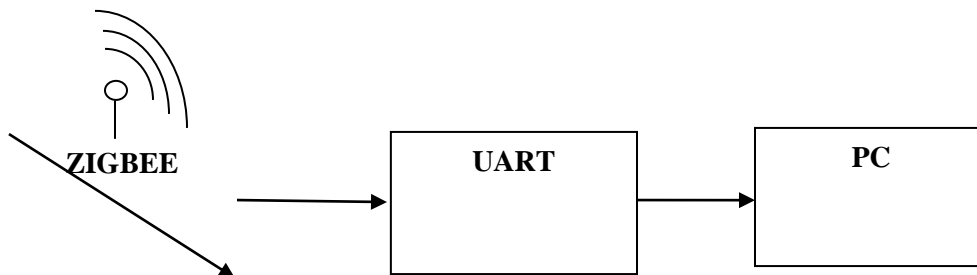
Here in this process we going to see NFC(Near Field Communication) based mobile healthcare system using NFC card reader, Temperature, Pressure, ECG sensors and with help of ZIGBEE sending the details to monitor in PC. Doctors or Nurses will use the NFC card in card reader so that it sensors will send the details to microcontroller, from there through ZIGBEE we can view in PC

BLOCK DIAGRAM:

TRANSMITTING END



RECEIVING END



HARDWARE REQUIREMENTS:

- MICROCONTROLLER
- ZIGBEE
- UART
- PC
- PRESSURE SENSOR
- ADC
- ECG SENSOR
- BODY TEMPERATURE SENSOR
- NFC READER

SOFTWARE REQUIREMENTS:

- MICROCONTROLLER COMPILER
- PROTEUS SOFTWARE

Microcontroller may be ATMEGA, 8051, PIC or Arduino