CONTEXT-AWARE ENERGY SAVING SYSTEM WITH MULTIPLE COMFORTS

M. Praveen Kumar
Department of Electronics and Communication Engineering,
St. Joseph's College of Engineering,
Chennai, Tamilnadu, India

Abstract— Power saving and carbon discount becomes the worldwide issue for saving the earth. given that humans often forget about to show off the electric centers with carelessness, so the effect of passive to remind people for strength-saving changed into restricted, but if we constructed automobile and energetic monitoring mechanism to proceed to energy control, the impact of energy-saving could be a whole lot higher. the detecting of walking parameters of the strength-saving machine turned into affected by layout fee and efficiency, which incorporates electricity, strength thing, voltage and cutting-edge, harmonic. The gap parameters consist of class of facilities, variety of human beings, temperature, co2, humidity, luminance, the location of people and so forth.

Keywords— Energy Saving, Power Component, Voltage, Temperature, Co2, Humidity, Luminance.

I. INTRODUCTION

An embedded provision is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as like on a perfect device often including hardware and mechanical parts. With general-purpose counterparts are paltry control consumption, little size, scratchy working ranges, yet low per-unit cost. This comes at the value about constrained processing resource, which makes them significantly more difficult to s program and to interact with. However, by building embedded systems limit many gadgets into frequent utilizes today. 98 percent of all microprocessors are manufactured as components of embedded systems. Examples upon properties over generally embedded computers then in contrast talent mechanisms of pinnacle of the hardware, reception advantage of feasible current sensors or the entity of a community regarding embedded units, some may each optimally control accessible sources at the unit or community levels as like nicely as furnish augmented functions, well past these available. For example, smart strategies perform remain designed in limitation of rule control destruction over embedded systems [1][2].

A general definition of embedded systems is: embedded systems are computing systems with tightly coupled hardware and software program integration, which can be designed to carry out a dedicated function. In a few cases, embedded structures can function as standalone systems. One class of embedded processors focuses of size, government consumption, or price. Therefore, some embedded processors are limited of functionality, i.e., a processor is strong enough for the classification on capabilities because of as such used to be designed however is in all likelihood insufficient because of ignoble classes regarding applications. Real-time systems are defined as much these systems into as the normal effect regarding the direction relies upon concerning both functional legitimacy and the timing correctness. The timing right is at least so essential namely the practical correctness [3].

Embedded processors do remain damaged in twin's extensive categories. Ordinary microprocessor (μP) utilizes resolve integrated circuits for attention and peripherals. Microcontrollers (μC) bear on-chip peripherals, thus reducing monitoring consumption, bulk and cost. In distinction to the non-public laptop market, deep special fundamental CPU architectures are used, given that software is custom-developed because an utility or is now not a commodity product mounted by way of the end user.

II. EXISTING SYSTEM

At present the RS 422 protocols and Power Line communication (PLC) is used. There is no automatic counting system available. [4][5] Drawbacks of existing system are slow operation, more power consumption and poor lighting system.

III. PROPOSED MODEL

An embedded system is a computer system together with a devoted characteristic within a larger mechanical then electrical system, fast along real-time computing constraints. It is embedded so share regarding a complete machine often along with hardware yet mechanical parts. Embedded systems government deep units of common make use of today. 98 percent of all microprocessors are manufactured as

components of embedded systems. Today, almost all petrol pumps have a micro controller to control the electrical pump, drive the display, measure the flow & accordingly turn OFF the electric pump. But a person is still required to collect the money. Our project is designed to eliminate this human interaction so that there is no need of workers to fill the petrol. In this project petrol bunks are using the petro card system for filling petrol in any vehicle [6][7]. In this system every user is provided with a smart petro card, with which one can get admission to petrol at the petrol bunks. Before the use of this card, we have to recharge it. Whenever we want to fill the tank, then we have to place the Petro card in the card reader, that's interfaced to the microcontroller with serial interfacing. The microcontroller reads the information from the smart card reader and asks how many liters you require, which will be displayed on the LCD screen. Then we ought to enter the desired number of liters of petrol through keypad which act as an input to the microcontroller. After reading this value the microcontroller will check for the available balance inside the smart card, if it's miles sufficient then the petrol filling process will be started. After filling the required quantity, a buzzer will indicate the process of completion.
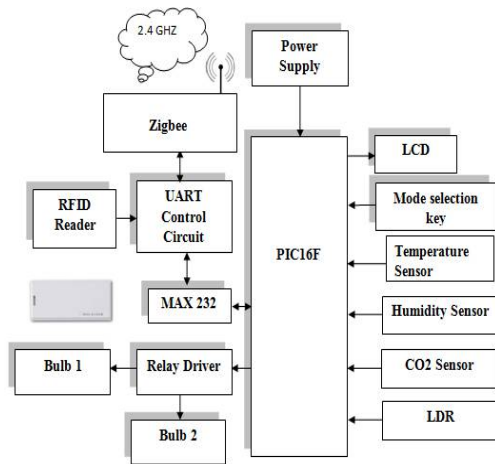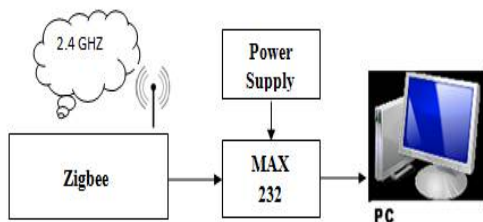

Fig 1 : P Lighting section

Fig 2: Control section

3.1 Microcontrollers

Situations that we discover ourselves in today inside the subject of microcontrollers had their beginnings in the development of technology of integrated circuits. This improvement has made it feasible in limitation of keep lots over thousands over transistors between one chips. That used to be a prerequisite because manufacturing regarding microprocessors, and the preceding computers systems were taken by using external peripherals such as like memory, input-output lines, timers or other. Further growing about the total regarding the package resulted in introduction concerning built-in circuits. These built-in circuits contained both processor and peripherals. That is how much the preceding fume containing a microcomputer, yet where would another be regarded as much a microcontroller came about [8][9].

3.2 Memory Unit

Memory is a part of the microcontroller whose function is to keep records. For a certain input we get the contents of a certain addressed memory location or that's all. Two new principals are brought after us: addressing and memory attention. Memory consists about whole attention locations, and addressing is absence however deciding on certain over them. This capability so much we need in conformity with pick out desired memory location on one hand. This is taken via providing an additional block called monitoring line. We pleasure take this range namely R/W (read/write).
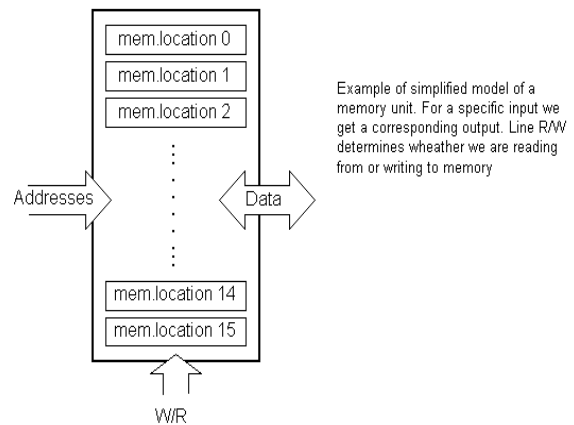

Fig 3 : Block diagram of memory unit

3.3 Central Processing Unit

Let add 3 more memory locations to a specific block that will have a built in capability to multiply, divide, subtract, and move its contents from one memory location onto another. The part we just added in is called "central processing unit" (CPU). Its memory locations are called registers. Registers are therefore memory locations whose role is to help with performing various mathematical operations or any other operations with data wherever data can be found. Look at the

Corresponding Author: M. Praveen Kumar, St.Joseph's College of Engineering, Chennai, India

current situation. We have two independent entities (memory and CPU) which are interconnected, and thus any exchange of data is hindered, as well as its functionality[10][11].

3.4 Bus

That "way" is called "bus". Physically, it represents a group of eight, 16, or greater wires. There are forms of buses: address and information bus. The primary one consists of as many strains as the quantity of reminiscence we want to deal with and the opposite one is as extensive as statistics, in our case
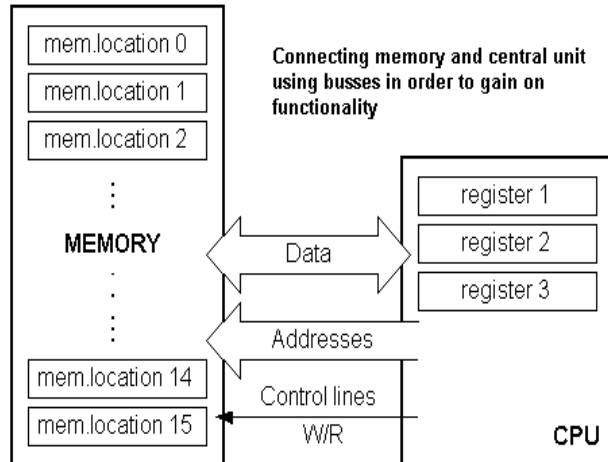
eight bits or the relationship line.

Fig 4.: Representation of bus

3.5 Input-Output Unit

Those locations we've got simply delivered are known as "ports". There are several sorts of ports: input, output or bidirectional ports. When running with ports, initially it is essential to pick out which port we want to paintings with, after which to ship records to, or take it from the port. Whilst operating with it the port acts like a reminiscence place. Something is simply being written into or study from it, and it could be noticed at the pins of the microcontroller [12].

3.6 Serial Communication

As we've separate lines for receiving and sending, it's far possible to receive and ship facts (information.) at the identical time. So known as complete-duplex mode block which allows this way of communication is called a serial communication block. Not like the parallel transmission, records actions right here little by little, or in a series of bits what defines the term serial verbal exchange comes from. After the reception of facts we want to study it from the receiving place and keep it in reminiscence instead of sending in which the method is reversed. Records goes from memory via the bus to the sending area, after which to the receiving unit according to the protocol [13].

3.7 Timer Unit

The timer block this can give us information about time, duration, protocol etc. The basic unit of the timer is a free-run counter which is in fact a register whose numeric value increments by means of one in even periods, so that through taking its value throughout duration's t1 and t2 and on the premise of their difference we can determine how much time has elapsed. This is a very important part of the microcontroller whose understanding requires most of our time [14][15].

3.8 Analog to Digital Converter

As the peripheral signals usually are substantially different from the ones that microcontroller can understand (zero and one), they have to be transformed into a pattern which can be comprehended by a microcontroller.
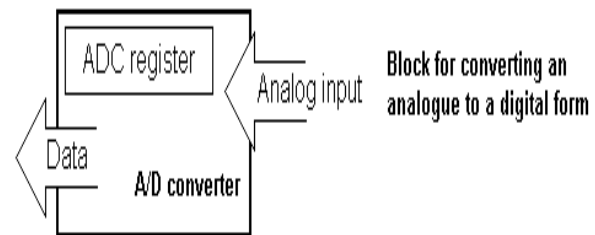

Fig 5: Analog to digital converter

This venture is done by a block for analog to digital conversion or with the aid of an ADC. This block is responsible for converting an information from analog value to a binary number and for follow it through to a CPU block so that CPU block can further process it.

3.9 Compiler

Compiler, it is a computer program that translates text written in a computer language (the source language) into computer language (the target language). The original sequence is usually called the source code and the output called object code.

3.10 Emulator

Emulator is a device it has the ability of a computer program or electronic device to imitate another program or device.

3.11 In Circuit Debugger

Microchip's in-circuit debugger for the flash PIC16F87x family only utilizes the in-circuit Debugging functionality of the PIC16F87X at the side of in-circuit serial programming (ICSP) protocol is to provide cost-effective in-circuit flash programming and debugging from the graphical user interface of the MPLAB.

Corresponding Author: M. Praveen Kumar, St.Joseph's College of Engineering, Chennai, India

3.12 Mplab IDE

The MPLAB IDE, the Windows Integrated Development Environment for development systems tools. This list is focused on MPLAB IDE, MPLAB SIM Simulator, MPLAB IDE Project Manager and general editing and debugging features. For precise facts concerning MPLAB IDE compilers, linkers and assemblers, contribute accordance with the COMPILERS list. For specific information on MPLAB IDE emulators, subscribe to the EMULATORS in list. For specific information on MPLAB IDE device programmers.

IV. ALGORITHMS

1. Steps to Create Firmware for an Embedded System using MPLAB 6.43

Now you have machine language version of your project ready for fusing it into the program memory of the PIC microcontroller.

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1) Open the MPLAB 6.43 from the Start➔Programs➔Microchip MPLAB IDE➔MPLAB IDE.

2) Select Project Wizard from the Project menu and configure a new MPLAB project.

3) Select a device. For example: PIC16F877A.

4) Select a Language Tool suite. For example: Microchip MPASM Tool suite.

5) Name your project and select a project directory.

6) Add any existing file to your project (optional).

7) Click Finish to create a new project. A new Workspace will be created and the new project added to that workspace.

8) To write a source file for your project, select File➔New option. A new text editor is created for entering the assembly language or C language code.

9) After completion of entering the code, save it with the extension <file name>.asm(for assembly language) or <file name>.c (for C language).

10) Add source code to your project by selecting Add Files to Project option from the Project menu.

11) Assemble or compile the project by choosing Build All option from the Project menu.

12) If you have written your program without errors you will get a message Build Succeeded else build Failed along with errors and their types. A hexadecimal file of your project is created with the extension .hex

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2. Steps To Fuse The Hex Code Into MC Chip Using IC Prog

The algorithm is

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1) Select the target device from the device list. For Example: 16F877A

2) Select the oscillator type as HS, write enable for 0000-0FFFh and enable the fuses

3) Open the hex version of the source file from the directory by selecting Open. Command from the File menu.

4) Choose Program all option from the Command menu. This willprogram the chip with the hex file of your project.

5) Finally download the configuration settings for the device by selecting Program

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V. CONCLUSION

Hence, an automotive and active monitoring mechanism to proceed to energy management is constructed so that the effect of energy-saving would be much better. The detection of running parameters and the space parameters of the energy saving system including classification of facilities, number of people, temperature, CO_2, humidity, luminance, the position of people etc., which is done using zigbee and sensors.

REFERENCES

[1] E.Celikin, a "Investigation of the underground structure elements of GSM towers with GPRand GSM signal effects in GPR data", advanced ground penetrating radar(IWAGPR), 2015.

[2] S.hasan, K.heimarl, K.harrison, K.ali, S.roberts, A.sahai, E.brewer, a "GSM whitespaces:an opportunity for rural services", Dynamic spectrum access networks(DYSPAN), 2014.

[3] F.hillebrandin, a "The creation of standards for global mobile communication: GSM and UMTS standardization from 1982 to 2000", IEEE Wireless communications, 2013.

[4] C.oanceain, a "GSM infrastructure used for data transmission", Advanced topics in electrical engineering (ATEE), 2011.

[5] J.mi, Y.takashi, a "Low cost design of HF-band RFID system for mobile robot self localization based onmuliple readers and tags", IEEE on robotics and biometrics (ROBIO), 2015.

[6] P.yang, W.wu, M.moniri, C.chibelushi, a "Efficiet object using localization using sparsely distributed passive RFID Tags", IEEE Transaction on indusrial electronics year, 2013.

[7] M.F.sadikin, M.kyas, a "RFID-tate:Efficient security and privacy protection for active RFID", kyasinformation,intelligence,system and applications IISA, 2014.

[8] Y.sato, J.mitsugi, O.nakamura, J.murai, a "Theory and performance evaluation of group coding of RFID tags", 2011.

[9] L.bhadrachalam, S.chalasani, R.v.boppanayear, a "Impact of RFID technology on economic order quantity models", 2009.

[10] S.oh, H.bang, J.hwang, a "Light weight RFID device interface for controlling RFID tag memory access", Advance communication technology(ICACT), 2010.

[11] D.Lee, S.kim, H.kim, N.Park, a "Mobile platform for networked RFID applications", International technology new generations (ITNG), 2010.

[12] B.M.gurusamy, P.Nagaraj, a "Automatic car body module control using PIC 16F877A", In circuits and communications, control and computing(14C), 2014.

[13] W.M.El-Medany, A.Alomary, R.AL-Hakim, M.Nousif, a "Implementation of GPRS based positioning system using pic microcontroller", In computational intelligence, communication system and networks(CICSyN), 2010.

[14] Pankajpanjiyar, Pradeepmourya, Neerajbansai, Prateeksrivastava, a "Transport security using mobile technology", Intelligence and security informatics, 2008.

[15] "The survey of GSM wireless communication system" In computer and inforamtion application(ICCIA), 2010.

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