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Implementation of Smart Card Technology as Digital Proof to Eliminate the Paper Works

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Abstract:
Now a days, every person in the world has personal information that is stored in the form of digital data. The personal information includes banking identity, personal identity, institution identity etc. In existing system for each and every identity a separate smart card is assigned. So, multiple cards are to be maintained by a single person for multiple purposes. This gives the drawback as it is somewhat difficult to carry and to maintain more number of cards. To overcome this drawback, the proposed system of maintaining a single card for multiple purposes is used. It includes the information of transport documentation through which in a single card all the details belonging to the transport such as pollution check up, registration certificate and license are included and banking identity which can be used as a credit card.

Keywords:
Digital data, smart card, license, banking identity.

I. INTRODUCTION:
A smart card is a device that includes an embedded integrated circuit chip (ICC) that can be either a secure microcontroller or equivalent intelligence with internal memory or a memory chip alone. The card connects to a reader with direct physical contact or with a remote contactless radio frequency interface. With an embedded microcontroller, smart cards have the unique ability to store large amounts of data, carry out their own on-card functions (e.g., encryption and mutual authentication) and interact intelligently with a smart card reader [1]. Smart card technology conforms to international standards (ISO/IEC 7816 and ISO/IEC 14443) and is available in a variety of form factors, including plastic cards, fobs, subscriber identity modules (SIMs) used in GSM mobile phones, and USB-based tokens. There are two general categories of smart cards: contact and contactless. A contact smart card must be inserted into a smart card reader with a direct connection to a conductive contact plate on the surface of the card (typically gold plated). Transmission of commands, data, and card status takes place over these physical contact points. A contactless card requires only close proximity to a reader. Both the reader and the card have antennae, and the two communicate using radio frequencies (RF) over this contactless link. Most contactless cards also derive power for the internal chip from this electromagnetic signal [2]. The range is typically one-half to three inches for non-battery-powered cards, ideal for applications such as building entry and payment that require a very fast card interface.

II. EXISTING SYSTEM:
In existing system for each and every identity a separate smart card is assigned. So, multiple number of cards are to be maintained by a single person for multiple purposes.

III. PROPOSED SYSTEM:
To overcome the drawback, The proposed system contains a single card which is used for multiple purposes. The card includes the information like pollution check up, registration certificate & license and also contains the banking information to pay the toll gate money.

IV. PROBLEM STATEMENT:
Now a days many people they are travelling by their two Wheeler, four wheeler. So every person must and should carry and travel with registration certificate, license, pollution check up. so every time they carry their certificate in paper form some times certificates will torn because of some rain problems. At this purpose I implemented this project. [3] It is very useful to public transportation. and every traffic connistable also carry the smart card reader when ever the connistable stop the traveler that particular person to swipe the smart card in smart card reader after

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that details are displayed on the LCD board with options.

V. BLOCK DIAGRAM

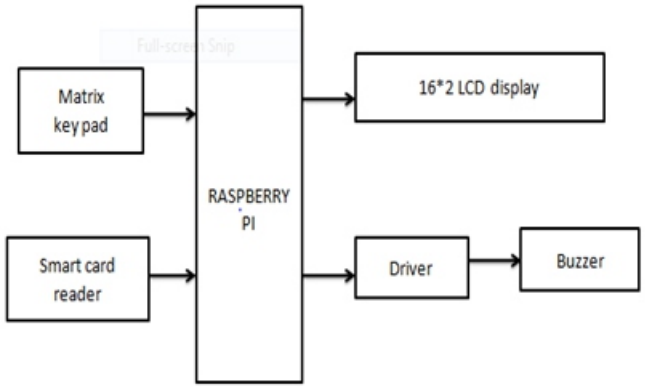

Fig.1. Block scheme of Proposed Approach

A. Raspberry Pi 3:

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python [4]. This Raspberry pi equipped with ENC28J60 which is a Ethernet chip to get connected with internet.

Fig.2. Raspberry Pi 3

B. Buzzer:

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows. It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a preset time has lapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound [5].

C. Buzzer Driver:

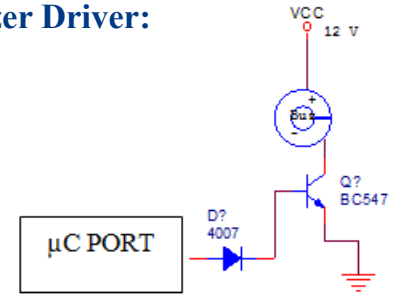

Fig.3. Buzzer Driver

The circuit is designed to control the buzzer. The buzzer ON and OFF is controlled by the pair of switching transistors (BC 547).

D.Power Supply:

The Power Supply is a Primary requirement for the project work. The required DC power supply for the base unit as well as for the recharging unit is derived from the mains line. For this purpose center tapped secondary of 12V-012V transformer is used.

E. 16x2 LCD Display:

Liquid crystal displays (LCD's) have materials which combine the properties of both liquids and crystals. Rather than having a melting point, they have a temperature range within which the molecules are almost as mobile as they would be in liquid, but are grouped together in an ordered form similar to a crystal. The LCD's are lightweight with only a few milli meters thickness. Since the LCD's consume less power they are compatible with low power electronic circuits and can be powered for long durations.

F. GPIO(General Purpose Input Output) pins:

	Pin No.		
3.3V	1	2	5V
GPIO2	3	4	5V
GPIO3	5	6	GND
GPIO4	7	8	GPIO14
GND	9	10	GPIO15
GPIO17	11	12	GPIO18
GPIO27	13	14	GND
GPIO22	15	16	GPIO23
3.3V	17	18	GPIO24
GPIO10	19	20	GND
GPIO9	21	22	GPIO25
GPIO11	23	24	GPIO8
GND	25	26	GPIO7
DNC	27	28	DNC
GPIO5	29	30	GND
GPIO6	31	32	GPIO12
GPIO13	33	34	GND
GPIO19	35	36	GPIO16
GPIO26	37	38	GPIO20
GND	39	40	GPIO21

Fig.4. GPIO Pin Configuration

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General-purpose input/output (GPIO) is a generic pin on an integrated circuit or computer board whose behavior—including whether it is an input or output pin—is controllablebytheuseratrun.

G.Matrix Keypad:

A keypad is a set of buttons arranged in a block or "pad" which bear digits, symbols or alphabetical letters. Pads mostly containing numbers are called a numeric keypad.

Numeric keypads are found on alphanumeric keyboards and on other devices which require mainly numeric input such as calculators, push-button telephones, vending machines, ATMs, Point of Sale devices, combination locks, and digital door locks. Many devices follow the E.161 standard for their arrangement.

H.Smart Card Reader:

This type of reader requires a physical connection to the cards, made by inserting the card into the reader. This is the most common reader type for applications such as ID and Stored Value. The card-to-reader communications is often ISO 7816 T=0 only. This communication has the advantage of direct coupling to the reader and is considered more secure.

The other advantage is speed. The typical PTS Protocol Type Selection (ISO7816-3) negotiated speed can be up to 115 kilo baud. This interface enables larger data transport without the overhead of anti-collision and wireless breakdown issues that are a result from the card moving in and out of the reader antenna range.

I. Python IDLE:

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

The Python interpreter is easily extended with new functions and data types implemented in C or C++ (or other languages callable from C). Python is also suitable as an extension language for customizable applications.

VI. FLOW CHART

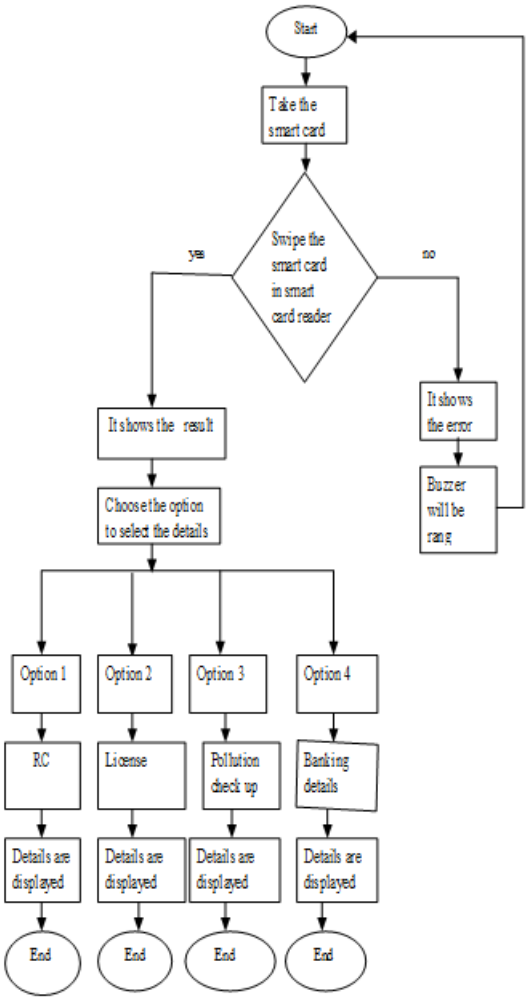

Fig.5. Flow chart

VII.HARD WARE VIEW

Fig 6: First we Insert the Card

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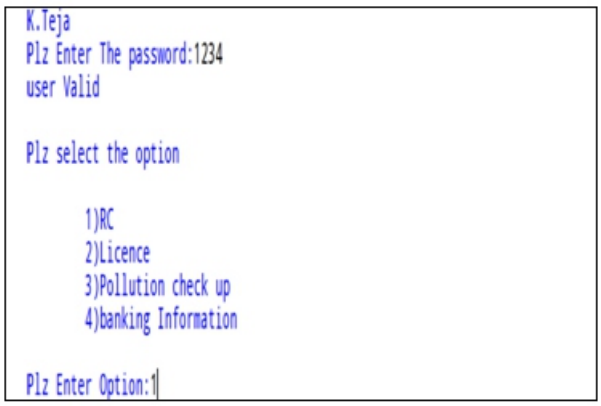

Fig7: After Swiping the Card We Enter the Password and Select the Option

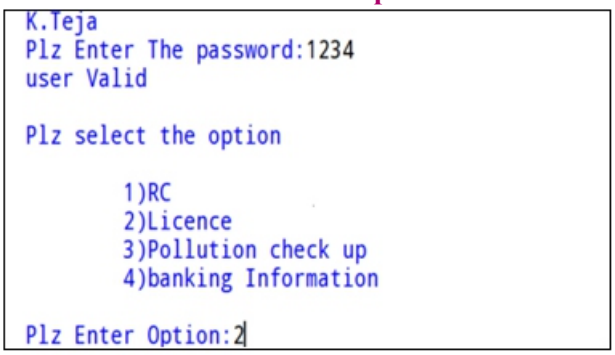

Fig8: We Select the Option 2 That Details Are Displayed On Lcd Board

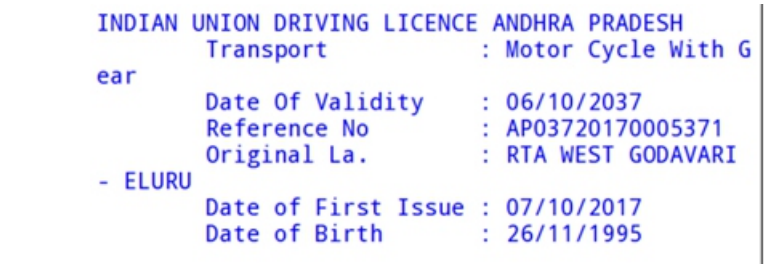

Fig9: License Details are Displayed on lcd Board

VII. CONCLUSION:

The working of the experiment is done with the real time applications. This proposed approach can make use of single card instead of multiple cards that are used for business purposes, banking purposes, license, driving sector. Where multiple cards are used for multiple purposes. This approach makes easy for people who mainly depend on multiple cards for multiple purposes.

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