3 CHANNEL QUIZ BUZZER USING IC 4013 AND IC 7408

DIGITAL ELECTRONICS LABORATORY

Z21351-MINI PROJECT REPORT

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DIPLOMA IN COMPUTER ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING
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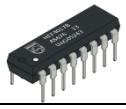
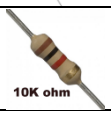
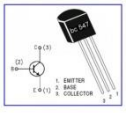
ABSTRACT

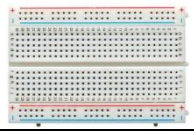
Education is a process of expediting learning, acquiring knowledge, values, and virtue. It contributes to the development of better people around the globe. It is more of an enduring method in which people gain information, skills, and ethics. Testing is a part of learning and lets students “show what they know” and “what they can do”. Tests results show student strengths. Quiz is an important event in any school/College institution to test the knowledge of the participants. In order to increase the difficulty, the spontaneity of the participants is also tested in which the reaction time of the participants also matters. The 3 channel quiz buzzers help to implement it. This system has been implemented with the help of IC 4013 AND IC 7408. This system facilitates to take quick analysis of the participants response. This system can be implemented in not only education sectors but also entertainment sectors. This system can resolve the contradictory among the participants and organizers**.**

PROBLEM DEFINITION

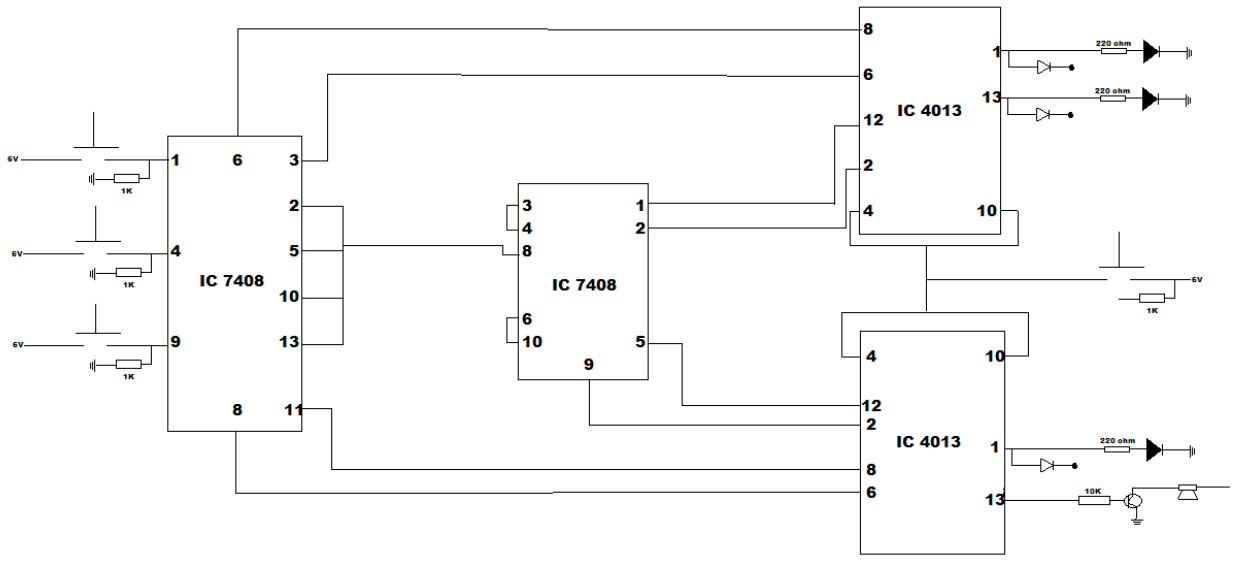
The existing systems to conduct quiz are using spotters and show-of-hands, but it is difficult to ensure that it is a foolproof system and completely unbiased system. To solve this problem, the proposed system indicates the person who is ready first to answer the question has to push the buzzer. It is also hard for a judge or the organizer to identify the first person who pushed the buzzer ON, since the participants race to answer the question. So the system has been added a feature in which if someone presses the buzzer first then all the remaining participant‘s buzzer gets disabled and the buzzer will not sound again until the reset button is pressed.

COMPONENTS REQUIRED

IC7408	
IC4013	
220k Resistors	
1k Resistors	
10K resistors	
Transistor bc547	
Diode	

LED	
Jumper Cables	
Bread Board	
Buzzer	
9v Battery	

CIRCUIT DIAGRAM



WORKING PRINCIPLE

IC 4013 contains two independent D type flip flops which exist in one of two states and can store information. Each module is further equipped with a group of pin outs assigned as data, set, reset, clock input and a couple complementary output Q and . As we know, output changes or toggles state as response to trigger applied to input terminals.

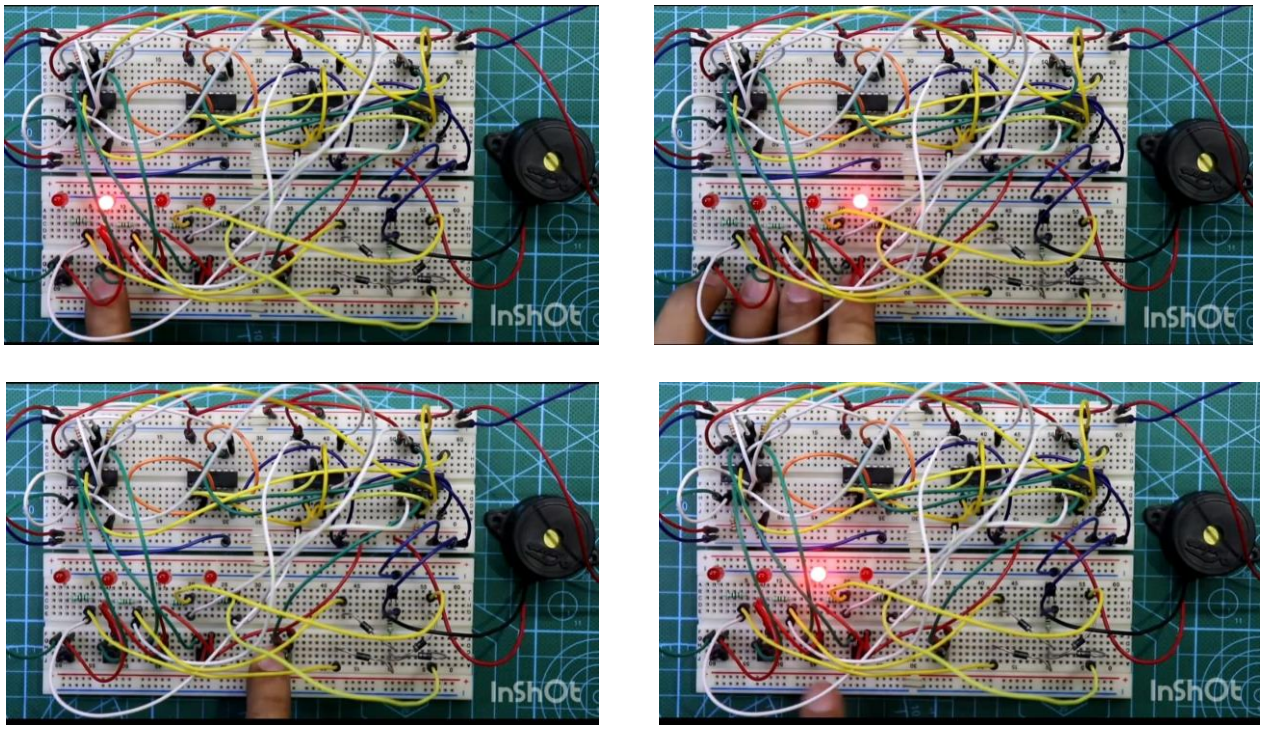
IC7408 is a quad 2-input NAND gate. It will give you output as high or logic one when both the inputs are high otherwise we will receive low output. Quad 2 input AND gate has four independent AND gates on a single IC.

Initially it may possible all or may two LED will be glowing for that you have to first clear the flip flop by pressing reset switch. Under this condition Q output of IC2 and IC1 become low. When no switch is pressed output of pin 6 of IC3 is high because it is receiving input from IC1 and IC2 Q' which is high(CD4013 produces complimentary output). This shows that no switch is pressed and none of the LED will glow.

As soon as anybody from four candidates presses the switch, its corresponding LED would glow and other connection would be left disabled. Suppose candidate 1 presses the switch, making input pin1 of NI1go high (it is connected to power supply) and pin 2 of NI1 is also high and from the truth table of NANA gate is both the inputs are high we will receive a high output at pin3 of NI1, this will make the pin 6 of IC1 high which in turn on the LED1. This indicates that output pin1 of IC1 (Q) has become high. If Q is high then Q' must be low. And if one low is supplied to IC3 it will make the output pin 6 of IC3 to go low hence further switching of switch is not allowed. Now no another candidate is allowed to press the switch until you have press the reset switch.

Similar phenomenon occur when another candidate press the switch. The candidate who presses the switch respective IC output goes high and LED glows to indicate this and others are not allowed to press the switch.

PICTURE OF WORKING MODEL



APPLICATIONS

- Educational institutions
- Game shows

ADVANTAGES

Conventional systems require human intervention to decide which team has pressed the button and this system can be erroneous and even biased. It is required for the organizers to know who pressed the button first. This system helps the organizers to identify the quick responder without any delay.

CONCLUSION

In this system, the delay is accurately taken into account when more than one team presses the switch. This system is basic model for 3 participants quiz competition. This can be improved further with embedded system with micro controller. The scope of the model is to implement the same concept with Internet of Things (IoT).