IMPLEMENTATION OF SCHOOL/COLLEGE BELL USING LABVIEW

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Abstract: - *Now a day's many school/college bells are manually operated. Hence there is a big question of accuracy. In market there are many digital clocks available with bells but rings only at specific time and cannot stop after specific time. This paper discusses in detail the use of automatic control system, which saves manpower and money and yielding better accuracy. Using LABVIEW software it rings in accordance to college/school time table at specific scheduled timings. It can be replaced with the manual switching of the bell in the school/college*.

Keywords:- *College/school Bell, Front Panel, Lab VIEW, Microcontroller, Virtual Instrumentation.*

I. INTRODUCTION

Due to literacy awareness number of colleges and schools are rapidly increasing. In present system, bell for period or break are operated manually. After every class, an employee is engaged in alarming bell. Inaccuracy, Human error and inconsistency are the drawbacks of manual system.

To overcome these problems Lab VIEW plays an important role. Automation of college bell is possible so the bell would ring automatically at the scheduled time. This paper deals with the implementation of circuit for scheduling of school/college bell. It has an inbuilt Real Time Clock which tracks over the Real Time. When this time equals to the Bell Ringing time, then the Bell is switched on. The Bell Ringing time can be edited at any Time, so that it can be used at Normal Class Timings as well as Examination timings. National Instrument's Lab VIEW is widely used graphical code development environment which allows system level developers to perform rapid prototyping and testing.

II. CONVENTIONAL METHODS

A) Manual College Bell

Early methods included the hand ringing of bells - some of which are still used at the moment. Progressively technology has seen the beginning of more dependable and more and more accurate systems, to the position where today's schools can have fully planned timetables that automatically make changes for exams. Present day ringing the bell in colleges/schools are carried out manually. The main disadvantage of this is one person is to be keeping alert for this. At the same time during that time he could not be engaged in another task. Of course, one further hitch of the manual bell ringing approach is the question of hearing loss caused by close proximity to the noisy bells. This exposure was either unknown in the past or at least it was by no means considered a significant enough issue to deserve changes to the practice.

In recent decades, several other school bell systems have been tested, some proving more functional than others. Several schools have tried using sirens and klaxons to alert students and teachers of period times, nevertheless these were usually found to be stressful, and had an adverse effect on the concentration ability of students.

B) Real Time Clock Based Automatic College Bell

This system replaces the Manual Switching of the Bell in College/school. It has an Inbuilt Real Time Clock which tracks over the Real Time. When this time equals to the Bell Ringing time, then the Relay for the Bell is switched On. The Bell Ringing time can be edited at any time, so that it can be used at normal class timings as well as examination timing.

The Real Time Clock is displayed on LCD display. When the Real time and Bell time get equal then the Bell is switched on for a predetermined time. These bells are equipped with the CPU which controls the bell.

C) Embedded Based Automatic College Bell

Embedded Based Automatic College Bell System is developed for the users to control Bell system in companies or institutions automatically. All the bell timings and durations are predefined and set in the microcontroller. The user can set the timings using a key pad. A LCD display is used to display the timings. The timings set by the user are stored in the microcontroller. At the particular time, signal is generated in the microcontroller and sent through the output port. The electronic circuit receives the signal and drives a corresponding relay.

The relay is used as a switch to operate the Bell. As soon as the duration is over, the signal is stopped and waiting for the next set time. This system is mainly used in Schools, Colleges and other companies where Bell system is implemented. There is no need of a person managing the bell timings.

The disadvantage using microcontroller for this system are more number of components used for the assembling of this microcontroller based circuit and Programming of

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microcontroller is time taking process. To overcome these flaws, this paper discusses the circuit that operates automatically using Lab VIEW.

III. PROPOSED METHOD & METHODOLOGY

Most of automatic college bell systems are microcontroller based, which require programming of microcontroller. This paper discusses yet another way to make automated bell ringing system using only Lab VIEW software instead of using a number of resistors, transistors, capacitors, microcontroller's etc. It replaces the Manual Switching of the Bell in the College. The time input can be edited as per requirements. This circuit is simple to prepare and easy to install. It can be concluded that it will be much useful for colleges or schools or industries.

The methodology follows the design of Lab VIEW front panel and block diagram for the automatic college bell system. The input given in the block diagram was the time that was scheduled for the classes by using an array shell. The output will be Boolean ON when the real time match with the scheduled time.

IV. SOFTWARE

Virtual instrumentation provides a new model for building measurement and automation systems. Key for its success includes rapid PC advancement; explosive low-cost, high-performance data converter (semiconductor) development; and system design software emergence. These factors make virtual instrumentation systems accessible to a very broad base of users.

Lab VIEW (Laboratory Virtual Instrumentation Engineering Workbench) is a platform and development environment for a visual programming language from National Instruments. The purpose of such programming is automating the usage of processing and measuring equipment in any laboratory setup. Lab VIEW is commonly used for data acquisition, instrument control, and industrial automation on a variety of platforms including Microsoft Windows, various versions of UNIX, Linux, and Mac OS X. Lab VIEW a program development application, much like various C or BASIC software development tools. Lab VIEW includes libraries of functions and development tools designed specifically for instrument control. It has application specific libraries for data acquisition, serial instrument control, data analysis, data presentation and data storage.
Lab VIEW programs are called *Virtual Instruments (VIs)* because their appearance and operation imitate actual instruments. VIs contains an interactive user interface, called the front panel that can have knobs, push buttons, graphs, and other controls and indicators. The actual program is included in the *Block Diagram* Window.
Graphical Programming is one of the most powerful features that Lab VIEW offers engineers and scientists. With Lab VIEW, the user can design custom virtual instruments by creating a graphical user interface on the computer screen through which one can Operate the instrumentation program, Control selected hardware, Analyze acquired data and Display results. The similarity between standard flow charts and graphical programs shortens the learning curve associated with traditional text-based languages.

The user can determine the behavior of the virtual instruments by connecting icons together to create block diagram and front panel. With graphical programming, the user can develop systems more rapidly than with conventional programming languages, while retaining the power and flexibility needed to create a variety of applications. The characteristics of Lab VIEW are:
- *Connectivity and Instrument Control*
- *Open Environment*
- *Reduces Cost and Preserves Investment*
- *Multiple Platforms*
- *Distributed Development*
- *Analysis Capabilities*
- *Visualization Capabilities*

The advantages of using Lab VIEW are:
- *Easy to Learn*
- *Easy to Use*
- *Complete Functionality*
  - a. *Powerful Built-In Functionality.*
  - b. *Add-On Software for Special Needs.*
  - c. *Configuration-Based Tools.*
  - d. *Third-Party Tools.*
- *Modular Development*

V. FRONT PANEL & BLOCK DIAGRAM

The front panel of a VI is build with a combination of controls and indicators. Controls are means of supplying data to VIs. Indicators display data that VIs generates. The figure 1 shows the front panel of the college bell system and figure 2 represents the block diagram of the system designed in Lab VIEW.

VI. RESULTS

College/school bell system designed using Lab VIEW is successfully implemented. The front panel are shown in figure1, 3 and 4.

- ✓ Figure 1: The front panel shows the result that when the scheduled time becomes equals to the real time the Boolean glows on a working day (e.g. Monday)
- ✓ Figure 3: The front panel shows that the Boolean turns off after the time elapsed (5 seconds) as shown in the figure.
- ✓ Figure 4: The front panel shows, Boolean remains in off position even that the scheduled time is equals to the real time during Sundays.
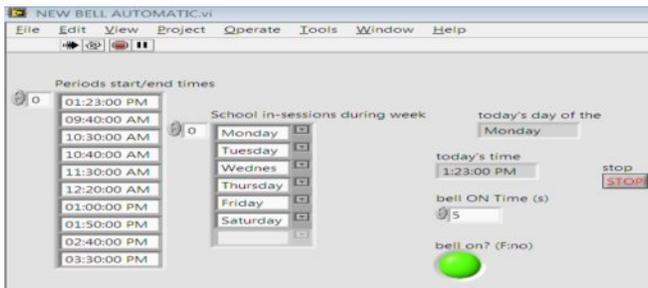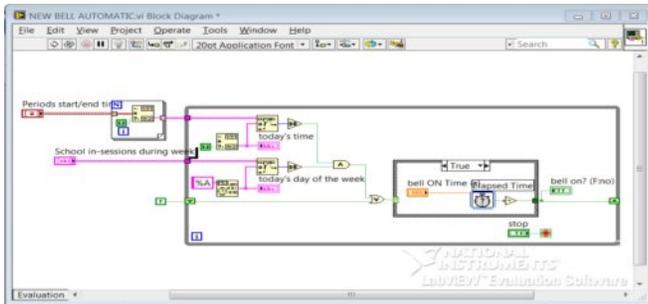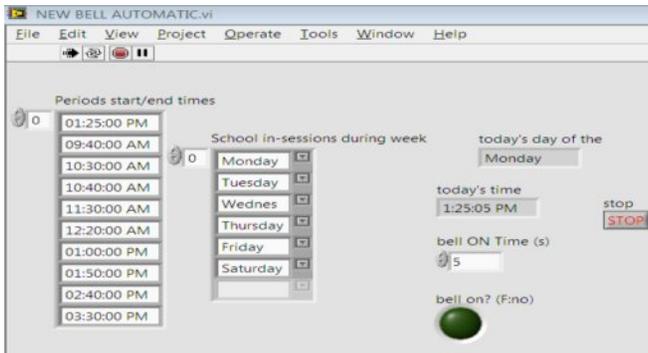
Figure 1: Front Panel

Figure 2: Block diagram

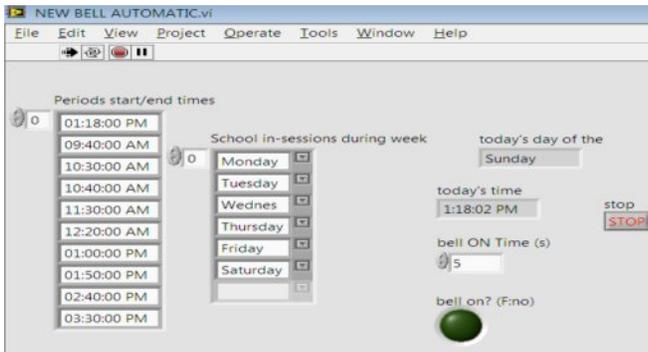Figure 3: Front panel during Monday (Boolean OFF)

Figure 4: Front panel during Sunday

The drawbacks of microcontroller based automatic college bell system can be overcome by this design.

Some of the advantages and disadvantages of this system are:

- All actions can be controlled from one place, one computer and one software with automatic time schedule
- Can define different timings for different classes.
- Editable time facility is available (this means no need to burn program again and again and no need to close software or anything just click on tab and change time)
- The only hardware part used in this project was the bell. DAQ is used as interface between LabVIEW software and the bell.
- It is easy to learn, use, debug as it is a Graphical programming language.
- It works on multiple platforms (Windows, Mac, Linux etc.).
- The bell will ring only on working days.
- The ringing time should be given at a time before we run the process. It cannot be changed when the system is in working mode which may otherwise not ring the bell.
- The software and the devices required to implement VIs are costly.

VII. FUTURE SCOPE AND CONCLUSION

Automatic college bell system using Lab VIEW can be extended for further development as there can be many departments in a university at a distance in the same campus and want to synchronize all department bells. A server program has to be designed with the specified bell timings. All departments' client programs can access the server using LAN/WIFI network.

The basic design of the Automatic College Bell is designed and implemented successfully. The system will ring the College Bell at pre-scheduled times of periods on each day. There are different timings for a period varying from one college to the other. The basic design provides an opportunity of selecting the suitable time schedule for the college by using the most powerful simulation tool **Lab VIEW** which is easy to design. This signals the DAQ to carry out the specific task, thereby ringing the bell at a regular time interval. From the results obtained, it can be concluded that the aim of this paper has been practically and theoretically achieved.

VIII.ACKNOWLEDGEMENT

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