



Automatic College Bell Using Raspberry-Pi

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Abstract

The world over the decades has made considerable advancement in automation, au-tomation is employed in every sector whether it is home or industry. Here a new and inexpensive design is being presented. This design a tremendous use at primary and secondary school levels as well as in colleges where the teaching sections can span over eight periods including breaks. The advantage of this design is that the bell rings at the start of each period without any human intervention to a great degree of accuracy and hence takes over the manual task of switching on/off the college bell with respect to time. It uses Real Time Clock (DS1307) which tracks the real time. The scheduled time results are compared with that of a clock, however, some drift is noticed, which is negligible. The Raspberry-pi is used to control all the functions, it gets the time through the keypad and stores it in its memory.

Keywords: *Raspberry-pi, Linux, Ethernet, ARM, Real Time Clock, Keypad, LCD;*

System Development

The Raspberry Pi is a series of credit card sized single-board computers developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools. The original Raspberry Pi and Raspberry Pi 2 are manufactured in several board configurations through licensed manufacturing agreements with Newark element 14 (Premier Farwell), RS Components and Ego man. These companies sell the Raspberry Pi online. Egomania produces a version for distribution solely in Taiwan, which can be distinguished from other Pies by their red coloring and lack of FCC/CE marks. The hardware is the same across all manufacturers. Memory 256 MB (model A, A+, B rev 1) 512 MB (model B rev 2, B+, CM) Storage SDHC slot (model A and B), Micro SDHC slot (model A+ and B+), 4 GB MMC IC chip (model CM) Graphics Broadcom Video Core Power 1.5 W (model A), 1.0 W (model A+), 3.5 W (model B) or 3.0 W (model B+) The Raspberry-pi is a credit card sized computer that plugs into your TV and

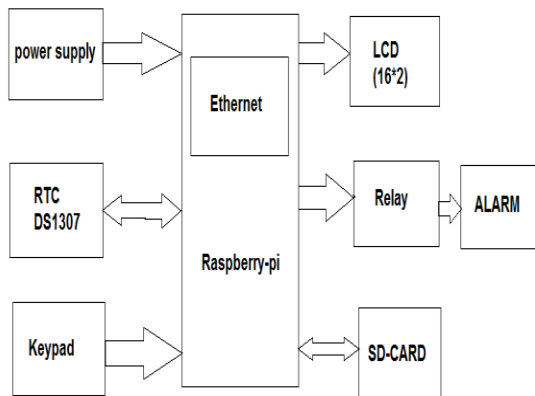
key-board. It is capable little computer which can be used in electronic projects, and for many of the things that your desktop pc does, like spreadsheet, word-processing and games. It also plays high-denation video. We want to see being used by kids all over the world to learns programming. The Raspberry-pi foundation is a charity, so we cants by shares in the company. If you want to support us, we want to love in you to buy a Raspberry pi. The default username for Raspberry is pi (without any quote marks)and the default password is raspberry. if that does not work,check the information about your special distro on the download page. Raspberry Pi is a credit-card sized computer.

Objectives

The objective of the present work is to design, analyze and propose a method of fabrication of composite mono-leaf spring for automobile suspension system. This is done to achieve the following-

1. This design helps in the replacement of conventional steel leaf springs with composite multi-leaf spring with better ride quality.
2. To achieve substantial weight reduction in the suspension system by replacing steel leaf spring with composite multi- leaf spring.

Block Diagram



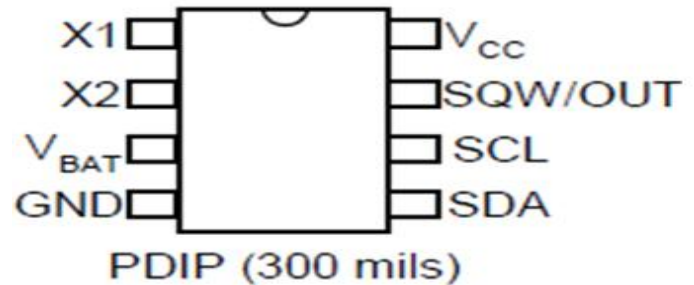
Block Diagram Description

Add two three lies of Raspberry pi.SD card is an secure digital card which is used to store the data like national anthem and Pasaydan. Real time clock which gives continuously time and date. when the Real time clock time is equal to programmed time then relay is activated and alarm is ring by that time. The RTC time is continuously displayed on the LCD. The LCD is of 16*2 LCD which displays 16 charecters in 1st line and second 16 charecters in second line. We can change the exam and normal mode (Regular college time) by using keyboard. Keyboard is directly connected to the module by using this network,we can send the Regular schedule or exam schedule to the model.

Real Time Clock

The DS1307 is a low power full binary coded decimal (BCD) clock/calendar with 56 bytes of SRAM. Clock/calendar provides seconds, minutes, hours, day, date, month, and year information. The

date at the end of the month is automatically adjusted including corrections for leap year. The DS1307 operates as a slave device on the I2C bus. Address and data are transferred serially through an I2C, bidirectional bus. Access is obtained by implementing a START condition and providing a device identification code followed by a register address. Calendar registers are in the BCD format. The day of week register increments at midnight. Values that correspond to the day of week are user-dened but must be sequential (i.e., if 1 equals Sunday, then 2 equals Monday, and so on.). Bit 7 of Register 0 is the clock halt (CH) bit. When this bit is set to 1, the oscillator is disabled. When cleared to 0, the oscillator is enable.



Relay

Relay is electro-mechanical device which is used to isolate one electrical circuit from another. It allows a low current control circuit to make or break an electrically isolated high current circuit path. Total isolation is provided by the relay between the triggering source applied to the terminal and the output. This total isolation is a feature that makes relay different from other integrated circuits and is also important in many digital applications. It is a feature that certain semiconductor switches (e.g. transistors, diodes and integrated circuits) cannot provide. In this circuit a 12V magnetic relay is used. In magnetic relay, insulated copper wire coil is used to magnetize and attract the plunger .The plunger is normally connected to N/C terminal. A spring is connected to attract the plunger upper side. When output is received by relay, the plunger is attracted and the buzzer is on.

THE PRIMARY FUNCTIONS OF RELAY ARE:
The galvanic sapration of primary or actuating circuit

and the load circuits. Single inputs multiple output capability. Separation of different load circuits for multi-pole relays. separation of AC and DC circuits. interface between electronic and power circuits. multiple switching functions, e.g. delay, signal conditioning amplifier function. Relay is electro-mechanical device which is used to isolate one electrical circuit from another. It allows a low current control circuit to make or break an electrically isolated high current circuit path. Total isolation is provided by the relay between the triggering source applied to the terminal and the output. This total isolation is a feature that makes relay different from other integrated circuits and is also important in many digital applications. It is a feature that certain semiconductor switches (e.g. transistors, diodes and integrated circuits) cannot provide. In this circuit a 12V magnetic relay is used. In magnetic relay, insulated copper wire coil is used to magnetize and attract the plunger.

Figure

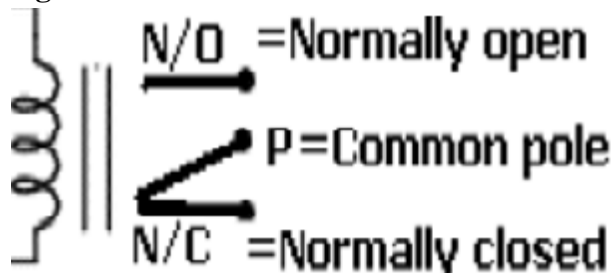


Figure : Relay

LCD (Liquid Crystal Display): This is the first interfacing example for the Parallel Port. This example doesn't use the Bi-directional feature found on newer ports, thus it should work with most, if not, all Parallel Ports. It however doesn't show the use of the Status Port as an input. These LCD Modules are very common these days, and are quite simple to work with, as all the logic required to run them is on board.

SD Card

The SD card standard is a standard for removable memory storage designed and licensed by the SD Card Association. The SD Card standard is largely a

collaborative effort by three manufacturers, Toshiba, SanDisk, and MEI and grew out of an older standard, Multi Media Card (MMC). The card form factor, electrical interface, and protocol are all part of the SD Card specification. The SD standard is not limited to removable memory storage devices and has been adapted to many different classes of devices, including 802.11 cards, Bluetooth devices, and modems.

Features

The SD card controller has the following features:
 Supports interface to multimedia cards (MMC)
 Supports interface to secure digital (SD) memory cards
 Ability to use the MMC/SD protocol and Secure Digital Input Output (SDIO) protocol
 Programmable frequency of the clock that controls the timing of transfers between the MMC/SD controller and memory card
 512-bit read/write FIFO to lower system overhead
 Signaling to support enhanced direct memory access (EDMA) transfers (slave)
 20 MHz maximum clock to MMC
 25 MHz maximum clock to SDCARD.

Python 3.5

Python is an interpreted object-oriented, high-level programming language with dynamic semantics. Its high-level built-in data structures, combined with dynamic typing and dynamic building, make it very attractive for rapid application development as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy-to-learn syntax emphasizes readability and therefore reduces a cost of program maintenance. Python support modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source for binary form without charge for all major platforms and can be freely distributed. Often programmers fall in love with Python because of the increased productivity it provides. Since there is no compilation step, the edit-space-debug cycle is incredibly fast. Debugging Python programs is easy; a bug or bad input will never cause a segmentation

fault. instead, when the interpreter discovers an error ,it weight raises an exception. When the program does not catch the exception, the interpreter prints a stack trace.a source never debugger allows inspection of local and global variables, evaluation of arbitrary expression, setting break points, stepping through the code aline at a time, and so on.the debugger is written in python itself, testifying to python's introspective power.

Operating System

An operating system is a program that acts an intermediary between a user of a com-puter and the computer hardware. The purpose of an operating system us to provide an environment in which a user can execute prorams. It makes the computer system easy to use. Allow users to use the computer hardware in an ecient manner. Three main components of a computer system reas follows: Hardware, Software, Data. The central processing unit is located on chips inside the system unit.The CPU is the brain of the computer. This is place where the computer interprets and processes information. An operating system is a program that acts an intermediary between a user of a computer and the computer hardware. The purpose of an operating system us to provide an environment in which a user can execute prorams. It makes the computer system easy to use. Allow users to use the computer hardware in an e_cient manner. Systems programs written for direct execution on computer hardware in order to make the power of the computer fully and eciently accessible to applications programmers and other computer users.

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