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AUTOMOBILE SECURITY SYSTEM USING GSM

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Abstract: In these last two decades automobile industry has undergone a rapid development. Even its impact had changed the life style of people. It's becoming the progressive symbol of the modern society. As it becomes as a progressive symbol its security also becomes challenging day by day. In this proposed system the security to an automobile is provided at very low cost and at higher efficiency. The system consists of a solenoid valve placed at part of the smoke exhauster. The solenoid valve is controlled by a digital password. When it matches then the solenoid valve is opened otherwise not. Hence the automobile never starts and also at the same time GSM Module send an SMS to the owner about the theft attempt.

Keywords: Solenoid Valve, GSM Module, AT Commands, RS232 and UART Protocols, SMS

I. INTRODUCTION

In these days, automobile thefts are increasing at an alarming rate all over the world. Hence the people's fond for automobile security have been increased. There are several types of anti thefting technologies are used. Some of them are

1. Biometric Recognition
2. Fingerprint Recognition
3. Voice Processing
4. Image Processing etc

These systems are all highly expensive because it requires multiple sensors to collect its input. The sensors used are very expensive. Hence the total cost of the security[1] system becomes highly expensive. Hence in this proposed system solenoid valve is utilized to control the theft of an automobile.

The solenoid valve is placed between the engine and smoke exhauster unit. The principle behind this is that when an engine is started by sealing the smoke exhauster then the automobile doesn't starts. This is the key idea being the proposed system. The solenoid valve is opened only when the correct digital password is entered. If it is not a correct one then it remains as such. In addition to it a GSM Module is also been interfaced. The main purpose of the GSM Module is to send the SMS to the owner about the theft. The GSM modem utilizes the AT Commands for sending the SMS to the owner. Once the GSM Modem is interfaced with the Processor it sends the SMS automatically when the digital password entered is incorrect. The LabVIEW is also been used to simulate the project.

II. LABVIEW:

Laboratory Virtual Instrumentation Engineering Workbench (LabVIEW) is a system design platform and development environment for a visual programming language from National Instruments. LabVIEW is commonly used for data acquisition, instrument control, and industrial automation on a variety of platforms including Microsoft Windows, various versions of UNIX, Linux, and Mac OS X. It is a highly productive development environment that engineers and scientists use for graphical programming and unprecedented hardware integration to rapidly design and deploy measurement and control systems. Within this flexible platform, engineers scale from design to test and from small to large systems while reusing IP and refining their processes to achieve maximum performance.

III. DATAFLOW PROGRAMMING

The programming language used in LabVIEW, also referred to as G, is a dataflow programming language. Execution is determined by the structure of a graphical block diagram (the LV-source code) on which the programmer connects different function-nodes by drawing wires. These wires propagate variables and any node can execute as soon as all its input data become available. Since this might be the case for multiple nodes simultaneously, G is inherently capable of parallel execution. Multi-processing and MULTI-THREADING HARDWARE IS AUTOMATICALLY EXPLOITED BY THE BUILT-IN scheduler, which multiplexes multiple OS threads over the nodes ready for executions.

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IV. GRAPHICAL PROGRAMMING

LabVIEW ties the creation of user interfaces (called front panels) into the development cycle. LabVIEW programs/subroutines are called virtual instruments (VIs). Each VI has three components: a block diagram, a front panel and a connector panel. The last is used to represent the VI in the block diagrams of other, calling VIs. The front panel is built using controls and indicators. Controls are inputs – they allow a user to supply information to the VI. Indicators are outputs – they indicate, or display, the results based on the inputs given to the VI. The back panel, which is a block diagram, contains the graphical source code. All of the objects placed on the front panel will appear on the back panel as terminals. The back panel also contains structures and functions which perform operations on controls and supply data to indicators.

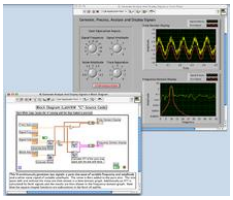
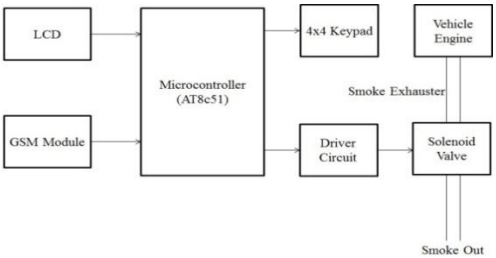


FIG-1. SCREENSHOT OF A SIMPLE LABVIEW PROGRAM

The structures and functions are found on the Functions palette and can be placed on the back panel. Controls, indicators, structures and functions will be collectively referred to as nodes. Thus a virtual instrument can either be run as a program, with the front panel serving as a user interface, or, when dropped as a node onto the block diagram, the front panel defines the inputs and outputs for the given node through the connector panel. This implies each VI can be easily tested before being embedded as a subroutine into a larger program.

Block Diagram:

The Block diagram of the proposed system is as shown in figure 2.



Block Description**:**

The system consists of five units namely

1. LCD Display
2. 4x4 Keypad
3. GSM Module
4. Driver Circuit
5. Microcontroller

LCD Display

The LCD display used in the system is a 16x2 (16 Columns and 2 Rows) Display. The LCD unit is used to display the digital password entered into the system. It also indicates whether the entered password is correct or wrong. Initially it displays the current status of the system.

4x4 Matrix Keypad

The 4x4 matrix keypad is used to enter the digital password to start off with the system. The 4x4 keypad consists of 16 keys through which the digital password can be entered.

GSM Module

The GSM Module used here is to send SMS to the owner if a wrong password is entered. The wrong password is entered only if unknown person tries to start of the system. When the digital password entered don't matches with the system then the GSM Module automatically send SMS to the owner. The GSM Modem used is SIM3000.

Driver Circuit

The driver circuit used here is to interface the solenoid valve with the Microcontroller. The driver IC used is Max232. It converts the RS232 voltage levels into TTL Levels and vice versa.

1. Microcontroller

The Microcontroller is the heart of the system because it only sends signals to open and close the solenoid valve. The microcontroller is programmed to compare the digital password entered with the already stored password. Once if the password matches then it opens the solenoid valve otherwise not. And also once the wrong password is entered it sends SMS to the owner. The microcontroller utilized is an Atmel 89C51.

Working Principle:

The vehicle will not move if the exhaust is blocked. The main theme of this project is to install a normally closed solenoid valve in the engine exhaust releasing system of the vehicle, which is controlled by the microcontroller through the driver circuit. The output voltage of the microcontroller is not sufficient to enabling and disabling process of the normally closed solenoid valve which is placed in engine exhaust releasing system of the vehicle.

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To overcome it in this system a circuit called driver circuit is introduced. The driver circuit is used to drive the solenoid valve. Thus the enable and disable of solenoid valve is controlled by the microcontroller through the driver circuit.

The digital key is given to the authorized person of the vehicle to start the vehicle by entering the keyword. After the key is entered the normally closed Solenoid
Valve is opened automatically and the vehicle will be ready to start. The entry of the wrong password will result in enabling of the Send SMS pin of the GSM Module. And also the normally closed solenoid valve remains in close position.

Simulation output:

Front Panel:

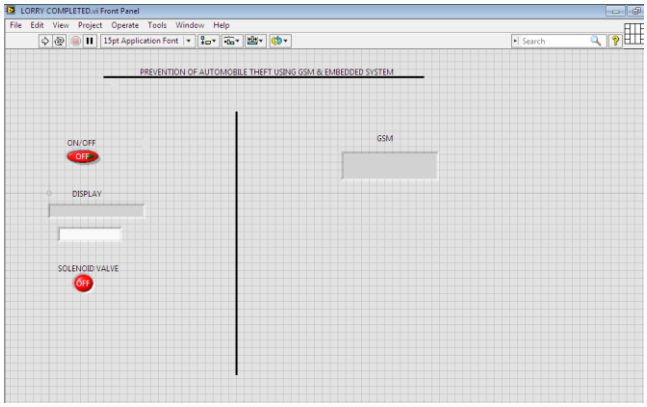

Fig-3 Front panel diagram of LabVIEW Simulation

Running Condition :

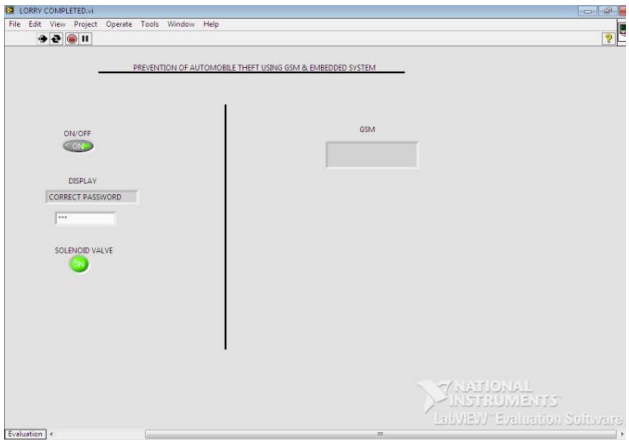

Fig-3 When correct password is entered

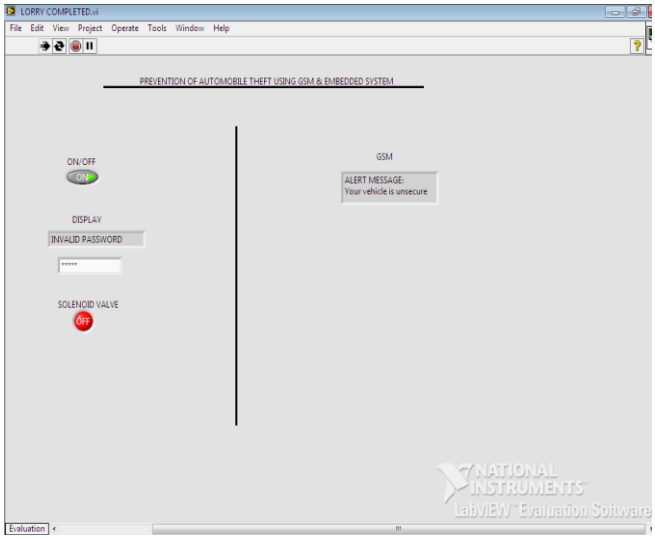

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Fig-4 when wrong password is entered

V. CONCLUSION

The proposed system has a unique method of designing a low cost and compact automobile theft control device for automobiles. This instrument designed can be easily fitted upon to the vehicles and it provides good results compared to that of the already existing systems. The working model tested also shows better results. Thus the proposed system can be implemented to the entire automobile so that the theft can be minimized greatly.

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