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CSE299.1 TNF

Auto Notification &

Fuel Refill System Using RFID

Team Green

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Abstract: The main aim of the project is to design a system which is capable of automatically deducting the amount of petrol dispensed from user card based on RFID technology. Liquid dispensing systems are quite commonly found in our daily life in different places like offices, Bus stands, Railway stations, Petrol pumps. Here we are going to present modern era petrol dispensing system which is meant to be operated with prepaid card using RFID technology. The project mainly aims in designing a prepaid card for petrol bunk system and also petrol dispensing system using RFID technology. In current days the petrol stations are operated manually. These petrol pumps are time consuming and require more man power. To place petrol stations in distant area is very costly to provide excellent facility to the consumers. All these problems are sorted out by the use of unmanned power pump which requires less time to operate and it is effective and can be installed anywhere. The customer self-going to avail the service has to done the payment by electronic clearing system.

Key word: RFID Technology, petrol dispensing system, petrol bunk system, automotive petrol control

INTRODUCTION

The increase in the number of vehicles in Bangladesh in recent years has led to the congestions and traffic jams in almost all cities of India. The dispensing of the fuel to this huge number of vehicles at the fuel stations has caused many complication in India. The vehicle driver has to pay for fuel with cash money and may have to pay more than the amount of dispensed fuel due to the lack of small money change available with station operator.

RFID Based Automated Petrol Pump, is to reduce human work and develop an auto-guided mechanism and to implement the task sequentially by using RFID technology. These systems are highly reliable and less time-consuming devices. The components used in this project are Arduino Mega, RFID tags, Power supply, an LCD display, a Motor driver and an RFID reader.

Petroleum products are one of the valuable and rare creations of the nature. The proper use and distribution is an important task to survive these products . A fuel station is a facility which sells fuel and lubricants via fuel dispensers or otherwise called browers which themselves are used to pump gasoline,

Diesel, kerosene, etc. into vehicles and to calculate the financial cost of the product thus dispensed . Enterprises engaged in urban and suburban public transport as well as other transport enterprises big fuel consumers, need control of fuel delivery to prevent or at least minimize the misuse of the fuel .

The emergency of radio frequency technology has changed the traditional methods of data collection. Compared to the traditional bar code, magnetic card and IC cards, RFID tags have the features of non-contact, reading speed, no wear, long life, user friendly and the security function . The use of RFID for vehicle identification, toll collection, traffic management have already been experimented with extensively . This project proposes the implementation of RFID technology in controlling fuel dispensing for an Dhaka cities.

BLOCK DIAGRAM

FOR

Auto Notification & Fuel Refill System

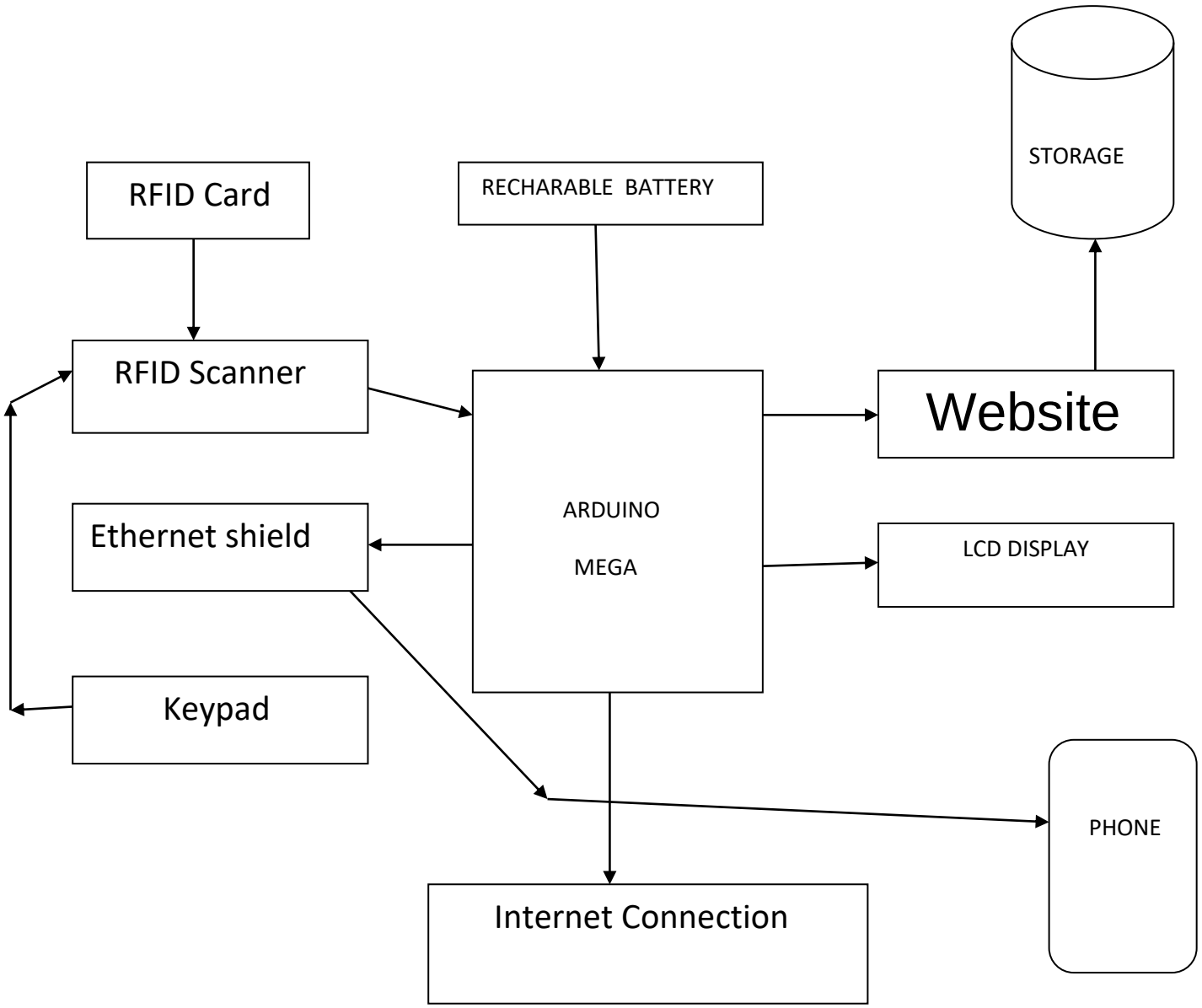

Fig. 1: Block diagram of the proposed system

Hardware required are:-

1) Arduino Mega,
2) Ethernet shield,
3) RFID Scanner,
4) RFID Card,
5) Ethernet shield,
6) Internet Connection,
7) Dispensary set (pump, pvc, pipe etc),
8) Jumper wires,
9) Keypad, 16*2 LCD,
10) Potentiometer,
11) Buzzer,
12) LED etc.

The project is implementing as an RFID-based petrol bunk. Users use RFID card: Petro Card with RFID tags including user verification codes. These cards can be recharged at the recharge points. When a user swipes the card through the RFID reader, it senses the amount

entered by the user and delivers fuel to the vehicle. Therefore, the amount will be deducted automatically from the user card and the LCD display shows the amount and details of the user.

The microcontroller stores several cards details and compares the data given by the RFID reader. When both these details match, it sends the control signals to the relay such that the motor operates to pump petrol.

The system proposed states three simple uses of RFID smart cards. Among these two cards are known and the rest is unknown. When the customer comes to fill the fuel at the station, firstly he will swipe the card. If the card is authorized, RFID card reader will accept the card. Then it will ask for the pin number. If he entered pin number by the customer is correct then it will ask for the amount for the petrol to be dispensed. In such a way system works.

If the customer swipes with unauthorized card, then the reader will display the error message as the card is unauthorized. In such a way the system is secured. This system does not require any high performance micro-controller such as ARM series. It is sone using low cost micro-controller which indirectly reduces the cost of the total system.

ADVANTAGES

1) Man power is reduced because of automated self-service.

2) Due to use of RFID system robbery of the fuel is avoided.

3) The time is saved.

4) Low power consumption.

5) Accuracy in the amount of petrol dispensed.

6) Highly sensitive.

IMPLEMENTATION AND RESULTS

In this system we have used RFID reader for swaping the RFID card. We have used LCD display for displaying the amount and pin number. For typing amount and pin we have used keypad. And for dispensing the fuel there is dispensing system. The system accepts the authorized RFID card. The system operates by the Arduino Mega receiving value from the keypad which represents customer request. And customers get the accurate amount of the fuel.


1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D
SCAN
HERE


Name: Md.noor

Email: nureazam97@gmail.com

Phone: 01737436896

Age: 20

Gender: M

Address: Dhaka

RFID NO: 94E73AF6

Your current balance is 29384

Refresh

Time	Fuel Type	Quantity (L)	Cost
2019-05-05 01:51:17	Petrol	10	980
2019-05-05 01:32:06	Petrol	22	2156
2019-05-04 23:37:06	Petrol	50	4900
2019-05-04 23:34:41	Petrol	100	9800
2019-05-04 23:28:52	Petrol	22	2156
2019-05-04 23:24:05	Petrol	22	2156
2019-05-04 23:19:43	Petrol	22	2156

Refresh

CONCLUSION

RFID system is a versatile technology. This system is used in many application and real time application. In our application, RFID system dispenses the accurate amount of fuel which reduces the misuse of the fuel. And it also reduces the man power. And if the customer tries to swipe with the unauthorized card, the RFID system rejects the card. In this way the system is so secured. To obtain best performance the RFID readers and Tags must be in good quality.

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