

SPARSH

Transfer of data through Human Body

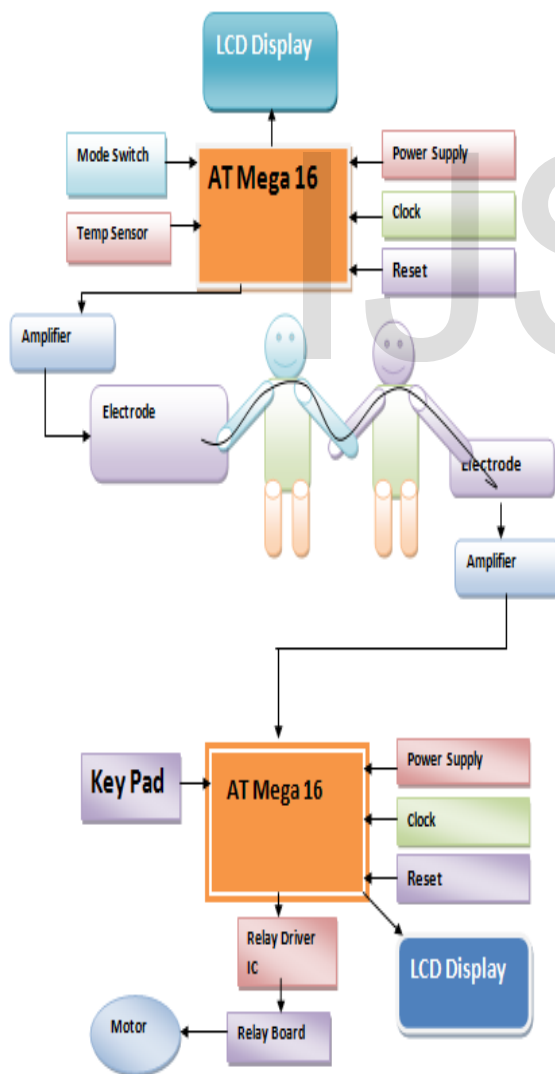
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Abstract— Human area network is a novel data transmission method that uses the human body as an electrical channel. The idea is driven by the vision of a cable-free secure data transmission system. The human body is characterized as a transmission medium for electrical currents by means of the dielectric properties. This paper describes a data transmission technology that enables communication by touching, a technology we call SPARSH. Short circuiting of wires has become a very critical problem hence more Wireless techniques are being developed. Here we use the property of a User Identifier and User Distinguisher. This approach imposes severe limits on the data rate, but the rate is sufficient to transfer limited data through the body.

Index Terms— Communication through touch, Human area network, Sparsh, Short-range data transfer, User identification, User distinguisher, Wireless communication, Wireless medium to transfer data,

1 INTRODUCTION

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important role in various areas of applications such as in the monitoring of health, sharing of personal information, security authentication and medical information systems.

Human body can be represented with an electrical circuit because tissues are made of cells and human body consists of cells. In human body, there is presence of iron, calcium etc. which are conductive in nature so as the current is passed through the body so the signal also can be transmitted through the body. This paper describes the model of human networking technology that enables communication by touching. Data from circuitry of one device is transferred to metal pad and via body it is transmitted another device.

Technologies enabling communication between people and devices in close proximity are required for all modern-day user friendly gadgets. Communication between two people or communication between a person and a device through touch is the unique. A transmission path is formed automatically when a person with a transmitter section encounters a device or another person with the receiver section. In this paper, we present a capacitive communication method through which a mere touch will transfer data included in Identification proofs like Aadhar card, ATM number and PIN, Medical history and status of the patient.

2 DESCRIPTION

2.1 Block diagram

2.2 Methodology

The complete development of this system can be divided

ata communication through human body is a combination of hardware and software protocol. Wireless body area networks around the human body are expected to play an

Fig 1. Block Diagram

into the following stages:

1. Problem definition stage
2. Designing block diagram
3. Implementing circuits and components
4. Developing algorithm for software
5. Writing actual code for Micro-controller
6. Compiling the code
7. Burning the hex file into micro-controller with programmer
8. Testing and Running

Problem definition stage

This is the very first stage to develop any project. It defines the aim and the concept of the project.

Designing block diagram

At this stage, we have categorized the whole system into different individual modules. These modules (block diagrams, eg. Fig 1.) will clarify the concept and working of the integrated system. It also simplifies the entire debugging and testing process.

Implementing circuits and components

This is the actual implementation of circuit of each block. At this stage, we have designed each block separately and finally integrated them into the complete working system.

Developing algorithm for software

To get the logical flow of the software, the development of algorithm is having a prominent role. So, that we have analyzed the complete system and organized the algorithm in such a manner that one can understand the complete working of the software.

Writing actual code for Micro-controller.

After the development of the algorithm and flowchart we have used BASCOM AVR, a very powerful and easy-to-use compiler for Atmega 16L Micro controller so that it can understand the instructions and run as per our requirement.

Compiling the code

The code is implemented on the computer for which we have used BASCOM AVR. Anybody with some basic knowledge of C can write a successful program using BASCOM, as most of its functions and its statement structure is like those in C.

After removing of several compiling errors the program was converted into machine language i.e. Intel hex format.

Burning the hex file into microcontroller with Programmer

In this stage the compiled hex format file was burned into Atmega 16L flash Microcontroller. The best thing about BASCOM AVR is that it can directly burn any flash file into a micro controller using just four wires connected to your computer's parallel port.

Testing and Running

This time we tested our project for actual working, after loading the software into the microcontroller. Any errors found were removed successfully. This is the last and final stage of development of our project.

3 SOFTWARE DEVELOPMENT

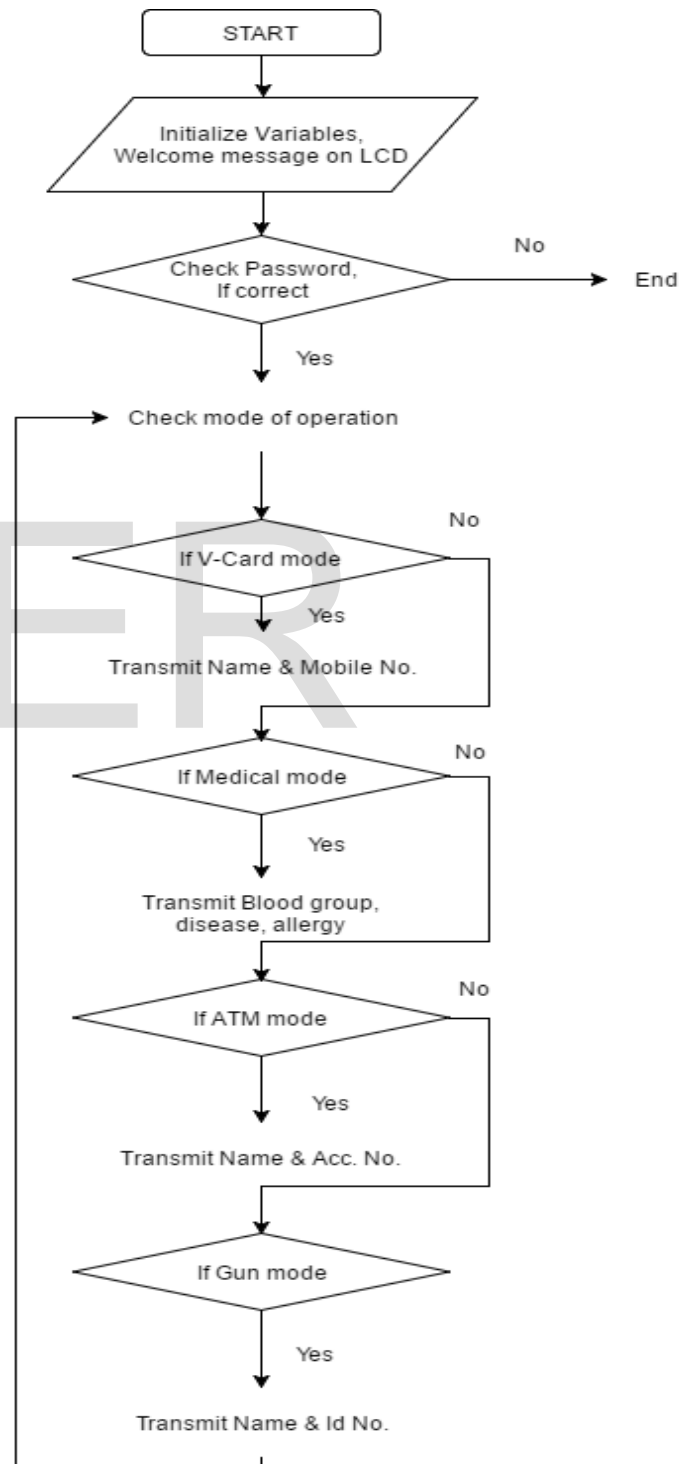
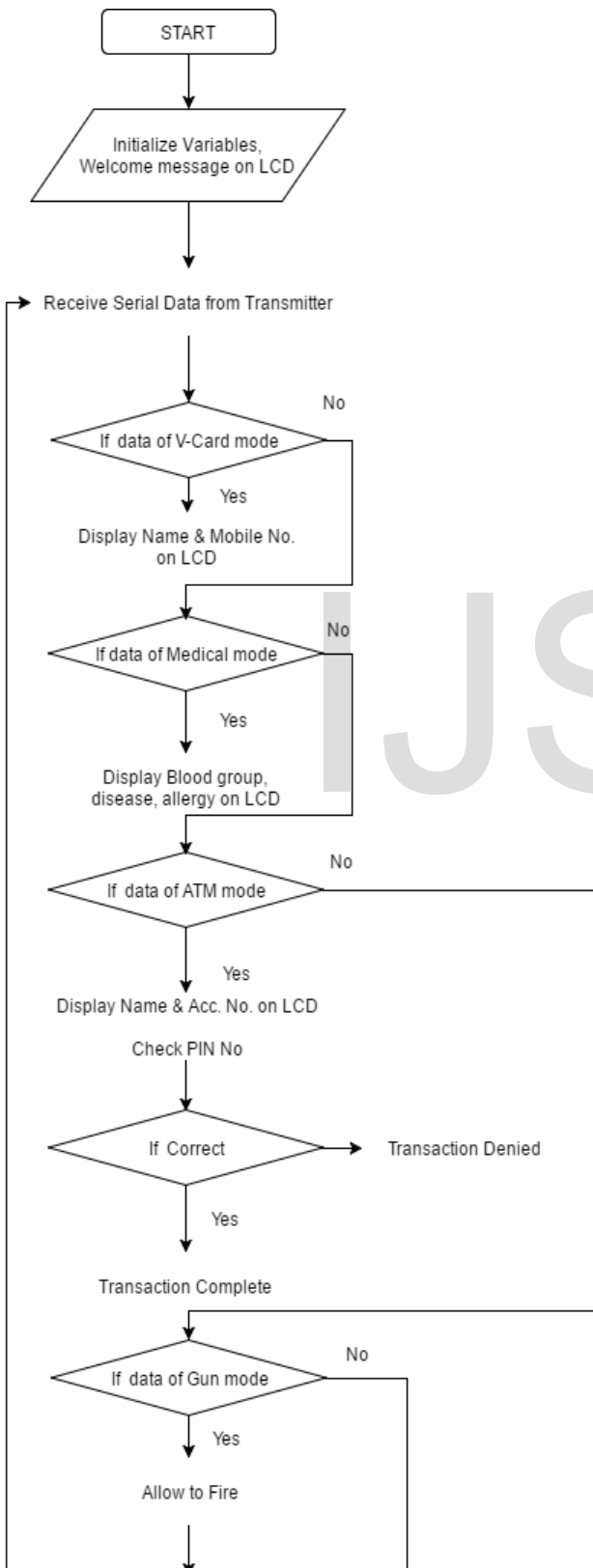


Fig 3a Transmitter Flow Chart

Fig 3b Receiver Flow Chart



4 RESULT

When the touch pad comes in contact with the body it transmits data via one body to another body which further receives the data through a receiver touch pad.

The information is processed by the controller, it mainly checks the conditions i.e. whether it is the authenticated user or not and provides permission only to the correct user.

In the medical application of the project it gives information of the temperature and the diseases of the patient. The device is unique to the particular user.

CONCLUSION

The performance of the device developed is better as compared to other technologies. There is no problem of hacking in this method as our body itself is the transmission media. This approach imposes severe limits on the data rate, but the rate is sufficient for the transfer of the limited data through the body.

The evolution of SPARSH is a big achievement, which is likely to be targeted for use in applications such as that for Medical, Security, User Identification.

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