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A COST EFFECTIVE VEHICLE MONITORING AND SECURITY SYSTEM USING SENSORS

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ABSTRACT

This is an attempt to design a low cost, simple vehicle monitoring system. Since many of the educational institutions are located out of cities, transportation plays a vital role in everyone's life. Need of monitoring buses and their way of driving by drivers becomes so essential. The travel time of buses varies depending on some parameters such as Bus Drivers doesn't follow time schedules, negligence and exceeding the speed limits. Continuous Monitoring provides various advantages such as reducing accidents leaded by over speed, time delay and miscellaneous activities of drivers. In this paper, a cost effective idea is proposed, i.e., integration of various with Zigbee. When compared with existing technologies, the proposed system gives more reliable, cost effective and fast means of long distance objects identification.

KEYWORDS: *Embedded System, ARM-Processor, Zigbee*

INTRODUCTION

Embedded System

An embedded system is a combination of computer hardware and software—and perhaps additional parts, either mechanical or electronic—designed to perform a dedicated function. The design of an embedded system to perform a dedicated function is in direct contrast to that of the personal computer. All embedded systems also contain some type of inputs and outputs. The outputs of the embedded system are almost always a function of its inputs and several other factors (elapsed time, current temperature, etc.). The inputs to the system usually take the form of sensors and probes, communication signals, or control knobs and buttons. The outputs are typically displays, communication signals, or changes to the physical world.

Purpose of Embedded System

Data Collection/Storage/Representation

Embedded system designed for the purpose of data collection performs acquisition of data from the external world. Data collection is usually done for storage, analysis, manipulation and transmission. Data can be analog or digital. Embedded systems with analog data capturing techniques collect data directly in the form of analog signal whereas embedded systems with digital data collection mechanism convert the analog signal to the digital signal using analog to digital converters. If the data is digital it can be directly captured by digital embedded system. A digital camera is a typical example of an embedded System with data collection/storage/representation of data. Images are captured and the captured image may be stored within the memory of the camera. The captured image can also be presented to the user through a graphic LCD unit.

Embedded data communication systems are deployed in applications from complex satellite communication to simple home networking systems. The transmission of data is achieved either by a wire-line medium or by a wire-less medium. Data can either be transmitted by analog means or by digital means. Wireless modules-Bluetooth, Wi-Fi. Wire-line modules-USB, TCP/IP. Network hubs, routers, switches are examples of dedicated data transmission embedded systems. Embedded systems with signal processing functionalities are employed in applications demanding signal processing like speech coding, audio video codec, transmission applications etc. A digital hearing aid is a typical example of an embedded system employing data processing. Digital hearing aid improves the hearing capacity of hearing impaired person. All embedded products coming under the medical domain are with monitoring functions. Electro cardiogram machine is intended to do the monitoring of the heartbeat of a patient but it cannot impose control over the heartbeat. Other examples with monitoring function are digital CRO, digital multi-meters, and logic analyzers. A system with control functionality contains both sensors and actuators. 9Sensors are connected to the input port for capturing the changes in environmental variable and the actuators connected to the output port are controlled according to the changes in the input variable. Air conditioner system used to control the room temperature to a specified limit is a typical example for CONTROL purpose. Buttons, switches, keypad, lights, bells, display units etc are application specific user interfaces. Mobile phone is an example of application specific user interface. In mobile phone the user interface is provided through the keypad, system speaker, vibration alert etc.

Elements of Embedded System

As defined earlier, an embedded system is a combination of 3 things: Hardware, Software, Mechanical Components And it is supposed to do one specific task only

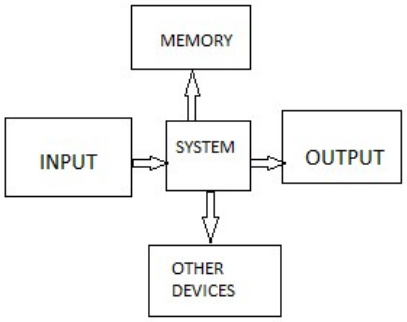

Figure 1: Elements of Embedded System.

Embedded systems are basically designed to regulate a physical variable (such Microwave Oven) or to manipulate the state of some devices by sending some signals to the actuators or devices connected to the output port system (such as temperature in Air Conditioner), in response to the input signal provided by the end users or sensors which are connected to the input ports. Hence the embedded systems can be viewed as a reactive system. Examples of common user interface input devices are keyboards, push button, switches, etc. The memory of the system is responsible for holding the code (control algorithm and other important configuration details). An embedded system without code (i.e. the control algorithm) implemented memory has all the peripherals but is not capable of making decisions depending on the situational as well as real world changes. Memory for implementing the code may be present on the processor or may be implemented as a separate chip interfacing the processor In a controller based embedded system, the controller may contain internal memory for storing code Such controllers are called Micro-controllers with on-chip ROM, eg. Atmel AT89C51. 12

Embedded System Application

The application areas and the products in the embedded domain are countless. Consumer Electronics, Household appliances, Automotive industry, Home automation& security systems Telecom Computer peripherals Computer networking system, banking & Retail Card Readers. The objective of the project is to implement a simple cost effective automative system for vehicle monitoring, and in another section, effective way of giving alert to driver from various parameters and the entire data is sent to organization pc, through wireless and the data is stored in the in the organization for further purposes. The project is divided into five section's. The first section deals with the overview and the objectives of the project. The second section discusses about the block diagram and operation of the project theories followed by the introductory concept of the hardware components in the third section and fourth section are devoted to the software applications. The fifth section deals with epilogue containing further modifications and improvements, applications, improvements problems faced and limitations

BLOCKS AND DESCRIPTION

General Description

Temperature is the most-measured process variable in industrial automation. Most commonly a temperature sensor is used to convert temperature value to electrical value. Temperature sensors are the key to read temperature correctly and to control temperature in various applications. Force sensing resistors are used to detect physical pressure and weight. Its resistive value in ohms and it resistance varies depends on force applied to it, If force is more than resistance will decrease. For no pressure is applied it will act as open circuit. Mems are used to measure proper acceleration ("g-force"). Proper acceleration is not the same as coordinate acceleration (rate of change of velocity).An accelerometer measures proper acceleration, which is the acceleration it experiences relative to free fall and is the acceleration felt by people and objects. Put another way, at any point in space time the equivalence principle guarantees the existence of a local inertial frame, and an accelerometer measures the acceleration relative to that frame. Such accelerations are popularly measured in terms of g-force. An ultrasonic sensor is used to transmit ultrasonic waves into the air and detects reflected waves from an object. There are many applications for ultrasonic sensors, such as automatic door openers and backup sensors for automobiles. Accompanied by the rapid development of information processing technology, new fields of application, such as factory automation equipment and car electronics, are increasing and should continue to do so. Using its unique piezoelectric ceramics manufacturing technology developed over many years, Murata has developed various types of ultrasonic sensors which are compact and yet have very high performance. The information contained in this catalog will help you to make effective use of our ultrasonic sensors. The reading from the sensors re interfaced to arm microcontroller, The controller will process the information and will send a warning message to the Zigbee Transmitter. The zigbee transmitter transmits the data to the Base station Zigbee receiver. From the receiver the data is displayed at college pc.

Sensors

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the celcius (centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in kelvin, It can be used with single power supplies. An ultrasonic sensor is used to transmit ultrasonic waves into the air and detects reflected waves from an object. There are many applications for ultrasonic sensors, such as automatic door openers and backup sensors for automobiles. Accompanied by the rapid development of information processing technology, new fields

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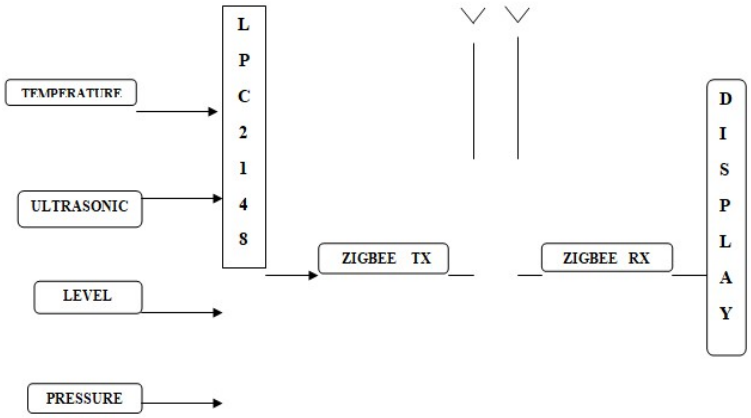


Figure 2: Block Diagram.

ARM LPC (2148)

ARM is a family of instruction set architectures for computer processors based on a reduced instruction set computing (RISC) architecture developed by British company ARM Holdings. A RISC-based computer design approach means ARM processors require significantly fewer transistors than typical processors in average computers. This approach reduces costs, heat and power use.

ZIGBEE

ZigBee is a wireless technology developed as an open global standard to address the unique needs of low-cost, low-power, wireless sensor networks. The standard takes full advantage of the IEEE 802.15.4 physical radio specification and operates in unlicensed bands worldwide at the following frequencies: 2.400–2.484 GHz, 902-928 MHz and 868.0–868.6 MHz.The Zigbee module acts as both transmitter and receiver. The Rx and Tx pins of ZIGBEE are connected to Tx and Rx of ARM microcontroller respectively. The data's from microcontroller is serially transmitted to Zigbee module via UART port. Then Zigbee transmits the data to another Zigbee. The data's from Zigbee transmitted from Dout pin. The Zigbee from other side receives the data via Din p

HARDWARE COMPONENTS

Introduction to ARM LPC2148

ARM is a family of instruction set architectures for computer processors based on a reduced instruction set computing (RISC) architecture developed by British company ARM Holdings. A RISC-based computer design approach means ARM processors require significantly fewer transistors than typical processors in average computers. This approach reduces costs, heat and power use. These are desirable traits for light, portable, battery-powered devices—including smartphones, laptops, tablet and notepad computers), and other embedded systems. A simpler design facilitates more efficient multi-core CPUs and higher core counts at lower cost, providing higher processing power and improved energy efficiency for servers and supercomputers.

Features of ARM LPC2148

ARMis 16-bit/32 bit ARM7TDMI-S MICROCONTROLLER in a tiny 64 package.8kb to 40 kb of on chip static RAM and 32 kb to 512 kb of on chip flash memory. USB 2.0 Full-speed compliant device controller with 2 kB of endpoint RAM. In addition, the LPC2146/48 provides 8 kB of on-chip RAM accessible to USB by DMA. One or two (LPC2141/42 vs. LPC2144/46/48) 10-bit ADCs provide a total of 6/14 analog inputs, with conversion times as low as 2.44 µs per channel. Single 10-bit DAC provides variable analog output (LPC2142/44/46/48 only). Two 32-bit timers/external event counters (with four capture and four compare channels each), PWM unit (six outputs) and watchdog. Low power Real-Time Clock (RTC) with independent power and 32 kHz clock input. Multiple serial interfaces including two UARTs (16C550), two Fast I2C-bus (400 kbit/s), SPI and SSP with buffering and variable data length capabilities.Vectored Interrupt Controller (VIC) with configurable priorities and vector addresses. Up to 45 of 5 V tolerant fast general purpose I/O pins in a tiny LQFP64 package. Up to 21 external interrupt pins available. 60MHz maximum CPU clock available from programmable on-chip PLL with settling time of 100µs. On-chip integrated oscillator operates with an external crystal from 1 MHz to 25 MHz. Power saving modes include Idle and Power-down. Individual enable/disable of peripheral functions as well as peripheral clock scaling for additional power optimization. Processor wake-up from Power-down mode via external interrupt or BOD. Single power supply chip with POR and BOD circuits: CPU operating voltage range of 3.0 V to 3.6 V (3.3 V ± 10 %) with 5 V tolerant I/O pads.

Power Supply

LPC2148 works on 3.3 V power supply. LM 117 can be used for generating 3.3 V supply. However, basic peripherals like LCD, ULN 2003 (Motor Driver IC) etc. works on 5V. So AC mains supply is converted into 5V using below mentioned circuit and after that LM 117 is used to convert 5V into 3.3V.

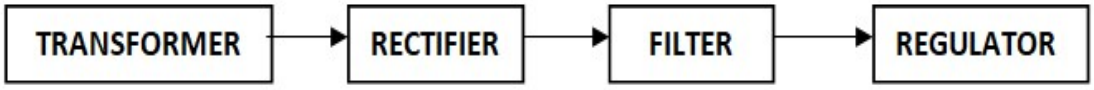


Figure 3: Components of Power Supply.

- **Transformer:** It is used to step down 230V AC to 9V AC supply and provides isolation between power grids and circuit.
- **Rectifier:** It is used to convert AC supply into DC.

- **Filter:** It is used to reduce ripple factor of DC output available from rectifier end.
- **Regulator:** It is used to regulate DC supply output..

Reset Circuit

Reset button is essential in a system to avoid programming pitfalls and sometimes to manually bring back the system to the initialization mode. Circuit diagram for reset is as shown below. MCP 130T is a special IC used for providing stable RESET signal to LPC 2148

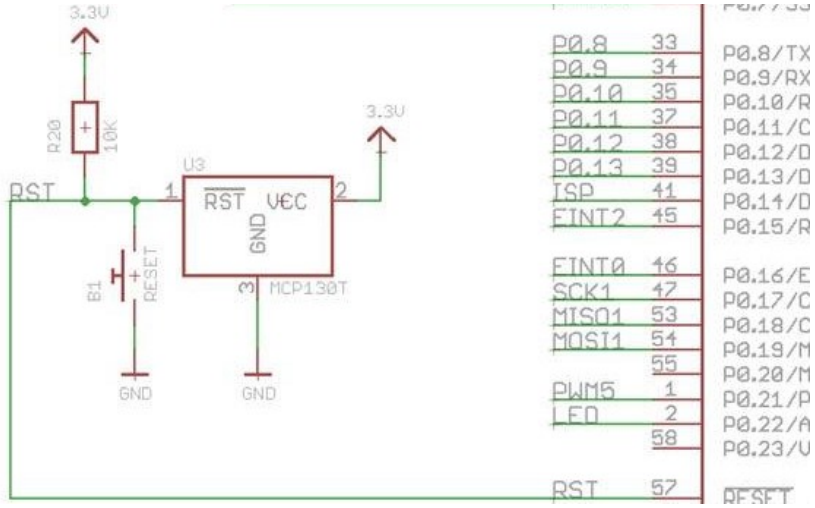


Figure 4: Reset Circuit.

Oscillator Circuit

Oscillations, the heartbeat, are provided using a crystal and are necessary for work

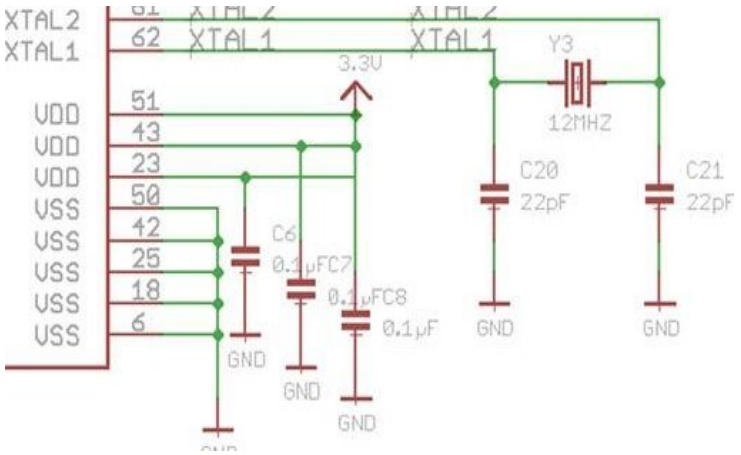


Figure 5: Oscillator Circuit.

We can also use external oscillator for providing system clock. Circuit for this application is as given below.

RTC Oscillator Circuit

It provides clock for RTC operation.

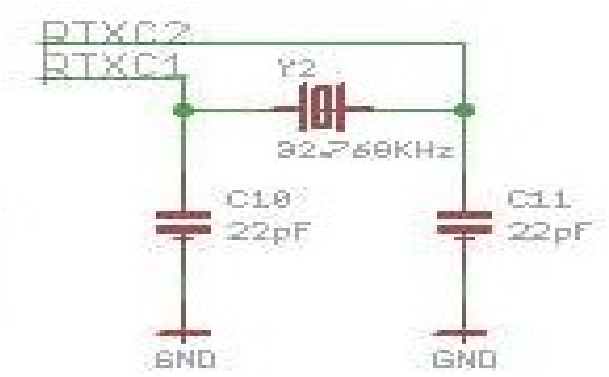


Figure 6: RTC Oscillator.

UART

LPC 2148 has inbuilt ISP which means we can program it within the system using serial communication on COM0. It has also COM1 for serial communication. MAX 232/233 IC must be used for voltage logic conversion. Related connections are as given below.

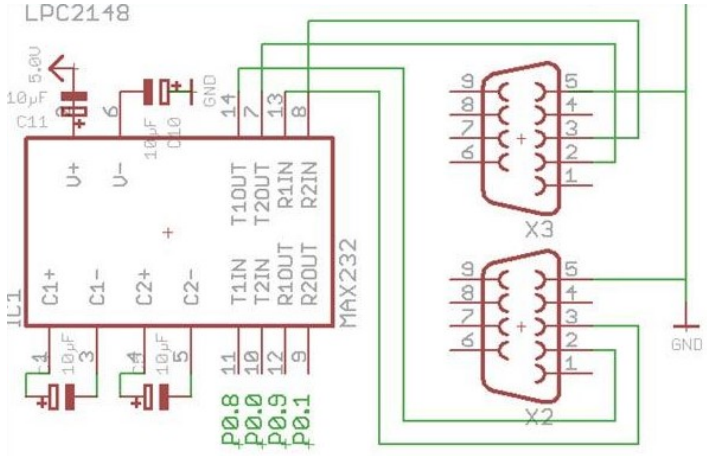


Figure 7: UART.

What is RF Module

An RF Module is a (usually) small electronic circuit used to transmit, receive, or transceive radio waves on one of a number of carrier frequencies. RF Modules are widely used in consumer application such as garage door openers, wireless alarm systems, industrial remote controls, smart sensor applications, and wireless home automation systems. They are often used instead of infrared remote controls as they have the advantage of not requiring line-of-sight operation

RF Communication

RF communication is established using RF module. RF module operates at radio frequency. The corresponding frequency range varies between 30KHz and 300GHz. Transmission through RF is better than IR because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. An RF transmitter generates radio frequency waves in its circuits, and to this carrier signal, it adds the information part by modulating the carrier signal. This composite signal (carrier plus information) is then fed to an antenna (aerial). The aerial induces a corresponding signal into the atmosphere, by altering the Electric and Magnetic fields at (obviously) the same frequency.

The impedance of free space is few tens of Ohms to a few hundreds of Ohms. [Impedance may be considered analogous to resistance, but with reactive properties as well.] The power emitted by the transmitter can vary from a megawatt or so (for VLF signals) to a few watts for hand held devices. An Rf receiver receives the signal from the atmosphere, from its own aerial. The receiver aerial is often quite simple, and the signal level is typically of a few microvolts. This it tunes in (gets rid of unwanted signals and amplifies only the wanted ones). The receiver circuits then strip the information part of the signal from the carrier part, and amplify this to a useful level for audio or video. While IR operates mostly in line of sight mode, RF signals can travel even when there is an obstruction between transmitter and receiver. Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR emitting sources. The sensor data in most hospitals are usually transferred through wired networks. There are number of hampering wires from sensors to the data acquisition systems. Now a days many wireless communication solutions are available. Many of these are intended for short range and are reasonably power efficient. It is very useful in BAN (body Area Network) for carrying health information

Figure 8: RF Communication.

Working of RF Module

A general RF communication block diagram is shown above. Since most of the encoders/decoders/microcontrollers are TTL compatible, most of the inputs by the user will be given in TTL logic level. Thus, this TTL input is to be converted into serial data input using an encoder or a microcontroller. This serial data can be directly read using the RF Transmitter, which then performs ASK (in some cases FSK) modulation on it and transmit the data through the antenna. In the receiver side, the RF Receiver receives the modulated signal through the antenna, performs all kinds of processing, filtering, demodulation, etc and gives out a serial data. This serial data is then converted to a TTL level logic data, which is the same data that the user has input. RF Modules are used wireless transfer data. This makes them most suitable for remote control applications, as in where we need to control some machines or robots without getting in touch with them (may be due to various reasons like safety, etc). Now depending upon the type of application, the RF module is chosen. For short range wireless control applications, an ASK RF Transmitter-Receiver Module of frequency 315 MHz or433 MHz is most suitable

Zigbee Module

With the development of network and communication technology, the WSN has solved the inconvenience into people's life.WSN has good functions of data collection, transmission, and processing. It has many advantages compared to traditional wired network, for example, convenient organizing network, small influence to environment, low power dissipation, low cost, etc. At present, near field wireless communication technology has been used widely, especially Bluetooth, wireless local area network (WLAN), infrared, etc. But, they have a number of disadvantages, for example, complexity, large power dissipation, short distance, networking in small scale. In order to satisfy the demand of low power

dissipation and low speed among wireless communication devices, a new type of wireless net technology-Zigbee emerges as the times require.

Zigbee and IEEE802.11.4 Specifications

Zigbee Alliance was established in August, 2001, The ZigBee specification, officially named ZigBee 2007. It offers full wireless mesh networking capable of supporting more than 64,000 devices on a single network. It's designed to connect the widest range of devices, in any industry, into a single control network. The ZigBee specification has two implementation options or Feature Sets: ZigBee and ZigBee PRO. The ZigBee Feature Set is designed to support smaller networks with hundreds of devices in a single network. The ZigBee PRO Feature Set is the most popular choice of developers and the specification used for most Alliance developed ZigBee Feature Set, plus facilitates ease-of-use and advanced support for larger networks comprised of thousands of devices. Both Feature Sets are designed to interoperate with each other, ensuring long-term use and stability. The ZigBee specification enhances the IEEE 802.15.4 standard by adding network and security layers and an application framework. From this foundation, Alliance developed standards, technically referred to as public application profiles, can be used to create a multi-vendor interoperable solutions. For custom application where interoperability is not required, manufacturers can create their own manufacturer specific profiles.

Liquid Crystal Display

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A **16x2 LCD** means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD. Click to learn more about internal structure of a LCD.

Pin Diagram

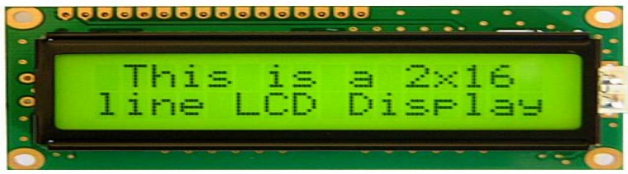


Figure 9: LCD Pin Diagram.

Table 1

Pin No	Function	Name
1.	Ground(0V)	Ground
2.	Supply Voltage: 5V(4.7V-3.3V)	Vcc
3.	Contrast adjustment; through a variable register	Vee
4.	Selects command register when low; and data register when high	Register select
5.	Low to write to the register; High to read from the register	Read/write
6.	Sends data to data pins when a high to low pulse is given	Enable
7.	8-bit data pins	DB0
8.		DB1
9.		DB2
10.		DB3
11.		DB4
12.		DB5
13.		DB6
14.		DB7
15.	Back LIGHT Vcc (5V)	LED+
16.	Back Light Grnd (0V)	LED-

Interfacing LPC2148 with LCD

Fig. 3.13 shows how to interface the LCD to microcontroller. The 2x16 character LCD interface card with supports both modes 4-bit and 8-bit interface, and also facility to adjust contrast through trim pot. In 4-bit interface 7 lines needed to create 4-bit interface; 8 data bits (D0 – D7), three control lines, address bit (RS), read/write bit (R/W) and control signal (E).

Circuit Diagram to Interface 8BIT LCD

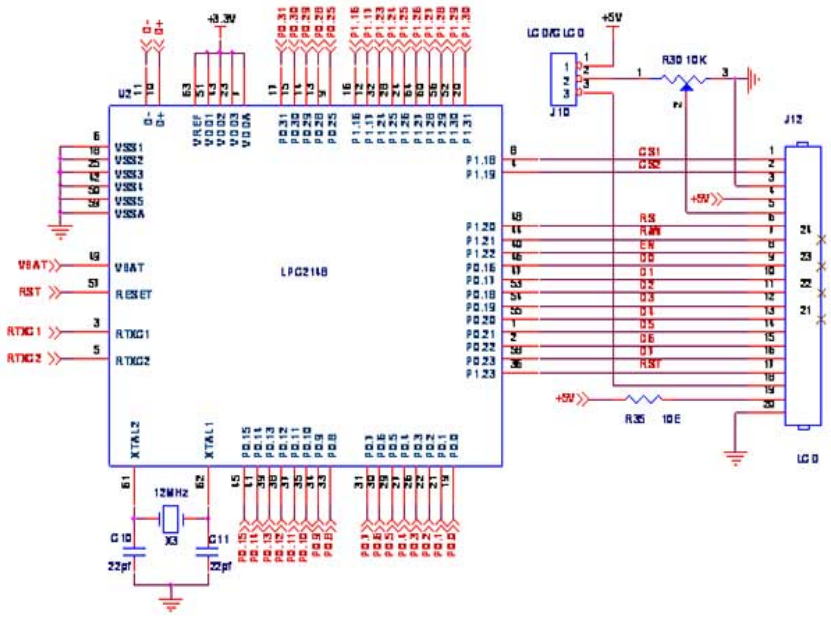


Figure 10: Interfacing 8 bit LCD with ARM LPC 2148.

Circuit Diagram to Interface Temperature Sensor

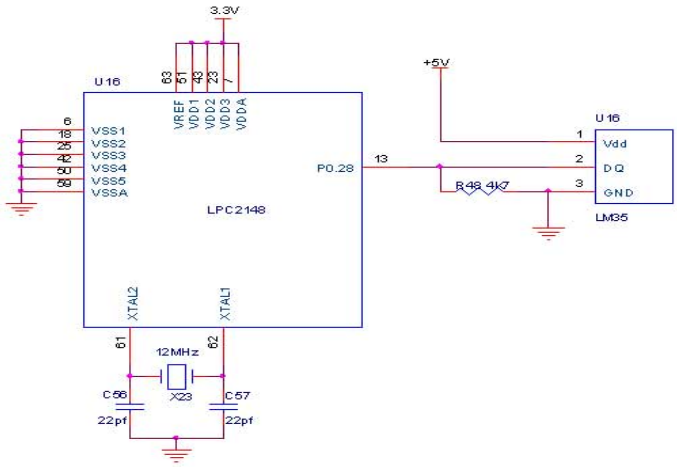


Figure 11: Interacing Temperature Sensor with Arm.

Circuit Diagram to Interface Other Sensors

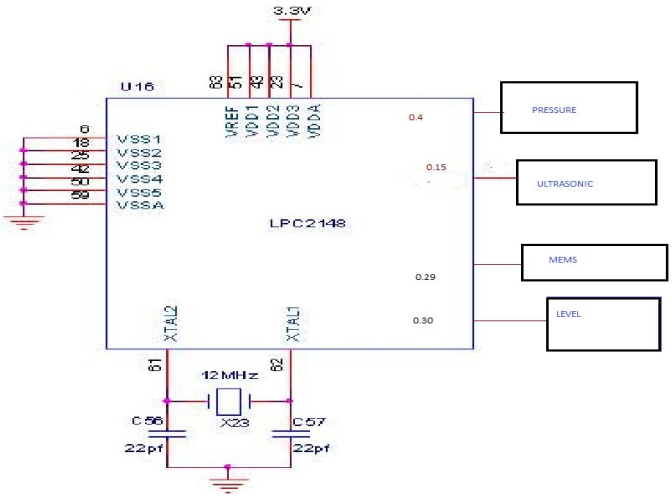


Figure 12: Interfacing Other Sensors.

Interfacing Relay with ARM LPC 2148

Relays are devices which allow low power circuits to switch a relatively high Current/Voltage ON/OFF. A relay circuit is typically a smaller switch or device which drives (opens/closes) an electric switch that is capable of carrying much larger current amounts. Fig. 3.17 shows how to interface the Relay to microcontroller. There are 2 input channels. Each input is connected to the triggering coil of the respective relay. There are 2 output channels that each correspond to an input. When the input is energized, the relay turns on and the '+' output is connected to +12v. When the relay is off, the '+' output is connected to Ground. The '-' output is permanently wired to Ground.

Pin Assignment for Interfacing Relay with LPC2148

Control the relay operations by using LPC2148 Primer Board. Here we are using two Relays. The relay consists of a coil and a switch. When the coil is energized, the switch closes, connecting the two contacts together. ULN2803 is used as a

driver for port I/O lines, drivers output connected to relay modules. Connector provided for external power supply if needed. **Relay Module:** Port P1 pins (Realy1 – P1.20) for relay module, make port pins to high, relay will activated.

Interfacing Buzzer with LPC2148

Buzzer is an electrical device, which is similar to a bell that makes a buzzing noise and is used for signaling. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke. Fig. 1 shows how to interface the Buzzer to microcontroller. A piezoelectric element may be driven by an oscillating electronic circuit or other audio signal source, driven with a piezoelectric audio amplifier. Sounds commonly used to indicate that a button has been pressed are a click, a ring or a beep. When the input port pin from microcontroller is changed, the sound wave is changed in Buzzer

Pin Assignment for Buzzer

A small piezoelectric buzzer on the ARM2148 Primer Kit, by pulling pin P0.7 low, current will flow through the buzzer and a relatively sharp, single-tone frequency will be heard. The alternative PWM feature of pin P0.7 (the PWM2 signal) can be used to modulate the buzzer to oscillate around different frequencies. Then the volume of the sound will be changed by alternating the pulse width. The buzzer can be disconnected by removing jumper JP1, and this is also the default position for this jumper since the buzzer sound can be quite annoying if always left on.

Circuit Diagram for Interfacing Buzzer

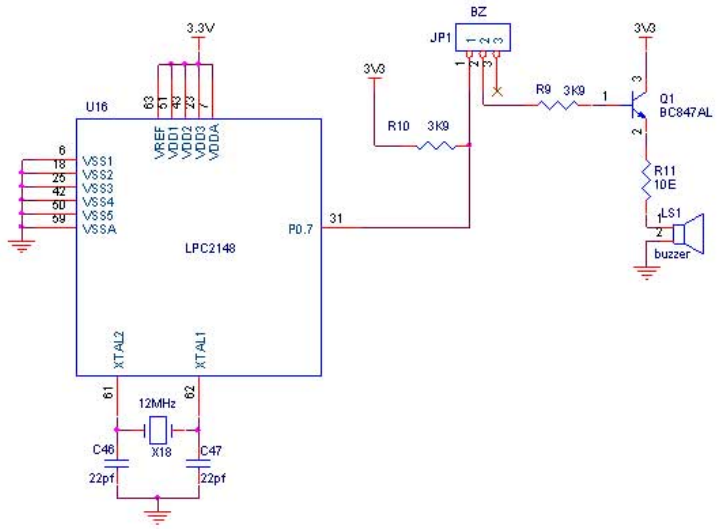


Figure 13: Interfacing Buzzer with LPC 2148.

Interfacing Zigbee with LPC2148

ZigBee is a specification for a suite of high level communication protocols using small, low-power digital radios based on an IEEE 802 standard for personal area networks. The Digi Xbee 802.15.4 modules are the easiest to use, most reliable and cost-effective RF devices we've experienced. The 802.15.4 Xbee modules provide two friendly modes of communication - a simple serial method of transmit/receive or a framed mode providing advanced features. These modules can communicate point to point, from one point to a PC, or in a mesh network.

Zigbee Module

Fig. 3.20 shows how to interface the Zigbee with microcontroller. The Xbee modules work at the 2.4 GHz frequency which means smaller board and antenna size. Xbee modules have the ability to transmit Digital, PWM, Analog or Serial RS232 signals wirelessly. To communicate over UART or USART, we just need three basic signals which are namely, RXD (receive), TXD (transmit), GND (common ground). So to interface UART with LPC2148, we just need the basic signals.

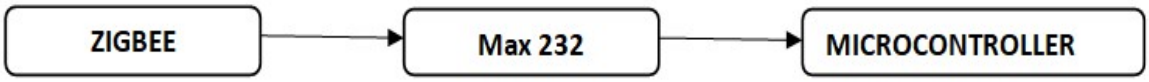


Figure 14: Interfacing ARM with Zigbee.

Pin Assignment for Zigbee

Interfacing ZigBee module with LPC2148 Primer Board for used for controlling application through UART0. The data communication is done in internet by using the ZigBee module through MAX232 into the SBUF register of LPC2148 microcontroller (refer serial interfacing with LPC2148). The serial data from the Zigbee receiver is taken by using the Serial Interrupt of the controller. +5V and ground is connected to provide power to the module. While TX and RX pin is connected for communication

Circuit Diagram for Interfacing Zigbee

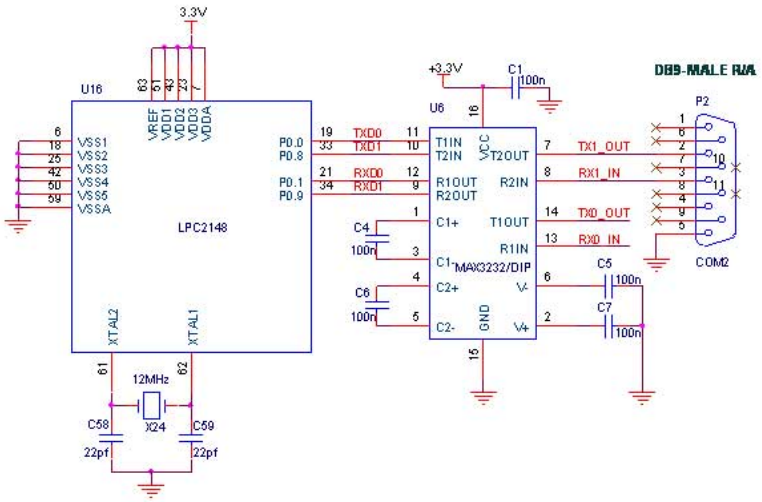


Figure 15: Interfacing Zigbee with LPC214.

Software Implementation

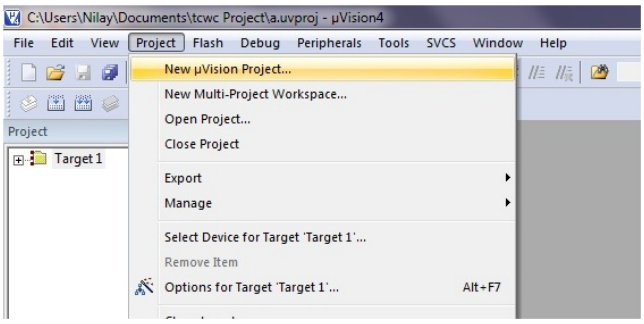
Keil U Vision

Keil MicroVision is software which integrated a text editor to write programs, a compiler and it will convert your source code to hex files too Here is simple guide to start working with Keil u Vision which can be used for writing programs in C/C++ or Assembly language, Compiling and Assembling Programs, Debugging program, Creating Hex and Ax f file, Testing your program without Available real Hardware (Simulator Mode).This is simple guide on Keil u Vision 4 though also applicable on previous versions also.

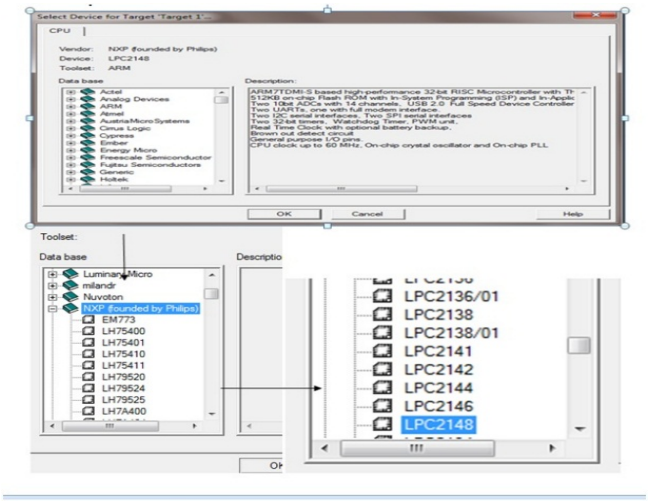
Step 1: After opening Keil uV4, Go to **Project** tab and

Create New U Vision Project

Now Select new folder and give name to Project.



Step 2: After Creating project now **Select your device model**. Example.NXP-LPC2148



Step 3: so now your project is created and **Message** window will appear to add startup file of your Device click on **Yes** so it will be added to your project folder

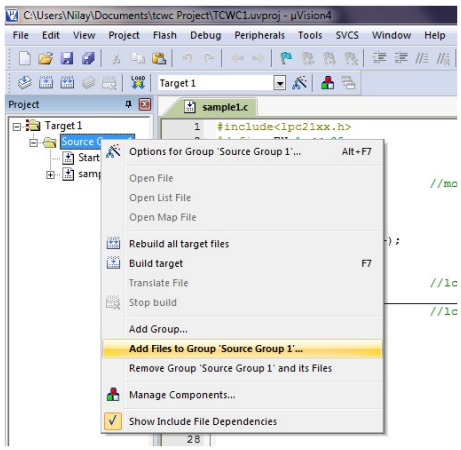
Step 4: Now go to File and create new file and save it with.**C** extension if you will write program in C language or save with.**asm** for **assembly** language.

i.e., **LCD.c**

Step 5: Now write your program and save it again. You can try example given at end of this tutorial.

Step 6: After that on left you see project window [if it's not there….go to View tab and click on project window].Now come on Project window.

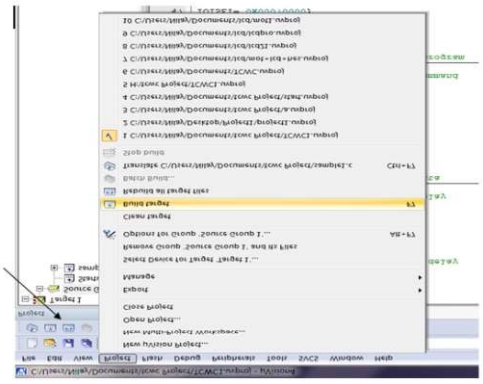
Step 7: Now Expand target and you will see source group. Right click on group and click on **Add files to source group.**



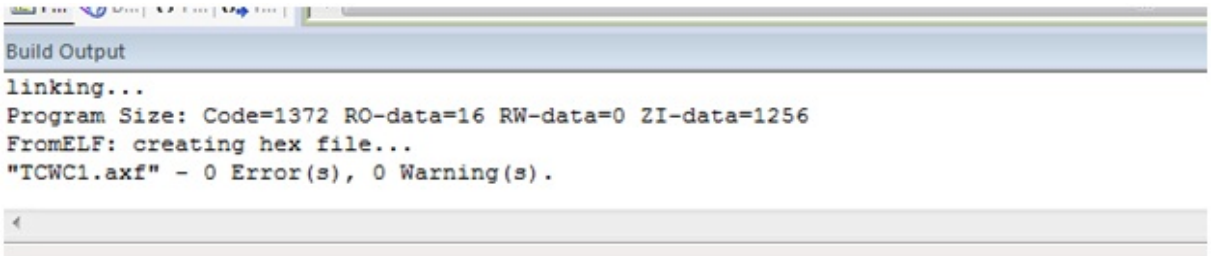
Now add your program file which you have written in C/assembly.

You can see program file added under source group.

Step 8: Now Click on **Build target**. You can find it under Project tab or in toolbar. It can also be done by pressing **F7** key.



Step 9: you can see Status of your program in **Build output** window

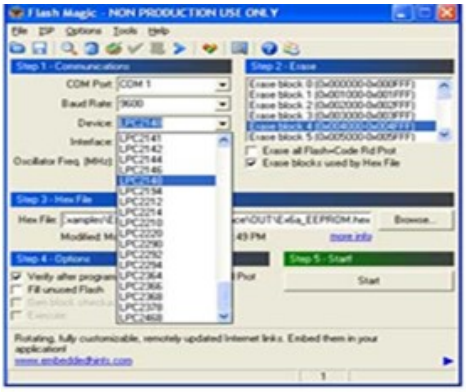


Now you are done with your program

Flash Magic

Step 1: Select Device LPC218

Step 2: Read Device Signature



Step 3: locate hex file

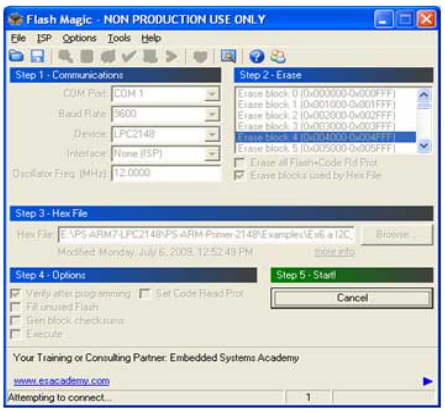


Figure 16: Flash Magic.

Hyperterminal

The HyperTerminal tool, included with Windows 2000, allows you to communicate directly with your system's modem. To create a connection to the port the modem is using. To do so, follow these steps, Click Start | Programs | Accessories | Communications | HyperTerminal. Once HyperTerminal opens, it will automatically prompt you to create a new connection if none exist. If no connection(s) exists, you can click File | New Connection to create a new one. Specify a name for the connection, choose an icon, and click OK.In the Connect to dialog box, choose the COM port being used by your modem (usually COM1 or COM2) from the Connect Using drop-down list and click OK. In the port property sheet that appears, choose a port speed (bits per second) that matches the device. (For a modem, choose its maximum speed.). Then, choose communications parameters that match the device. For most devices, you can typically use 8 data bits, no parity (set to none), one stop bit, and hardware control.

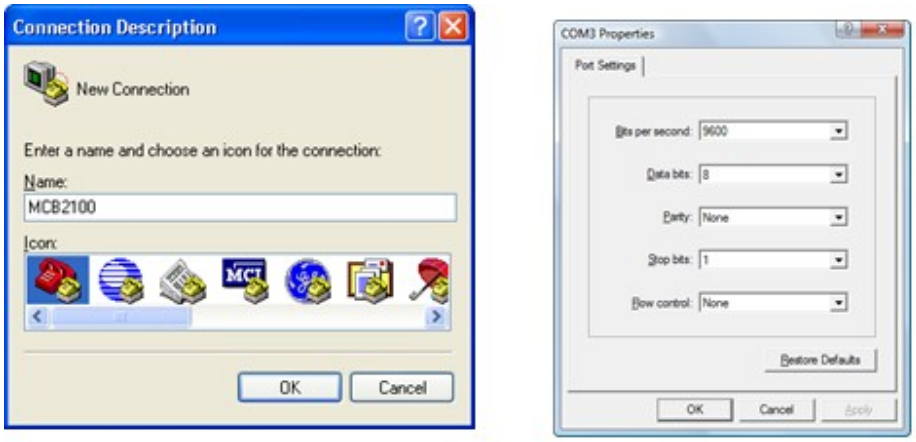


Figure 17: Hyperterminal Configura.

EPILOGUE

Application

This system can be used in any organization for the transport department in order to monitor the vehicle conditions and also used to alert the driver through various conditions. Therefore vehicle accidents are much avoided from this system, and drivers may not cheat the transport department of any organization and also this system eliminate the manual reporting of the bus arrival at the organization campus. From this approach man work is reduced by the automative information system

LIMITATIONS

Range of transmission is short due to the limitation of used transceiver module in the project. Continuous monitoring is taken in this project which is another drawback for this system and this system is used for only permanent drivers not for frequent change of drivers for the vehicle

Further Modification and Improvement

The project can be further enhanced using a high range transceiver module to satisfy under demand. Implementation of database management system can be embedded to make vehicular information system more feasible, also the recorded can be implemented for further use. This project can be modified to duplex communication. Data output of the mechanism can be further modified, processed and transmitted via web using pc. The use of GSM,GPS can also be implemented for future application

CONCLUSIONS

The Goal of my thesis was to design and develop microcontroller based vehicle monitoring system using sensor.to achieve this hardware was developed with compatible software so that the above mentioned parameters can be efficiently transmitted and received through wireless and monitor using pc. This system collects the data from the various sensors which is interfaced to the arm controller in the vehicular section, to alert the driver form various parameters, through LCD and buzzer and the data is transmitted wirelessly to organization, which is monitored and the entire information is documented for the further investigation purposes.

REFERENCES

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