

# License Scanning Automobile Security System

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**Abstract**— The project entitled License scanning automobile security system is designed for the users to use vehicles with high security using license scanning system. Here in this project we use radio frequency identifiers (RFID) which is connected with the micro controller. The microcontroller kit is also connected with the key section of vehicle is connected with the microcontroller kit. The data of RFID of the license is already stored in the micro controller. When the user keeps the RFID tag in front of the scanner the system reads data on the tag and search for the matching details of RFID, the software in the micro controller recognizes the data and checks it with the existing data stored in the device. If it matches, it sends signal to the microcontroller. The microcontroller receives the signal and sends signal to the relay section through drivers. The relay section is connected to the electric starter of the vehicle. Thus the operation of the vehicle depends upon the data in the RFID. If the software does not recognize it, the starter section will not start.

**Key words:** RFID, License Scanning Automobile Security System

## I. INTRODUCTION

Modern automobiles are protected by various security systems which are expensive. The objective of the work is to develop a cheap and dependable security system for automobiles. The device uses a microcontroller which is interfaced with other peripherals like GSM (Global System for Mobile) and RFID (Radio Frequency Identification) reader. If a person is licenced to drive a particular category of vehicle, the system will permit the vehicle to be used once both the authentication and the driving licence cards are validated.. For anyone, other than the registered owner, to use the vehicle, the authentication card is to be validated first. Before the vehicle starts, the RFID reader reads parameters of the smart driving licence. Once these parameters are validated by the microcontroller; the ignition system will be switched on. The main aim of this project is to allow or deny permission to operate a vehicle, on the basis of driving licence and vehicle ownership. A driver should possess a valid driving licence to drive a vehicle. This prevents one from driving a vehicle if he/she is not licenced and helps in reducing road accidents. Generally, license card have been characterized by the date, expiry and type of vehicle. At present some individual makes the fake license card and to evade making such IDs, RFID tag is used as DL card which enhances the security execution and keeps away from fake identification. RFID reader sends the information to the P89V51RD2 microcontroller. The P89V51RD2 microcontroller is given the information of each and every person. Subsequent to RFID reader sending the ID to the microcontroller, it tries to match up the ID with its information base.

## II. PROBLEM IDENTIFICATION

In existing method, keys were used to start the vehicle. By this method, vehicles can be stolen easily and unable to prevent accidents. Driving without license is a major cause of road accidents. This project is based on smart driving license card which would enhance road safety and vehicle security. The card helps to limit the vehicle operation on the basis of three parameters; driving license expiry date, vehicle ownership and category of the vehicle for which driving licence is issued. The common defects seen in car ignition system.

### A. Manufacturer Defect

One of the most common reason's ignitions fail is a faulty part from the beginning, many car manufacturers will warranty the part if the car is still under warranty. If not, any reputable automotive locksmith can help. Common vehicles with factory related ignition problems are Ford Focus, Nissan Sentra, Jeep Grand Cherokee, and Chevrolet Cavalier.

### B. Attempted Vehicle Theft

Many times when a burglar attempts to steal a vehicle he or she is not well versed in how a vehicle ignition works, the end result is usually a mess with an ignition switch and steering column in pieces. In this case, best course of action is replace the entire ignition assembly.

### C. Wrong Key Inserted Into Keyway

When the wrong key is inserted into the ignition switch, do not try to remove it! Call a locksmith immediately, trying to pull the key out can cause more damage to the ignition and may cause irreparable damage.

### D. Worn Out or Jammed Up Wafers

Every key ignition has a set of wafers that index with the corresponding cuts on the key. Over time these parts can become worn our packed with dirt and grime causing the switch to fail. Many times the switch can be repaired without the need for replacement, just simple cleaning or individual wafer replacement.

### E. Worn Out Key

Keys don't handle wear and tear as well as the rest of your vehicle, as the key loses material the key will work less and less effectively and eventually stop altogether. In this case the key will need to be remade using the factory key cutting codes, to ensure to key is correctly cut and functional.

## III. OBJECTIVE

### A. Primary Objective

- The main objective of this project is to allow or deny permission to operate a vehicle, on the basis of driving license and vehicle ownership.

- A driver should possess a valid driving licence to drive a vehicle.
- This prevents one from driving a vehicle if he/she is not licensed and helps in reducing road accidents.

**B. Secondary Objective**

- The objective of the work is to develop a cheap and dependable security system for automobiles.
- Safety of the vehicle is the priority of this work

**IV. METHODOLOGY**

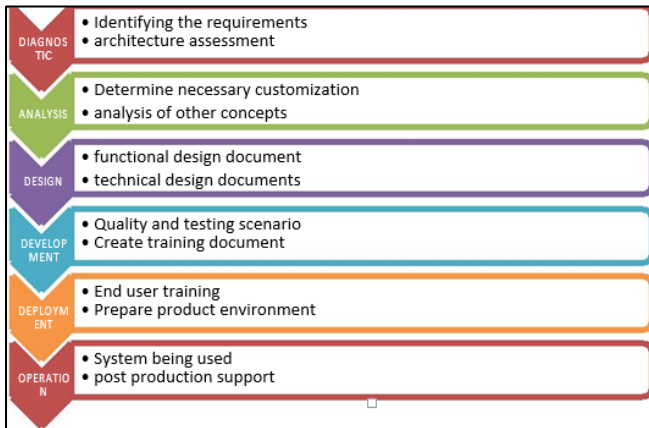


Fig. 1: Methodology

**A. Concept Generation**

A product concept is an approximate description of the technology, working principles and form of the product. It is a concise description of how a product will satisfy the customer need. A concept is usually expressed either sketch or as a rough 3 dimensional module and is often accompanied by a brief textural description. The five concepts which are proposed are:

**1) Concept 1: Fingerprint Scanner**

Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. When fingerprint module is interfaced to the microcontroller, it will be in user mode. In this mode, stored images will be verified with the scanned images. When coming to our application the images of the person's fingerprint that are authorized to open the locker door will be stored in the module with a unique id. To prove that the persons are authorized to open the locker door they need to scan their fingerprint images. If an unauthorized person tries to scan his fingerprint image then an indication will be given by a buzzer which is interfaced to the controller and also if wrong password is entered by the user again indication will be given by the buzzer.

**2) Concept 2: Eye Scan Recognition**

Iris recognition is an automated method of biometric identification that uses mathematical pattern-recognition techniques on video images of one or both of the irises of an individual's eyes, whose complex patterns are unique, stable, and can be seen from some distance. Retinal scans map the unique patterns of a person's retina. The blood vessels within the retina absorb light more readily than the surrounding tissue and are easily identified with appropriate lighting. A retinal scan is performed by casting an unperceived beam of low-energy infrared light into a person's eye as they look through the scanner's eyepiece. Often enrolment in a retinal

scan biometric system is lengthy due to requirement of multiple image capture, which can cause user discomfort. However, once user is acclimated to the process, an enrolled person can be identified with a retinal scan process in seconds.

**3) Concept 3: Voice Recognition**

Speech recognition (SR) is the inter-disciplinary sub-field of computational linguistics that develops methodologies and technologies that enables the recognition and translation of spoken language into text by computers. The voice recognition system has a voice input section at its first stage. This section outputs in voice signal form a speaker's voice recorded through the microphone to the voice recognition processing section. The voice recognition processing section roughly consists of an acoustic processing section and a word collation section. The acoustic processing section can further be divided into an analyzer that detects voice blocks in input signals and a phoneme collator that analyzes phonemes contained in the voice-block signals.

**4) Concept 4: License Scanning**

Automatic license card recognition (ALCR) is a technology that uses optical character recognition on images to read vehicle registration plates. Number receives the details of the driving licence which is being used to drive the vehicle. In authors use proposed thesis aims at securing the automotive using the technologies like Radio Frequency Identification (RFID) technology. Initially the RFID system gets authenticated. The importance of this system is, it gets its verification from the Road Transportation Office (RTO).

**B. Concept Selection**

Concept selection is the process of evaluating concepts with respect to customer needs and other criteria, comparing the relative strengths and weaknesses of the concepts and selecting one or more concepts for further investigation or development. All teams use some method, implicit or explicit, for selecting concepts.

**C. Concept Screening**

Concept screening tests are research designs that reduce a large number of conceptual ideas into a group worth pursuing vs. those that should be rejected. Ideas may be screened using traditional measures (i.e., purchase interest), or through volumetric projection analysis.

Surveys & Forecasts typically conducts concept screening after

- a segmentation or strategic market study has identified new marketing opportunities; (2) exploratory qualitative research that reveals a consumer need; or (3) group ideation or brainstorming sessions. However, concept screening can be conducted at any time there are enough ideas to test that are felt to be judgmentally viable.

**D. Concept Screening Matrix**

Criteria	Fingerprint	Eye	Voice	License
		Scan	Recognition	Card
Universality	0	-	0	+
Uniqueness	-	0	0	0
Permanence	+	-	0	+
Collectability	+	-	0	+

Acceptability	-	-	0	0
Circumvention	0	-	0	0
Performance	+	-	0	+
Sum of +s	3	0	0	4
Sum of 0	2	1	0	3
Sum of -s	2	6	0	0
Total Score	1	-6	0	4
Rank	2	3	Taken AS	1
Continue?	Yes	No	Reference	Yes

Table 1: Concept Screening Matrix

Selection Criteria	Weight	Voice Recognition		License Card Scan		Fingerprint	
		Rating	Wt Score	Rating	Wt Score	Rating	Wt Score
Universality	5%	3	0.15	3	0.15	3	0.45
Uniqueness	5%	2	0.1	4	0.2	2	0.1
Permanence	15%	4	0.6	2	0.3	2	0.3
Collectability	15%	2	0.3	3	0.45	3	0.45
Acceptability	20%	2	0.4	4	0.8	3	0.6
Circumvention	10%	3	0.3	3	0.3	3	0.3
Performance	30%	2	0.6	4	1.2	3	0.9
	Total		2.45		3.4		3.1
	Score Rank		2		1		3
	Continue?		No		Yes		No

Table 2: Concept Scoring Matrix

## V. FLOWCHART & DIAGRAM

The flowchart as shown in the figure shows the brief process which the license card system follows. The smart card reader sends the information to microcontroller, from microcontroller to the ignition system and finally to the engine.



Fig. 2: Flowchart

The circuit diagram as shown in the below figure shows the step wise flow of the process which the license card system follows. The smart card reader is connected to the power source then sends the information to microcontroller, from microcontroller to the ignition system and the GSM module simultaneously and from the relay to the ignition coil which help in igniting the spark plug.

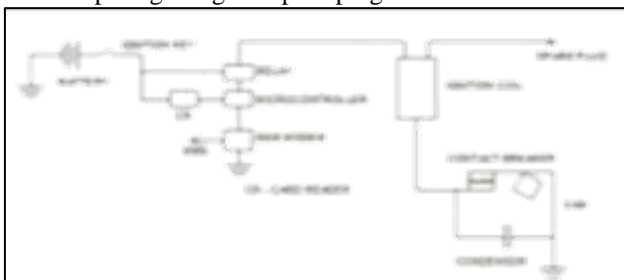


Fig. 3: Flowchart

## VI. ALGORITHM OF THE PROCESS

Automobile Engine Ignition by electronic driving license authentication proposes a system which is supposed to be installed inside the vehicle electronic control panel, integrated with car engine ignition control and odometer. The vehicle driver is supposed to insert his/her driving license inside the driving license slot provided in the system panel

## E. Concept Scoring

Scoring is a more careful analysis of these relatively few concepts in order to choose the single concept most likely to lead to product success. Concept scoring is used when increased resolution will better differentiate among competing concepts. In this stage, the team weighs the relative importance of the selection criteria and focuses on more refined comparisons with respect to each criterion.

## F. Concept Scoring Matrix

inside the vehicle. The system will immediately detect the inserted driving license and reads the driving license number and user info from the EDL. The license number read from the card is sent to Database server of Regional Transport Office or Administrative Authoring which act as a Control Station. The License data is sent over wireless medium.

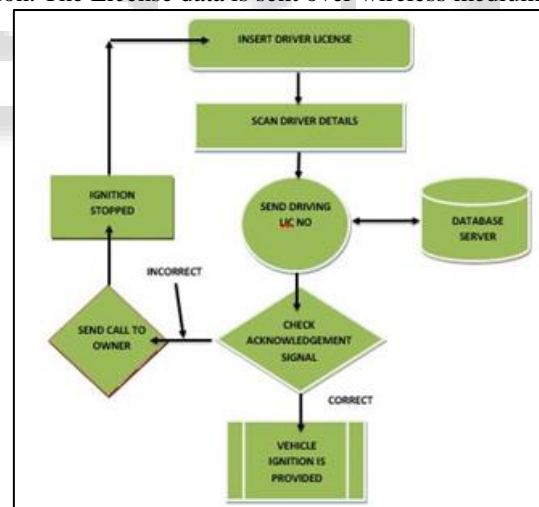


Fig. 4: Algorithm of the Process

## VII. DESCRIPTION OF EQUIPMENTS

### A. P89V51RD2 Microcontroller

The P89V51RD2 is an 80C51 microcontroller with 64 kB Flash and 1024 bytes of data RAM.

A key feature of the P89V51RD2 is its X2 mode option. The design engineer can choose to run the application with the conventional 80C51 clock rate (12 clocks per machine cycle) or select the X2 mode (6 clocks per machine cycle) to achieve twice the throughput at the same clock frequency. Another way to benefit from this feature is to keep the same performance by reducing the clock frequency by half, thus dramatically reducing the EMI.



The Flash program memory supports both parallel programming and in serial In-System Programming (ISP). Parallel programming mode offers gang-programming at high speed, reducing programming costs and time to market. ISP allows a device to be reprogrammed in the end product under software control. The capability to field/update the application firmware makes a wide range of applications possible.

The P89V51RD2 is also In-Application Programmable (IAP), allowing the Flash program memory to be reconfigured even while the application is running.

### B. Liquid Crystal Display

Liquid crystal display technology has enjoyed significant advances in just a few short years.

The quality of LCD panels has improved dramatically while at the same time costs have gradually come down. LCDs are now found in products as small as mobile phones and as large as 42-inch flat panel screens.

The term liquid crystal is used to describe a substance in a state between liquid and solid but which exhibits the properties of both. Molecules in liquid crystals tend to arrange themselves until they all point in the same specific direction. This arrangement of molecules enables the medium to flow as a liquid. Depending on the temperature and particular nature of a substance, liquid crystals can exist in one of several distinct phases. Liquid crystals in a pneumatic phase, in which there is no spatial ordering of the molecules, for example, are used in LCD technology.

The working of a simple LCD is shown in Figure 8.3. It has a mirror in back, which makes it reflective. There is a piece of glass with a polarizing film on the bottom side, and a common electrode plane made of indium-tin oxide on top. A common electrode plane covers the entire area of the LCD. Above that is the layer of liquid crystal substance. Next comes another piece of glass with an electrode in the shape of the rectangle on the bottom and, on top, another polarizing film, at a right angle to the first one. The electrode is hooked up to a power source like a battery.

### C. Radio Frequency Identification

RFID tagging is an ID system for identification and tracking purposes that uses radio frequency identification devices. An RFID tagging system consists of the tag, a read/write or only read device, and a system application for data collection, processing, and transmission.

RFID tags consist of minimum two parts: an integrated circuit and an antenna for receiving and transmitting the signal. The tag information is stored in a non-volatile memory.

### D. How Does Communication Occur?

Data between reader and tag are transmitted in half-duplex mode.

The reader continuously generates a RF carrier wave. When the passive tag is within its read range, this signal powers it. The tag responds to the reader by backscatter and the detected electromagnetic field indicates the presence of the tag.

The time taken for the tag to become fully functional is called the setup time. After this time, the reader requests for read/write access by sending instructions to the tag.

The demodulator recovers the received data stream.

After demodulation of the received instructions and handshaking, the information stored in the tag is transmitted back to the reader by backscattering.

After all of the read/write operations are completed, the reader acknowledges the successful completion of the communication and the tag shuts off.

Tag's material and structure are different depending on the end application and environment

### E. There Are Three Main Categories Known For Rfid Tags

INLAY TAGS- occupy 70% of the market. This type of Tag is mainly used in clothing and merchandise management, and can be replaced by bar code. They are low cost and easy to use but can be employed only in metal free and normal temperature. COMPOSITE TAGS- occupy 20% of the market. This type of tag is mainly applied in storage and pipeline management. They can be used in metal environment but have poor performance. CERAMIC TAGS- occupy 10% of the market. This type of Tag is used in medical equipment, oil and gas pipeline and drilling management which relate to harsh environment. They are small, high temperature and high pressure resistant. However they have narrow bandwidth and long manufacturing cycle.

### F. Global System for Mobile Communication

This document gives an overview of the Link Sprite GSM/GPRS module: a miniature, single-side board, quad-band GSM 850/EGSM 900/DCS 1800/PCS 1900 module, ready for integration in various kinds of Fix wireless phones and other wireless devices. The RF part of this module converts RF signals to baseband for receiver chain and translates base band signals into RF frequency spectrum. The operating frequencies are:

Rx (EGSM 850): 869 to 894 MHz Tx (EGSM 850): 824 to 849 MHz Rx (EGSM 900): 925 to 960 MHz Tx (EGSM 900): 880 to 915 MHz Rx (DCS 1800): 1805 to 1880 MHz Tx (DCS 1800): 1710 to 1785 MHz Rx (PCS 1900): 1930 to 1990 MHz Tx (PCS 1900): 1850 to 1910 MHz

The power supply is one of the key issues in the designing GSM terminals. Due to the 577 us radio burst emission in GSM every 4.615ms, power supply must be able to deliver high current peaks in a short time. During these peaks, ripples and drops on the supply voltage must not exceed a certain limit.

### G. Relay Driver

Large numbers of relay-based applications require the use of a microprocessor which implements complex system control. In these systems, there is the need for microprocessor logic supply voltage, power-on reset circuitry, and watchdog capabilities.

The Allegro™ A2550 combines the functions of voltage regulator, watchdog, and reset, as well as three low-side DMOS relay driver outputs. Primarily targeted at automotive applications, this IC is designed to provide robust performance over extended voltage and temperature ranges.

Three low-side DMOS drivers can drive inductive loads, such as relay coils. Each driver integrates rugged voltage clamps which survive automotive load dump pulses up to 48 V. The 40 V rating on VBB also ensures adequate survival in harsh automotive environments.

A 5 V linear regulator provides 40 mA of output current, with a tolerance of 2% over the operating

temperature range. To enhance the usefulness of the IC in automotive applications, the 5 V regulator output, as well as the three low-side driver outputs are protected against overcurrent conditions

#### H. Max232

The MAX232 device is a dual driver/receiver that includes a capacitive voltage generator to supply TIA/EIA -232-F voltage levels from a single 5-V supply. Each receiver converts TIA/EIA-232-F inputs to 5-V TTL/CMOS levels. These receivers have a typical threshold of 1.3 V, a typical hysteresis of 0.5 V, and can accept  $\pm 30$ -V inputs. Each driver converts TTL/CMOS input levels into TIA/EIA -232-F levels. The MAX232 is shown in the fig 8.12.

#### I. Power Supply

A Dc power supply which maintains the output voltage constant irrespective of Input mains. This laboratory power supply offers excellent line and load regulation and output voltages of +6V at output currents up to one amp.

- Rectifier Stage: The two diodes D1 & D2 are connected across the Output as a full-wave rectifier' during the positive half cycle of secondary voltage, the end A of the secondary winding becomes positive and end B negative. This makes the diode D1 forward biased and diode D2 reverse biased. Therefore diode D1 conducts while diode D2 does not. During the negative half cycle end A of the secondary winding becomes negative and end B positive. Therefore diode D2 conducts while diode D1 does not. Note that current across the center tap terminal is in the same direction for both half-cycles of input AC voltage. Therefore, pulsating DC is obtained at point 'C' with respect to Ground.
- Filter Stage: Here Capacitor C1 and C2 is used for filtering purpose and connected across the rectifier output. It filters the AC components present in the rectified DC and gives steady DC voltage. As the rectifier voltage increases, it charges the capacitor and also supplies current to the load. When capacitor is charged to the peak value of the rectifier voltage, rectifier voltage starts to decrease. As the next voltage peak immediately recharges the capacitor, the discharge period is of very small duration. Due to this continuous charge-discharge-recharge cycle very little ripple is observed in the filtered output. Moreover, output voltage is higher as it remains substantially near the peak value of rectifier output voltage. This phenomenon is also explained in other form as: the shunt capacitor offers a low reactance path to the AC components of current and open circuit to DC component. During positive half cycle the capacitor stores energy in the form of electrostatic field. During negative half cycle, the filter capacitor releases stored energy to the load.
- Voltage Regulation Stage: Across the point 'JD' and Ground there is rectified and filtered DC. In the present circuit L1147806 three terminal voltage regulator IC is used to get +06V output. In the three terminals, pin 1 is input i.e., rectified & filtered DC is connected to this pin. Pin 2 is • common pin and is grounded. The pin 3 gives the stabilized DC output to the load. The circuit shows two more decoupling capacitors C2 & C3, which provides ground path to the high frequency noise signals.

Across the point 'E' and 'F' with respect to ground +06V stabilized or regulated DC output is measured, which can be connected to the required circuit.

#### J. Resistors

Resistors is the electronic component used to control the current passing through the circuit. They are calibrated in ohms. In the other words resistance are circuit elements having the function introducing electrical resistance into the circuit. There are three basic types:

- Fixed Resistance
- Rheostat
- Potentiometer

A fixed Resistance is a two terminal resistance whose electrical resistance is constant. A rheostat is a resistance that can be changed in resistance value without opening the circuit to make adjustment.

A potentiometer is an adjustable resistance with three terminals one each end of the resistance element and third movable along length.

#### K. Capacitor

A capacitor is a device capable of storing an electric charge (static electricity). It consists of two metal plates separated by dielectric material. Capacitors are available in values ranging from less than one picofarad to thousands of microfarad. While using a capacitor its ratings must be carefully observed to make certain that the potential to be applied across the capacitor is not greater than the rated value.

#### L. Ceramic Capacitor

In this project, 0.01 microfarad capacitor is a ceramic capacitor. The basis of the ceramic material is mainly barium titanate or a similar material, but other ceramic substances including hydrous silicate of magnesia or talc are also used. The electrodes are applied in the form of silver which is either spread or plated on to the opposite faces of a thin tube/wafer or disc made from the ceramic material. Connecting wires are then soldered to this 'Posit and the whole capacitor dipped in for a suitable coating.

#### M. Electrolytic Capacitor

In this type of capacitors, the dielectric consists of an extremely thin film of aluminum oxide formed on one of its aluminum foil plates. Intimate contact with the other plate is achieved by impregnating the paper between the foils with an electrolyte in the form of viscous substance, such as ammonium borate. The sandwich is then rolled into a cylindrical element and housed in either metallic cardboard, plastic or ceramic protective tube.

#### N. Diode

It is a P-type region and N -type region formed in the same crystal structure, and hence a P-N junction is produced. Some of the conduction electrons near the junction diffuse in to P-type semiconductor from the N-type semiconductor across the junction combining with the holes. The loss of electrons makes the N-type semiconductor positively charged and hence the neutralization of the holes on the other hand makes P-type semiconductor negatively charged. This region where positive and negative charges develop is called depletion region.

If a P-region is made positive with respect to the N-region by an external circuit then junction is forward biased and junction has a very low resistance to the flow of current. Holes in the positive P- type material are attracted across the junction to the negative side and the free electrons in the N-type material are likewise attracted to the opposite side. If a positive voltage is applied to N- zone with respect to the p-zone terminal, the P-N junction is reverse biased.

#### O. Light Emitting Diode (LED)

A light-emitting diode (LED) is a semiconductor device that emits incoherent narrow-spectrum light when electrically biased in the forward direction of the P-n junction. This effect is a form of electroluminescence. LEDs are small extended sources with extra optics added to the chip, which emit a complex intensity spatial distribution. The color of the emitted light depends on the composition and condition of the semi conducting material used, and can be infrared, visible or near-ultraviolet.

The kinetic energy of the wheel gets converted in to electrical energy by the help of generator. This electrical energy is shown by LED.

#### P. Photodiode

A photodiode is a type of photo detector capable of converting light into either current or voltage, depending upon the mode of operation. Photodiodes are similar to regular semiconductor diodes except that they may be either exposed (to detect vacuum CV or X-rays) or packaged with a window or optical fiber connection to allow light to reach the sensitive part of the device. Many diodes designed for use specifically as a photodiode will also use a PIN junction rather than the typical PN junction.

A photodiode is a PN junction or PIN structure. When a photon of sufficient energy strikes the diode, it excites an electron, thereby creating a mobile electron and a positively charged electron hole. If the absorption occurs in the junction's depletion region, or one diffusion length away from it, these carriers are swept from the junction by the built-in field of the depletion region. Thus holes move toward the anode, and electrons toward the cathode, and a Photocurrent is produced.

When used in zero bias or photovoltaic mode, the flow of photocurrent out of the device is restricted and a voltage builds up. The diode becomes forward biased and "dark current" begins to flow across the junction in the direction opposite to the photocurrent. This mode is responsible for the PV effect, which is the basis for solar cells—in fact, a solar cell is just a large area photodiode.

In this mode the diode is often reverse biased, dramatically reducing the response time at the expense of increased noise. This increases the width of the depletion layer, which decreases the junction's capacitance resulting in faster response times. The reverse bias induces only a small amount of current (known as saturation or back current) along its direction while the photocurrent remains virtually the same. The photocurrent is linearly proportional to the luminance.

Although this mode is faster, the photoconductive mode tends to exhibit more electronic noise. The leakage current of a good PIN diode is so low ( $< 1$  nA) that the Johnson –Nyquist noise of the load resistance in a typical circuit often dominates.

#### Q. Transistor

A transistor is semiconductor device consisting of three regions separated by two P-N junctions. The three regions are Base, Emitter & Collector.

The base may be of N- type or P- type. The emitter and collector have same impurities but different from that of base. Thus if base is of N- type then emitter and collector are of P-type then transistor is called P-N-P transistor and vice versa transistor is called N-P-N transistor.

The base is made thin and number density of majority carriers is always less than emitter and collector. The base provides junction for proper interaction between emitter and collector. Electrons are majority charge carriers in N-region and in P-region, holes are the majority charge carriers. Thus two types of charge carriers are involved in current flow through N-P-N or P-N-P transistor.

#### R. Symbols for Transistors

In schematic symbols as shown in Fig 9.10, the emitter is always represented by an arrow indicating the direction of conventional current in the device. In case of N-P-N transistor arrow points away from base and in case of P-N-P transistor it points towards base.

When transistor is used in circuit, emitter - base junction is always forward biased while base -collector junction is always reverse biased.

#### S. Biasing of Transistor

- Both junctions may be forward biased. It causes large current to flow across junctions. Transistor is to be operated in "SATURATION REGION".
- Both junctions may be reversed biased. It causes very small current to flow across junctions. Transistor is to be operated in "CUT OFF REGION".
- E-B junction is forward biased and C-B junction is reverse biased. The transistor is said to be operated in "ACTIVE REGION". Most of the transistors work in this region.
- E-B junction is reversed biased and C-B junction is forward biased. The transistor is said to be operated in "INVERTED MODE".

#### T. Buzzer

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

##### 1) Types of Buzzer

###### a) Electromechanical

Early devices were based on an electromechanical system identical to an electric bell without the metal gong. Similarly, a relay may be connected to interrupt its own actuating current, causing the contacts to buzz. Often these units were anchored to a wall or ceiling to use it as a sounding board. The word "buzzer" comes from the rasping noise that electromechanical buzzers made.

###### b) Mechanical

A joy buzzer is an example of a purely mechanical buzzer. They require drivers.





## IX. PROTOTYPE



Fig. 12: Top View

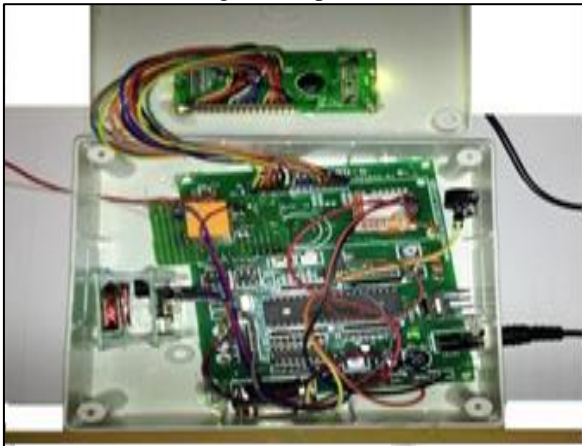


Fig. 13: Top View (interior)-PCB Circuit



Fig. 14: Top View Valid card identification



Fig. 15: Top View Invalid card identification

## X. ADVANTAGES & LIMITATIONS

### A. Advantages

- Avoids fake identification.
- It reduces the accidents and theft.
- Convenient to use and the cost is also low.
- Scanning can be performed within a minimum amount of time.
- The main objective of this project is to allow or deny permission to operate a vehicle, on the basis of driving license and vehicle ownership.

- A driver should possess a valid driving licence to drive a vehicle.
- This prevents one from driving a vehicle if he/she is not licensed and helps in reducing road accidents.

### B. Disadvantages

- If the license card is stolen, rebooting is done. This will take time, since removing the programs requires an experience software engineer
- A given family member below 18 years of age can use the owner's DL, this could be dangerous.

## XI. CONCLUSION

- Proposed system shows promising results, since active RFID technology used for the purpose of identification, it contains voter's details. P89V51RD2 microcontroller is used which contains special features like ISP & IAP.
- This system is designed with some of the advantages that the owner of the vehicle can protect his car from theft. So that 70% efficiency can be achieved, human interference is less and also chance of accident is less.
- The data centralization is used i.e., after scanning all the details are sent to respective server. So it avoids human interference. The GSM technology is used for transmitting the details of fake id.
- This system avoids fake license, it can easily identify that who have valid driving license.

## XII. FUTURE SCOPE

This work deals with the design & development of a driving licence based security system for an automobile. This system prevents vehicle theft and driving without proper driving licence. The simulation of the system is done using PROTEUS 7.7 software.

A physical system is under development and will be tested for effectiveness. The system will increase road safety and reduce vehicle theft. If installed in all the vehicles, it will be of use for the society as well as the law enforcement department. Ideally, this system could be made more convenient and effective with the use of satellite modems, instead of cell phones, as tracking device as the present system may fail when there is no cellular network coverage.

This setup can be made more powerful with the help of a pinhole camera and GPS tracking device. The image captured by the camera and GPS data may be send to owner's mobile phone and the data can be identify the thief and retrieves the vehicle.

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