AUTOMATIC ALARM SYSTEM USING ANDROID SMART PHONE FOR COLLEGE OR INSTITUION OR INDUSTRY

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Abstract

This paper describe the simple method of implementation of automatic alarmsystem using android smart phone in school or college. In this method, a simple circuit is design to operate the bell. Set the alarm in android phone through its app according to the schedule of time table and connect the outputfrom audio jack of phone to the input of circuit. Whenever phone alarms or vibrates, the bell also ring for assign time period.

Keywords: Alarm, Android, Microcontroller.

Introduction

Currently in most institute, the bell operates manually, therefore there is few possibility to ring the bell at exact time, it means that one employ is engaged to monitor the clock and to ring the bell. In market, there are many types of electronic module of automatic bell system using microcontroller or microprocessor for college or school are available and its cost is high. This paper presents the simple way to implement the automatic bell system using android phone with simple electronics circuit. Today everyone has android phone and familiar with its feature. One of the feature of android phone ismultiple time alarm is used to make the automatic bell system. Everyone android phone user set the alarm for their personal as well as official schedule. In this case, alarm in android phone is set according to the institution/college/school of time table.The audio output of phone is connected to the input of circuit shown in fig.B). Whenever the alarm rings, the institution bell also rings. But there is a one precaution is to be taken that phone should not have sim card or if there is a sim card, deactivate the sim card through the setting option of android phone. If sim card is activated or enable in phone and phone will ring for incoming or outgoing call and messages institution bell will also rings. The another precaution is that alarm ringing time of phone should not be more than 10 minute. In this system,if phone is kept in vibrating mode, there is a facility to sense the phone vibration instead of audio alarm.

Block Diagram

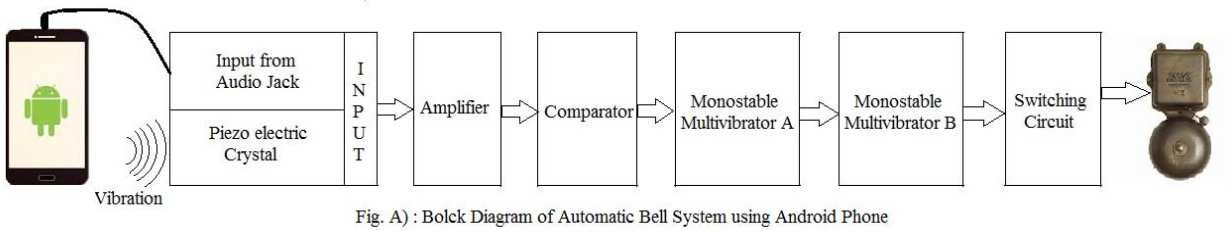

Fig. A) : Bolck Diagram of Automatic Bell System using Android Phone

Description

In block diagram, the first block is input section in which input is accept in two ways i.e. from audio output of phone or vibration of phone. The input signal is amplified by amplifier and rectified it. Comparator compare the rectified voltage with reference voltage. If rectified voltage is greater than reference voltage, monostablemultivibratorA is triggered and gives the high output for 10 minute. The output of mono stable multivibratorA trigger the monostablemultivibratorB and give the high output for 10 second which energized the relay through switching circuit and ring the bell for 10 second.

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Circuit Diagram

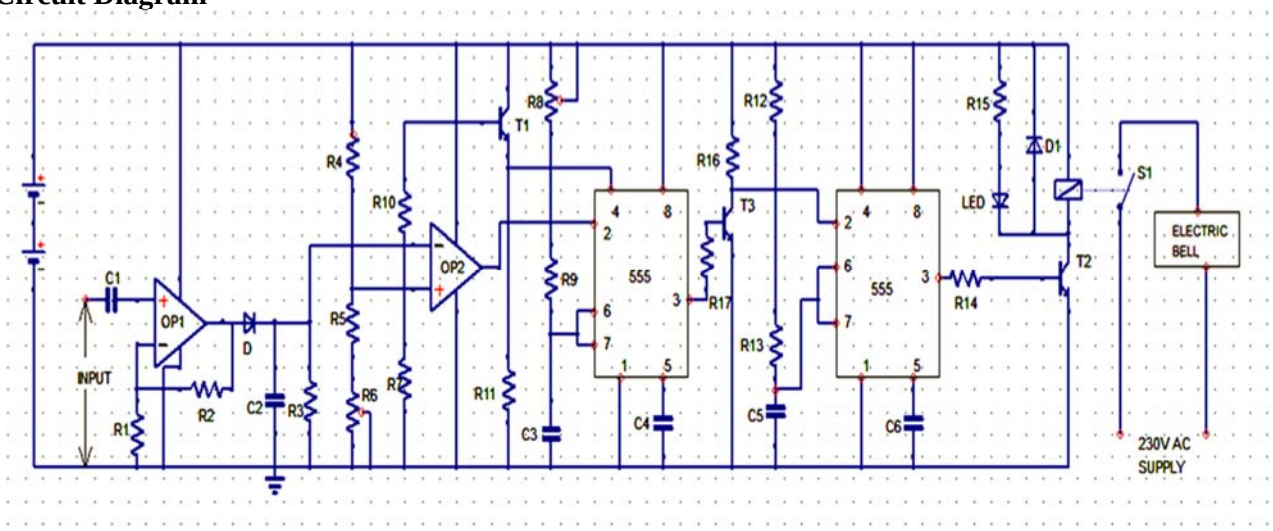

Fig. (B) : Circuit Diagram for Bell Ringer

Working

The input signal is applied to the input of amplifier(OP1) from audio jack of phone. The gain of the amplifier is adjusted according to maximum level of input signal. The value of R1 and R2 selected according to maximum level of input signal. In order to sense the vibration of phone piezo electric crystal as a vibration sensor is connected at the input of amplifier. The value of R1, R2 and C1 is different for vibration sense mode. The amplified output signal is rectified by diode D1 and applied to the inverting input of comparator(OP2) which compare it with reference voltage. Reference voltage at non inverting terminal of op2 is set by the value of R4, R5& R6. The reference voltage should be adjustedin such a way that the difference between maximum output voltage not more than one volt, to avoid the false output of OP1. The output of OP2 is connected to the trigger input of 555A which triggered when voltage at inverting input terminal of OP1 is greater than reference voltage. As soon as 555A triggered, it gives the high output for 10 minute which is applied at the trigger input of 555B through transistor T3. The purpose of T3 is to invert the output of 555A in order to trigger 555B. As 555B triggered, it gives the high output for 10 second, which drive the transistor T2 and energize the relay for 10 second and also LED will glow for 10 second. Whenever the relay energize, it make the connection of bell and bell will ring if 230V ac is applied.

Result

As per setting of multiple alarms in android phone, it will ring or vibrate on scheduled time. For proper working of circuit, the alarm volume of android phone should be high and sim card in phone should be disabled in phone. If sim is active in a phone, incoming call and message will ring the bell unnecessarily. This circuit act as switch for institution bell for particular time period as per designing timer circuit555Batscheduled time of clock. it is observed that phone alarm is more comfortable as compare to vibration because if external unwanted strong vibration arises in the vicinity of piezo electric crystal, the bell will unnecessarily ring which not as per schedule of time table.

Conclusion

In this system, it is here notice that clock is considered of android phone therefore it should be set according to standard time format and check the clock and battery of phone day today so that it alarm or vibration on scheduled time. The circuit design here just accepts the alarm or vibration signal as a alert signal which switch on the bell for desire time period. This circuit is applicable for not only college, school but also it is used for offices, industries where need of single or multiple alarm.In this circuit, two timer circuit using 555A and 555B are used. The time period timer may get changed due to

ageing and heating effect so little precaution is to be taken that to observe the time period of ring once in a month.

Reference

1. Op-Amp and Linear Circuits – RamakantGayakwad
2. Instrumentation Device and System – Rangan Sharma
3. http://www.dummies.com/consumer-electronics/smartphones/droid/basics-of-the-alarm-clock-on-an-android-phone/
4. https://www.droid-life.com/2013/03/20/how-to-set-an-alarm-on-your-android-phone-beginners-guide/
5. Microcontroller Controlled AutomatedCollege Bell - ***International Journal of Engineering Trends and Technology (IJETT) – Volume 32 Number 4- February 2016***, **ISSN: 2231-5381**, Page 184. http://www.ijettjournal.org
6. MICROCONTROLLER BASED AUTOMATIC COLLEGE BELL WITH MONITORING SYSTEM - ***International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 4 Issue 2, February 2015,*****ISSN: 2278 – 1323,** Page 401**.**