

Smart License Key for Vehicle Management

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ABSTRACT: Vehicle theft is one of the major problem faced by the civil society. Statistics shows that vehicles which gets stolen, only one fourth of them is recovered. Current system uses remote control devices for security. In our proposal system, a smart license key is employed along with inbuilt database device. This device only activates the ignition system when the data in the license key is matched with vehicle data. The database consists of vehicle register, chase number, RC details and insurance. The database is only boosted by the concerned authority which cannot be accessed explicitly. In future, the device will upgraded for the Traffic Rule Management. In this paper mainly how RFID system with its identification feature is useful for vehicle identification. With this feature can improvise current system extent the same concept in biometric vehicles.

KEYWORDS: Smart key, Reader, Database, RFID

I. INTRODUCTION

In today's world, theft of vehicles are increasing day by day. So in order to avoid this problem we have introduced a new model where vehicle cannot be access without the knowledge of owner. With the help of this method, theft of the vehicle can be reduced to certain number. In our project, the card is made up of radio frequency identification technology that uses that uses radio waves to identify objects. The device that reads the information RC522 contained in a wireless device or "tag" from a distance without making any physical contact or requiring a line of sight. RFID uses electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Some tags are powered by electromagnetic induction from magnetic fields produced near the reader. If someone steals the owner's license he/she can also operate the vehicle but in the database information of the vehicle's owner will be stored already, with the help of that information we can easily find that whether he/she is operating the vehicle with the owner's intention or not. This model can be used as an active tool for maintaining traffic rules for people below the age of 18. Now let us see about this in detail below.

II. RELATED WORK

This is a very useful as well as effective way to protect our vehicles in a simple and cost efficient manner. Since RFID is used here it's replacement cost will also be less and also data can be re-entered in the database again for verifying the user. The steps which are followed here are not complex and can be followed easily which are mentioned below.

- RFID with unique is first scanned by the RC522 reader.
- The new data is then verified with the reference data in arduino.
- Then if it matches access for starting the vehicle will be granted.
- If it does not match access will be denied.

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- If id which does not match is scanned more than three times then sound alert will be given with the help of a buzzer.

III. PROPOSED MODEL

In this project, a RFID key is provided with the details like bike chassis number, RTO register no, and the owner name. The reader is used to fetch and match the details of the key with database. In case if the key is lost, user can block the key and start using a new one which is issued by concerned authorities. The engine will start only if the key and database is matched. If not, access will be denied. If card without the required data is used multiple times buzzer alert will be given.

IV. BLOCK DIAGRAM

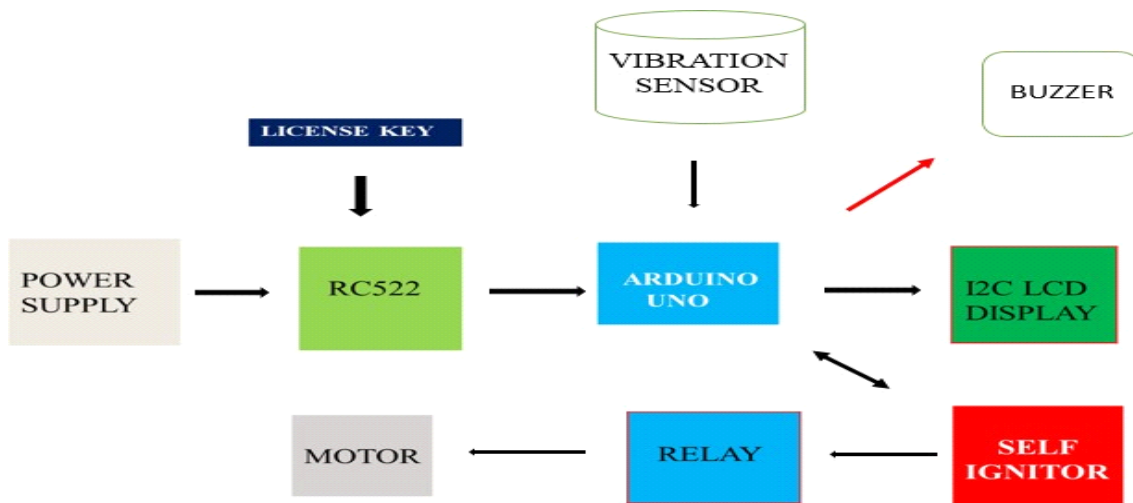


Fig1: Block Diagram

V. WORKING PRINCIPLE

- The RFID is read by RC522 reader. A reader generates an electromagnetic field which causes electron to move through the tags antenna subsequently power the chip. The power chip inside the tag then responds by sending its stored information back to the reader in the form of another radio signal.
- A radio frequency identification system uses tags, or labels attached to the objects to be identified. Two way radio transmitter receivers called reader send a signal to the tag and read its response.
- RFID tags can be either passive, active or battery assisted passive. RFID offers advantages over manual systems or uses of bar codes. Information collected from the tags is then transferred through a communications interface to a host computer system, where the data can be stored in a database and analyzed at a later time.
- It works as master in slave out. In a smart card data can be transmitted to Arduino Uno. Smart cards are portable data cards that must communicate with another device to gain access to a display device or a network. It can read by RFID and send the data for Arduino. Because Arduino is an open source electronics platform based on easy to use hardware and software.
- Voltage regulator, any electrical or electronic device that maintains the voltage of a power source within acceptable limits. The voltage regulator is needed to keep voltages can be tolerated by the electrical equipment using that voltage. The voltage regulator can converted high voltage to low voltage after that it send the small amount of voltage to Arduino. The relay works on the principle of an

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electromagnetic attraction.

- When the circuit of the relay senses the fault current, it energises the electromagnetic field which produces the temporary magnetic field. This magnetic field moves the relay armature for opening or closing the connections.

VI. EXPERIMENTAL RESULTS

The development of the smart license key allows access for only few people who has the unique ID which matches with the pre-stored data in the database. The access will be denied if the data does not match. If this step is followed more than three times buzzer alert will be given. The output is shown below.

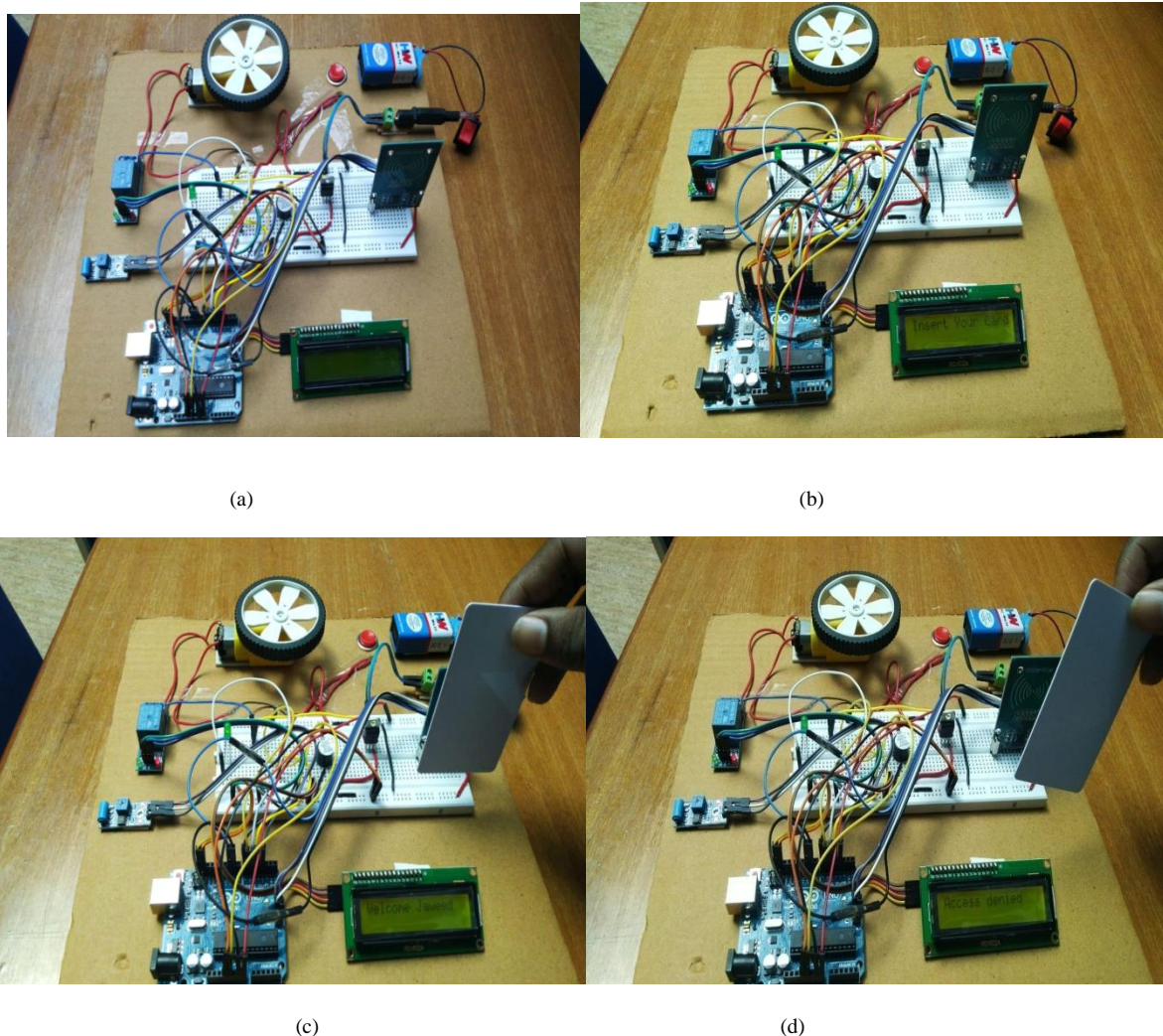


Fig. 2: (a) Experimental Setup (b) Initialisation of setup (c) Experimental output if the ID matches (d) Experimental output if the ID does not match

VII. CONCLUSION

Now a days, due to the demand for less manual controlling, everyone prefers automated control system. The proposed project suggests vehicle authentication with smart tag using RFID. This technology is one of the efficient technology for vehicle authentication. It contains RFID and RFID tags whenever these tags are in the visibility of reader, data can be accessed. Also avoid manual verification and chances of occurrence of the error. Therefore, we can control time consumption during vehicle inspection. In future, this system can be upgraded to detect unexpected accidents with the help of vibration sensor and send the information along with location details to the management. Further, it can be installed in any kind of transportation used by the people.

REFERENCES

- [1] AjinkyaKawale, "Fingerprint based locking system", International Journal of Scientific & Engineering Research, Volume 4, No 5, pp.899- 900, May-2018.
- [2] Prashantkumar R., Sagar V.C., Santhosh S.2, Siddharth Nambiar, "Two wheeler vehicle security system", International Journal of Engineering Sciences & Emerging Technologies, Volume 6, No. 3, pp.324-334, 2017.
- [3] Raj Upendran Rajendran and Albert Joe Francis, Anti Theft Control System Design Using Embedded System, Proc. IEEE, vol.85 page no. 239-242, 2016.
- [4] Security System for Vehicle using Number Plate Detection and RFID Paras Goyal, Iqbal Singh International Journal of Computer Applications (0975 – 8887) Volume 97– No.8, July 2014.
- [5] Vehicle Tracking Using RFID Jayalakshmi J, Ambily O A International Journal of Engineering Research and General Science Volume 4, Issue 2, March-April, 2012 ISSN 2091-2730
- [6] Automatic Vehicle Identification with Sensor Integrated RFID System 1 J. Wisanmongkol, T.Sanpechuda and U.Ketprom Proceedings of ECTICON 2012.
- [7] Technologies in Highway's Electronic Toll Collection System Xu Guangxian Department of Electronic Information Engineering, Liaoning Technical University HuLuDao, China.