

TIMER BASED ALERT SYSTEM

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Abstract: - The most important goal of this project is to put into force low-value automatic university bell-ringing gadgets and the usage of the Internet of Things. In our project, it uses four major components, which include the node MCU, LCD modules, and input provision to change the timing during exam hours. Node MCU is used here for reading time from NTP and displaying it on the LCD. An electric powered bell is used as an alarm that allows it to ring while the alarm is activated, and so the date and time may be displayed on the LCD module. We have designed the code in such a way that the bell will be activated every 60 minutes, as per the college schedule. We have programmed the bell in such a manner that it could ring for 10 seconds in each block of our university simultaneously, informing the students and teachers of the institution of the completion of the class period in all the blocks at the same time.

Keywords: Node mcu, two channel relay, Lcd module, bell.

I. INTRODUCTION

In daily life, everyone gives significance to time. We know that time and money do not wait for anyone. Everything should be done on time and accurately for a better outcome. Also, there may be a necessity for a workforce and money. Hence, we should use an automatic control system, which saves manpower, time, and money and also has the highest accuracy. The goal of this project is to design and implement a Timer based alert system. An automatic college bell is a virtual circuit that is used for the automated switching of the bell in line with the given agenda without human intervention. Generally, anywhere we can also go, it is probably a college or a business enterprise if the beginning or stopping of any technique is to be conveyed to a huge range of people. A bell is used over there to indicate the beginning or stopping of any process. So, a lot of these bells are commonly operated by human beings without delay, which isn't always advisable. In order to avoid the situation of time lag, we introduced the automatic college bell ringing system. Also, in order to avoid this, we introduced an automation-based bell system for better performance at a low cost. Automation, or computerized management, is using diverse management structures for running systems, including machinery, strategies in factories,

boilers and heat-treating ovens, switching on Smartphone networks, steering and stabilizing ships and planes, and different packages with minimal or decreased human intervention. Some approaches were completely automated. The largest advantage of automation is that it saves labor; however, it's also used to store power and substances and to enhance quality, accuracy, and precision.

II. IMPLEMENTATION SETUP

Components required: Hardware

- 1) Node mcu
- 2) 16*2 LCD module
- 3) Two channel relay
- 4) Bell
- 5) NTP server
- 6) Components required: Software
- 7) Arduino IDE
- 8) Accessible Wi-Fi

The complete model of the system can be illustrated as,



Fig1: The complete setup of the device

WORKING PRINCIPLE. The block diagram consists of Node MCU, LCD module, ntp server, relay and bell. The Arduino microcontroller consists of EEPROM where the code is dumped and written in Arduino programming software using embedded C coding. The time period for which the bell ringing is programmed and loaded into the microcontroller. If the present time matches with the time on the ntp server, the bell will initialize to ring. When the current time matches with the time in the program, then the relay is set to logic HIGH, and then the bell will ring. A relay circuit is used to power the bell for several seconds.

NODEMCU. It is the main and central part of the device. It provides the platform for our project. All the other sensors are connected to this microcontroller module. They send the measured values to it and then

upload all the values to the cloud where the values are analyzed. The developer and architect of this board is ESP8266 Open source Community. It has a running machine known as XTOS. The CPU is ESP8266(LX106). It has an in-built memory of 128 Kbytes' and a storage capacity of 4 Mbytes measured.

LCD MODULE. These LCDs are perfect for showing textual content or characters only, therefore the name 'Character LCD', hence the name 'Character LCD'. The show has an LED backlight and may show 32 ASCII characters in rows with sixteen characters. It defines the character, the background color, and the character to background contrasts. A liquid crystal display, a higher referred to as an LCD, is a brilliant way for a microcontroller to give seen information. LCDs can show output from the μ C which includes time, date, and temperature; they also can be used to show the contents of memory, and a useful resource in debugging programs.

TWO CHANNEL RELAY MODULE. This is a 2 Channel isolated 5V 10A relay module Opt coupler for Arduino PIC ARM. It can be used to control many appliances and other types of equipment with high current. The 2 Channels Relay Module is a board. It can be used to control the high voltage required by motors, solenoid valves, lamps and AC loads. The purpose of this relay module is to interface with microcontrollers such as Arduino, PIC etc. The function of a relay is mainly to switch electrical devices and systems into on or off conditions. It isolates the control circuit from the device or system being controlled. It works on the principle of electromagnetism. The EMF that creates the temporary magnetic field is energized when the relay's circuit detects the fault current. This magnetic field controls the armature to open or close connections.

OPERATION. In our project, we use four major components, which include Node MCU, LCD modules and input provision to change the timing during exam hours. Node MCU is used here for reading time from NTP and displays it on LCD. An automatic bell is used as an alarm, which will ring when the alarm is activated. Also, the date and time will be displayed on the LCD module. We have designed the code in such a way that the bell will be activated for every 60 minutes as per the college schedule. The programming is done in such a way that the bell would continue to ring for 10 seconds in every block of our college simultaneously during regular class. So, this system allows every person in the institution to learn the correct timing without any delay. That means it starts by synchronizing time with the ntp server. There are two provisions. During regular time, activate the control circuit and ring the bell for 10 seconds. Another mode is during exam time. During exam time, the control circuit activates and rings the bell. At the same time, the date will be displayed on the LCD board, so this is the basic

operation of this bell ringing system. It can be illustrated using the below circuit diagram. The bell ringing system can also be used in schools or any institutions. In this project, time is mainly set based on the time of the college interval. During exam time, the bell should be reset to exam mode so students can start or end the exam at the correct time without any delay.

Circuit Diagram

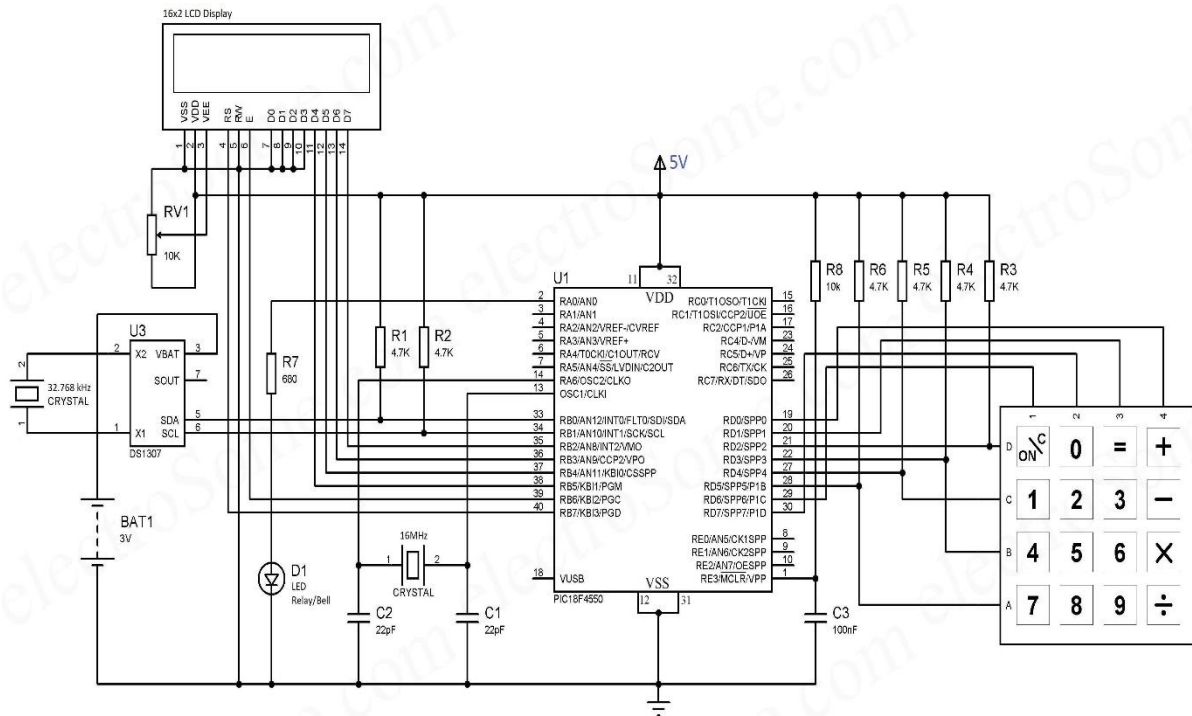


Fig2: Circuit Diagram

III. ALGORITHM FOR THE PROPOSED MODEL

- ✓ Starting with synchronizing time with the ntp server
- ✓ There are two provisions.
- ✓ During regular time, activate the control circuit and ring the bell for 10 seconds.
- ✓ Another mode is during exam time. During exam time, the control circuit activates and rings the bell.
- ✓ At the same time, the date will be displayed on the LCD board.

IV. RESULT AND DISCUSSION

By implementing the program, for every 60 minutes, a signal is sent from the board to the control circuit and it will activate the bell and ring for 10sec. In addition to normal time of sophistication hours, there may be a choice to up trade the time in the course of examinations. The timings are preprogrammed for each of the cases. It can also be modified from an

automated condition to manual. If a few mistakes happen, then there is the option to reset all the conditions.

During exam time the output can be illustrated as,



Fig3: Time slot arrangement

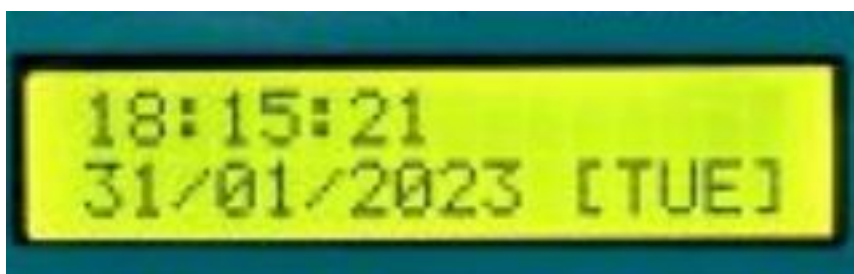


Fig4: Time & Date arrangement

There are two provisions in the program. The first one is during regular class the output will be shown in figure 4. As per the schedule during regular class, the relay will be switched to high and the bell will ring for 10sec with a 60 minute gap.

During regular class, the bell will ring for 10 seconds every 60 minutes. At the same time as the date, time will be displayed on the LCD board. During exam time, the display will be shown in fig 5. At that time; the bell will ring as per our requirements by changing the program.

V. CONCLUSION

This project eliminates the drawbacks of a manually operated bell ringing system and it brings a new automatic college bell ringing system at a low cost. This computerized bell ringing gadget is now no longer the simplest used for lecture agendas, but it can also be used it for exams. This task allows us to ring the bell with excessive accuracy in time in all locations.

VI. FUTURE SCOPE AND RESEARCH

In this project, more advancement and upgrades can be done. The timings can best be edited by way of means of a licensed person. Another benefit is that the timings may be edited for an extra wide variety of

instances according to their wish. Another gain is that it affords safety because it makes use of a password. It can also be made via means of the usage of GSM.

VII. REFERENCES

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