

# GSM Calculating the System of Automobiles in Their Safety Way

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**Abstract:-** Microcontroller based advanced framework has been intended to screen the fuel level and aggregate sum of burden on the vessel. No heap, ideal burden And over burden are the three distinctive tanker burden levels. It stays in no heap status at introduction level when burden increments and still stay in ideal level then the framework inform groups to start voyage. When the heap increments to over burden then the framework gives caution and sends ready message to the control tower for important activity. The correspondence between the vessel and fundamental control tower is finished by GSM module to guarantee long separation solid correspondence. The tanker fuel level is observed in simple and computerized scale for the enhancements. Here in this task the vehicle fuel level demonstrating by the showcase and the signal sound, furthermore the over burden, of a vehicle which can be utilized identifies and demonstrates the outcomes.

## OVERVIEW OF THE ARM PROCESSOR:

### ARM Microcontroller: LPC2148:

This system is the combination of software and hardware. Removing bugs, making modification, adding new features is easily possible using the microprocessor by rewriting the software that controls the device. Embedded system includes the microprocessor to perform a specific dedicated application. Because of necessary development time and build in efficiencies, embedded systems are fairly expensive. Microprocessors are including in all the embedded system to monitor and control the system.

-16-bit/32-bit Architecture.

-It is Von-Neuman Architecture

-ARM7TDMI S microcontroller in a tiny LQFP64 package.

- On-chip static RAM and 32kB to 512kB of program memory. 128-bit wide interface enables high-speed 60 MHz operation.

-In System Programming and In Application Programming (ISP/IAP) via on-chip boot loader software.

-USB 2.0 Full-speed map out device controller with 2kB of endpoint RAM.

-The Single 10-bit Digital to analog converters provides variable analog output (LPC2142/44/46/48 only)..

-Low power Real-Time Clock (RTC) with self-governing power and 32 kHz clock input.

-Two 32 bit timers/external event counters

-We have two UARTS they are UART 0, UART 1

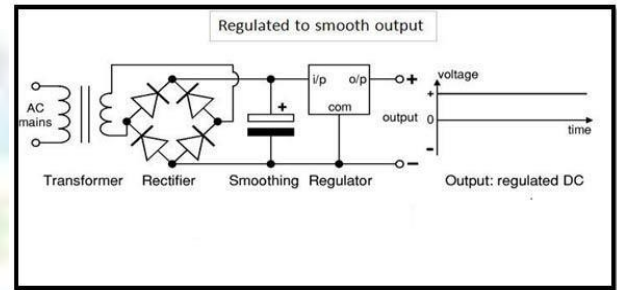
-Watch dog timer it internally reset the CPU.

The LPC2141/42/44/46/48 microcontrollers are 16/32 bit Architecture performing same functions but they have different features. The Arm is a reduced instruction set computer And ARM7TDMI S Central processing unit with real time emulation and embedded outline support, that microcontroller with integrated high speed flash memory ranging from 32 KB to 512kB. A 128bit vast memory interface and specific accelerator architecture it enable 32 bit code execution at the maximum clock rate. It has lot of functionalities less power consumption and tiny size and Pipe line instruction set means the execution of instruction are very fast before the execution instruction it fetches the another instructions.

Serial communications interface ranging from USB 2.0 very speed device and it has multiple UARTS, SPI and

IIC(Inter integrated protocol) bus on chip SRAM 32kb , make these devices Very well suited for communication gateways and protocol. It has inbuilt ADC (Analog to digital convertor) single or dual 10 bit ADC , 10 Bit DAC and PWM(pulse width module)channels and 45 Fast GPIO lines with up to nine edge.

bridge rectifier it can be used to convert Ac voltage into dc voltage ,here we are using two capacitor filters remove unwanted Ac pulses. Here the filters blocks Ac current and allows only dc current. After that the power goes to the voltage regulator Lm7805, it gives the only five voltages to the controller why because the controller working with 5v dc only, If we use the dc supplies no need of transformer.



## LIQUID CRYSTAL DISPLAY:

Liquid Crystal Display, LCD display overcomes the drawback of LEDs because of the following reasons:

1. LCD has the ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.
2. LED must be refreshed by the CPU to keep displaying the data. There is no need of refreshing for LCD.
3. Using programming LCD can display characters and graphics.
4. LCD used for writing different messages.

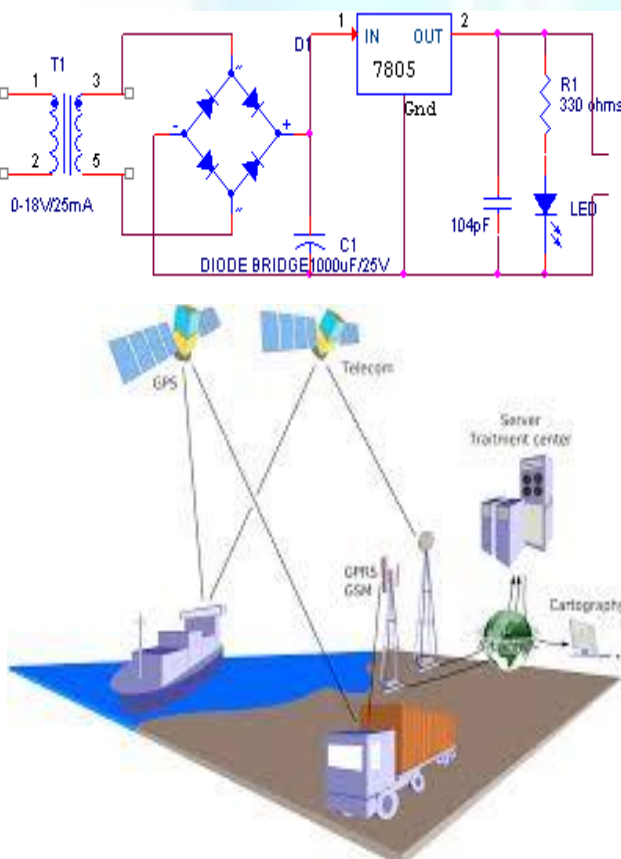
### Pins Functions:

There are total 16 pins to the LCD. These pins used for connection to the microcontroller. Out of 16 pins, 8 pins are used for transferring data from controller to the display. Remaining 8 pins are used s control pins.

### Basic Commands:

LCD having eight data lines (i.e. D0-D7), used to transfer data as well as command. When

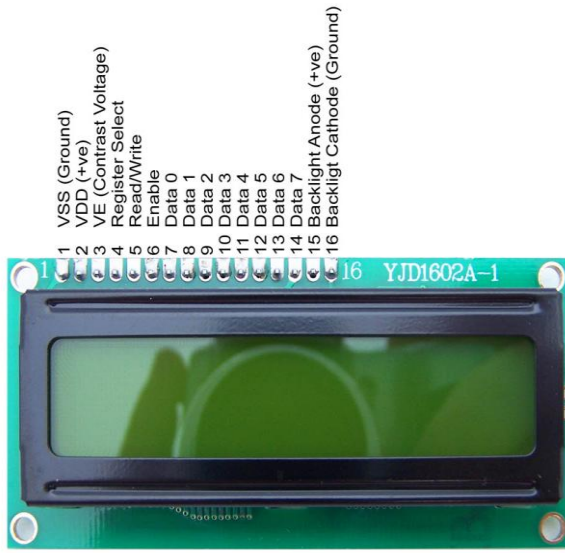
1. RS=1 controller sends the commands to the LCD using D0-D7 lines.
2. RS=0 controller sends the data to LCD using D0-D7 lines
3. WR= when WR=0 it out the data on display.



## POWER SUPPLY:

In project we give the power supply +5v to -5v. when we give the power supply if it Ac supply it can be step down 12V/50Hz using of transformer , after that the

When WR=1 it in the data. But in LCD we use WR=0, because we only out the data i.e. display the data on LCD



**LCD Connection:**

LCD can be used as 4 bit LCD or 8 bit LCD. If 8 data lines are used for connection to the microcontroller then it is 8 bit LCD. If 4 data lines are used for connection to the microcontroller then it is 4 bit LCD. We can use any one of them. It has control pins:

1. EN: To enable data to LCD.
2. RS: To send the data or commands to LCD
3. WR: To write the data on display.

No.	Command	Hex value
1	Function Set: 8-bit, 1 Line, 5x7 Dots	0x30
2	Function Set: 8-bit, 2 Line, 5x7 Dots	0x38
3	Function Set: 4-bit, 1 Line, 5x7 Dots	0x20
4	Function Set: 4-bit, 2 Line, 5x7 Dots	0x28
5	Entry Mode	0x06
6	Display off Cursor off	0x08
7	Display on Cursor on	0x0E
8	Display on Cursor off	0x0C
9	Display on Cursor blinking	0x0F
10	Shift entire display left	0x18
11	Shift entire display right	0x1C
12	Move cursor left by one character	0x10
13	Move cursor right by one character	0x14

**Temperature sensor**

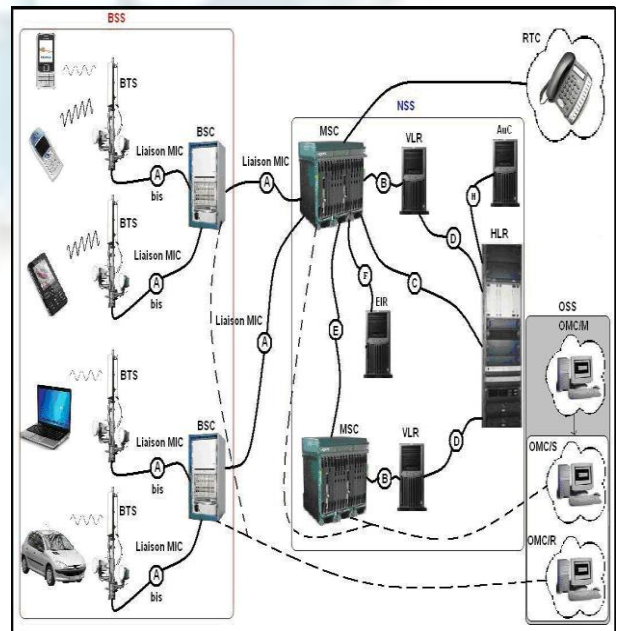
Temperature Sensor converts temperature value into electrical signals. We use integrated chip is called Lm35 is as a temperature sensor. LM35 series sensors are accuracy integrated-circuit temperature sensors whose output voltage is linearly proportional to the Celsius

temperature. The LM35 sensor requires no external calibration since it is internally calibrated. .

The temperature sensor does not require any external calibration or adornment to provide typical accuracies of  $\pm 1/4^{\circ}\text{C}$  at room temperature and  $\pm 3/4^{\circ}\text{C}$  over a full  $-55$  to  $+150^{\circ}\text{C}$  temperature range. This sensor we implement in industrial areas and home appliance, power generation stations also we use this temperature sensor.

**Definition of GSM:**

GSM (Global systems for mobile communications) is an open, digital cellular technology. it can be transfers the information and receives the information, and here we can transmit the voice and data also. It is widely used in European countries and other part of the world. It uses a variation of time division multiple Access (TDMA) and also used for three digital wireless telephone technologies(GSM ,TDMA and CDMA).it can digitizes and compress the data ,and it can be send to the two other streams of user data, each in own time slot. The operating frequency is 900 MHz or 800 MHz. The speed upto 906 Kbit/s. In 21<sup>st</sup> century GSM network is the started (Global system for mobile communication )because communication entirely occur the it is called 2<sup>nd</sup> generation standard. Unlike the first generation of portable telephones. when it was first 1982 standardized, and it was called as group special mobile. And later it came as international global system for mobile communication in1991.



The maximum through output of the GSM is 9.6kbps and which allows the voice nad low volume digital data like Short message service, multimedia messages etc.

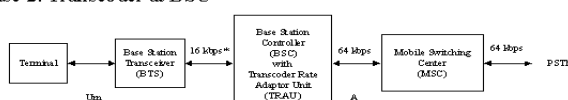
all the programs that they are running. Repeat to all the programs

## GSM Circuit-Switched Architecture

Case 1: Transcoder at MSC



Case 2: Transcoder at BSC



\*TRAU frames

### KEIL:

KEIL is a software which is used to create the code and that is based on the C programming . Here mainly the purpose of KEIL software is to create a .c file and also for the creation of the hex file , by the use of .c file is the source code which can be used for the main code. And coming to the Hex file it is mainly used for the dumping into the hardware. And run the compiler on each C source file,and also specifying the list of controllers . Here one more thing is that for the selection of the controller also it is mainly using this KEIL software. It can run the library manager or linker. Hex file is main source for the hardware because it is downloading to the target h/w and debugging. It is used to create a source file to create the .c file. Mainly the compiling is going in the KEIL software they are translate ,burn and Reborn these three main compiling buttons which can be used to compile the program.

### PROJECT:

To build a single application a project is list of all source files required. Here KEIL centers on projects ,all the tools in the KEIL are used to support how to apply the tool depends on the selected program. For every project contains the set source files and instructions, and they exactly the binary code for the application required. The degree flexibility required from specific manner. For loading the project file to the KEIL which the source files are required. Therefore they are stored in a project file. Whenever we are going to write the program we need to do are repeat the same steps ,because by using this only

### Debugger and simulator:

Debugger and simulator can work both the very detailed execution of a micro controller with external signals. It can used to execute for the prescribed time of a assembly instruction ,or by using the single line C code source code .these are all used for the entire application and to perform the task that can be used for the particular task .

Lines of C code and executions it may be stepped through in single instruction or c line at single time .the memory areas are viewed with some ability along to find specific variables. In present the register may be viewed allowing detailed for what microcontroller is doing at any point in single time .

Mainly in this KEIL 8051 developing tools and they are listed for the program to compile in the source code. by arranging the code files in a programmed way. To create Hex file and for the debugging the target program, micro  $\mu$ Vision2 is for the OS that can be used to get the keil4 and also keil3 like this we are having the different version but coming to the 8051 the keil that we are using is the KEIL4 and is called micro vision .here in this we are editing programming project management .

- Here in this C51 KEIL ANSI creates and relocate object module from c source code.
- And coming to the A51 macro version, object modules are taken from the 8051 assembler source code .
- And BL51 locator and linker,they are created by the compiler and final absolute module will be assembled.

### What is the new in micro vision?

It is used for the text compiler templates, fast navigation function and coloring of syntax with high lighting compared to micro3 micro2 is compatible.

what is the micro vision 3?

It is an IDE that which can be used help us write. And compile debug the embedded program.

- ❖ Project manager
- ❖ Making facility
- ❖ Configuration of tool
- ❖ Editable
- ❖ And debugger
- ❖ For analog and digital systems measure

## Relay:

Relays are simple switches, which operated in both ways electrically and mechanically, we know already relays are using in industrial high end applications effectively. Relays are consisting of an electromagnet and contacts. The switching mechanism carried out by the with the help of electromagnet switch. A relay is used to separate one electrical circuit from another. It allows a small current control circuit to make contacts or break an electrically isolate high voltage path.

The simple relay consists of a coil and a set of contacts. The most common relay coil is a length of magnet wire envelop around a metal. When the voltage is given to the coil, current passes through the wire and generates a magnetic field. This magnetic field drags the contacts together and holds them there until the current flow in the coil after that when release the switch it is stopped. The below diagram shows the parts of a simple relay. Usage of Relay in its place of switches are a lot of safer, relays can be operate in very low down voltage but it can handle high voltages also and much safer. Switches are only manual operated, easily depreciate. The other form a Relays are contactor & Breakers during power supply it control 400v to 220 kilo volts for these application switches cannot be situated used at all. We know the working of a relay as a remote control switch. It can have one or more set of connections so one relay can become a series of remote controlled switches Single Pole Single Throw relay. Current will only stream thought the connection as the time as the relay coil is enable means when we give the voltage supply it make contact.

Applications:

- To organize a elevated -voltage path with a low-voltage signal, as in some types of modems,

- To detect and separate faults on transmission and delivery lines by open and close circuit roller (protection relays)
- To operate logic functions. For example, the logical function And operation is realized by connecting relay contacts in series, the OR operation by making contacts in parallel. Due to the breakdown type of a relay contrast with a semiconductor, they are extensively used in safety critical logic, such as the organize panels of radioactive waste handling machinery.

## MOTORS

Motor is refer as an electrical motor or an inter combustion engine. It is a device which creates motion.

It may also refer to: machine or a device that converts electricity into a mechanical motion is known as electric motor. Motor driven by alternating current is known as AC motoring electric motor that runs on direct current electricity is known as DC motor. Motor based on the attraction and repulsion of electric charge is known as Electrostatic motor. A motor which is commonly used in robot known as the servo motor.

TYPES OF MOTORS: Motor has a different basics type. These motors are used for different applications.

### AC Motors

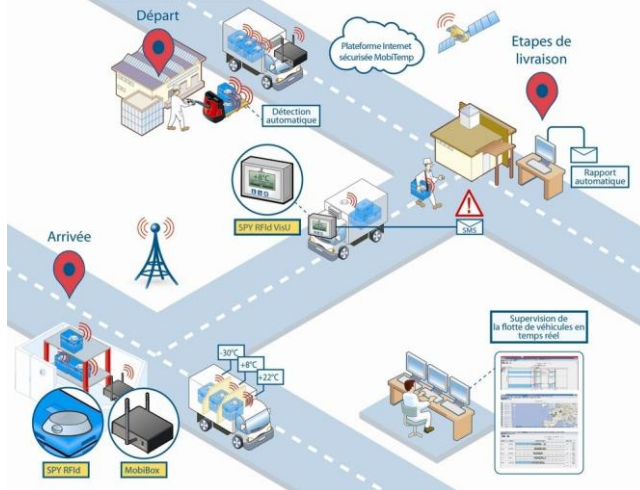
“Squirrel cage” motor also known as the AC induction motor. It is most common and simple motor, having three phases.

### DC Motors

In variable speed and torque control applications the DC motor are used. Brushed DC motor is one of the earliest motor designs.

### Extension of project:

In this project, we use the GSM module. But for the future scope we can modified it, as we know the communication is the important part of exchanging information. Using zigbee or any Wi-Fi module we can transmit the data to control system. So monitoring will be easy by controlling the control system. At the same time we can develop the software which will keep the records of system.



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## CONCLUSION:

The project "Smart Water Monitoring System Using Wireless Sensor Network at Home/Office" been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

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