

ARDUINO IMPLEMENTATION TO NFC BASED MEDICAL EQUIPMENT MAINTENANCE

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ABSTRACT

This paper deals with a new system of Near-Field Communication (NFC) system which operates to provide all the information of the object on which NFC tag is implanted. The application we deal here is for medical equipment's. Medical equipment's needs to be maintained periodically as they should be accurately working throughout the time to be used during an emergency. NFC can be used to just scan any medical equipment and detect all its details like last maintained, manufacturing details, expiry, number of times used etc. If used properly it can organize the unorganized system of the current medical field. The NFC card is attached with Arduino Nano and power supply to scan and provide the necessary result on LCD screen,

Keywords: *Arduino, Ultrasonic Sensor, Bluetooth etc.*

1. Introduction

Near-Field Communication (NFC) is a lot of correspondence conventions that empower two electronic gadgets, one of which is generally a convenient gadget, for example, a cell phone, to build up correspondence by bringing them inside 4 cm (1.6 in) of each other.[1] NFC gadgets are utilized in contactless installment frameworks, like those utilized in Visas and electronic ticket smartcards and enable versatile installment to supplant or enhance these frameworks. This is at times alluded to as NFC/CTLS (Contactless) or CTLS NFC. NFC is utilized for long range informal communication, for sharing contacts, photographs, recordings or files.[2] NFC-empowered gadgets can go about as electronic personality reports and keycards.[3] NFC offers a low-speed association with basic setup that can be utilized to bootstrap progressively competent remote connections.[3] Similar thoughts in publicizing and modern applications were not

commonly effective monetarily, outpaced by innovations, for example, scanner tags and UHF RFID labels. NFC conventions set up a by and large upheld standard. When one of the associated gadgets has Internet availability, the other can trade information with online administrations.

NFC-empowered compact gadgets can be given application programming, for instance, to peruse electronic labels or make installments when associated with a NFC-agreeable device. Prior short proximity correspondence utilized innovation that was exclusive to the producer for applications, for example, stock ticket, get to control and installment peruses. Like other "nearness card" advances, NFC utilizes electromagnetic enlistment between two circle reception apparatuses when NFC-empowered gadgets—for instance a cell phone and a printer—trade data, working inside the all-around accessible unlicensed radio recurrence ISM band of 13.56 MHz on ISO/IEC 18000-3 air interface at rates going from 106 to 424 Kbit/s.



Fig.1 – NFC Device and hand tag

Each full NFC gadget can work in three modes:

1.1 NFC card copying

Empowers NFC-empowered gadgets, for example, cell phones to act like shrewd cards, enabling clients to perform exchanges, for example, installment or ticketing.

1.2 NFC peruse/author

Empowers NFC-empowered gadgets to peruse data put away on cheap NFC labels implanted in marks or shrewd publications.

1.3 NFC shared

Empowers two NFC-empowered gadgets to speak with one another to trade data in an adhoc form. FC labels are detached information stores which can be perused, and under a few conditions written to, by a NFC gadget. They ordinarily contain information (starting at 2015 somewhere in the range of 96 and 8,192 bytes) and are perused just in typical use, however might be rewritable. Applications incorporate secure individual information stockpiling (for example charge or Visa data, reliability program information, individual ID numbers (PINs), contacts). NFC labels can be exclusively encoded by their makers or utilize the business details.

2. PREVIOUS WORK

The work by Prabhakar et al, directs a broad examination identified with NFC for Pervasive Healthcare Monitoring [4]. Structured two items initially is NFC based battery charger circuit to accuse a thermometer prepared of remote correspondence and second is

NFC based battery-less therapeutic review thermometer. They demonstrate that the two items has potential for basic consideration ceaseless checking and regimentation based parameter observing. Be that as it may, the work raises security issues since it can prompt the circumstance where patients don't know that their private data is being shared and ends up helpless for risk. The work by Divyashikha et al, proposed NFC based secure portable human services system[5].Introduced two applications in framework that is I) Secure restorative labels for decreasing medicinal blunders and ii) Secure wellbeing card for putting away Electronic wellbeing record dependent on secure NFC labels, cell phone utilizing P2P Mode and Card Emulation mode. It enhances human services process for secure restorative item recognizable proof and patient wellbeing card on an outside tag or cell phone itself. Be that as it may, the framework faces security issues while getting to wellbeing card.

3. PROPOSED SYSTEM

3.1 NFC Based system of Medical Equipment

In our proposed system we deal with the NFC devices which reads the information mentioned on the medical equipment's and alert us about all their features like last maintained, manufacturing details, expiry, number of times used etc. This helps the medical people to correctly maintain the equipment's during rush hours. It is highly useful and can bring a lot ease in medical industry.

3.2 NFC Device

NFC means "Near Field Communication" and, as the name suggests, it empowers short-go correspondence between good gadgets. This requires no less than one transmitting gadget, and another to get the flag. A scope of gadgets can utilize the NFC standard and will be viewed as either aloof or dynamic.



Fig.2 – A Small NFC device as keyring

3.3 Arduino NANO

One another component of our project is Arduino NANO. It's best for our project due to its small size and efficiency. The Arduino Nano is a little, total, and breadboard-accommodating board dependent on the ATmega328P (Arduino Nano 3.x). It has pretty much a similar usefulness of the Arduino Duemilanove, however in an alternate bundle. It needs just a DC control jack, and works with a Mini-B USB link rather than a standard one.



Fig.3 – Arduino NANO

3.4 Advantages

1. A Fast response system
2. Real time implementable
3. Accurate system
4. Low cost implementation

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