Majority Voting System

Group-7

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Introduction:

A majority voting system is a system which is used to record votes digitally and shows us the finalize decision. It can be used for office or institutions where we take vote via pressing a button. In fact, it shows the number of people agreeing or disagreeing in one proposal. Majority voting system is important for many different offices, as majority voting system is an electoral system which gives the decision by counting votes of the electors.

Objective: The purpose of a majority voting system is to count the votes effectively and consume the time of counting votes. We take the scenario from any reality show or round table meeting of any office/ institution for taking any decision by voting. We can take the votes digitally through this system. So, our objective is, we have to take the vote digitally by using DLD which counts the majority of vote and displays the final result. In our system, we use counters to show the number of people agreeing or disagreeing and we use result area for showing the finalize result to everyone, here we have added 3 LEDs (red, yellow, green) to indicate different results.

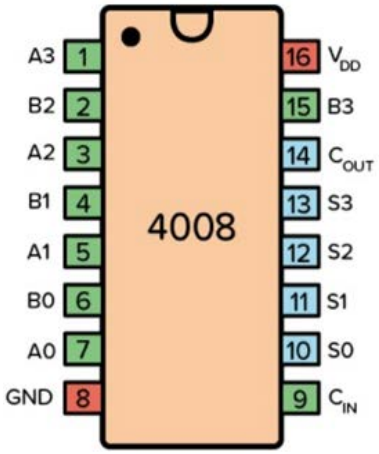
Proposed System:

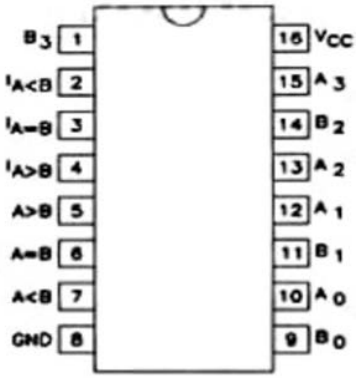
In office or any institutions, we need to vote for giving opinion to take many decisions. Also, it delays a lot, when we do it manually. Sometimes we feel hesitate to give our own opinion in front of people, just because it might create negative impression. So, being an electronic enthusiastic, we prefer an electronic solution for it. So, here is a simple software implementation that will guide us to make a circuit which will help us to take the vote digitally. This full adder-based circuit is very useful to give the accurate result in a very short time. There is a voting area, where people put their vote (it takes it as a binary input- 0 or 1). So, whenever a person put 1, it means he supports the decision otherwise he disagrees this. Here, we take four 2-bit full adders (each adder takes 3 inputs). Then we pass the outputs to two 4-bit full adders to sum the total output, then the outputs are compared by the comparator IC. As we know, comparator is used to compare voltage/ current, which are given. That means, it takes both input voltage, then compare them and gives a differential output voltage either high, low or equal signal, where we use **green**, **yellow** and **red** lights to show the difference. In the result area, **red** light is shown when majority of people disagree the statement, **green** light is visible when majority of people support it and **yellow** light denotes half of the people support this and half of them do not support it, so it is neutral. In addition, we use logic probe to understand the whole process easily as it shows the result (in binary). Moreover, we use BCD to 7-segment decoder to show the number in decimal form using 7-segment display.

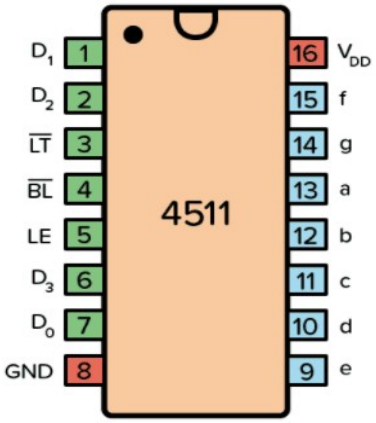
Experimental Setup-

Circuit Components:

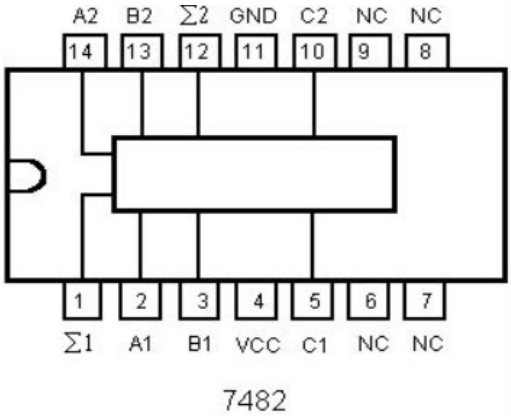
- IC-4008(4-bit Binary Full Adder)
- IC-4063(4-bit Magnitude Comparator)
- IC-4511(BCD to 7-Segment display driver)
- IC-7482(2-bit Binary Full Adder)
- Input and Output devices
- Gate (NOT)
- Logic probe
- Logic state
- LED (Red, Yellow, Green)
- DC power
- Wire
- Ground





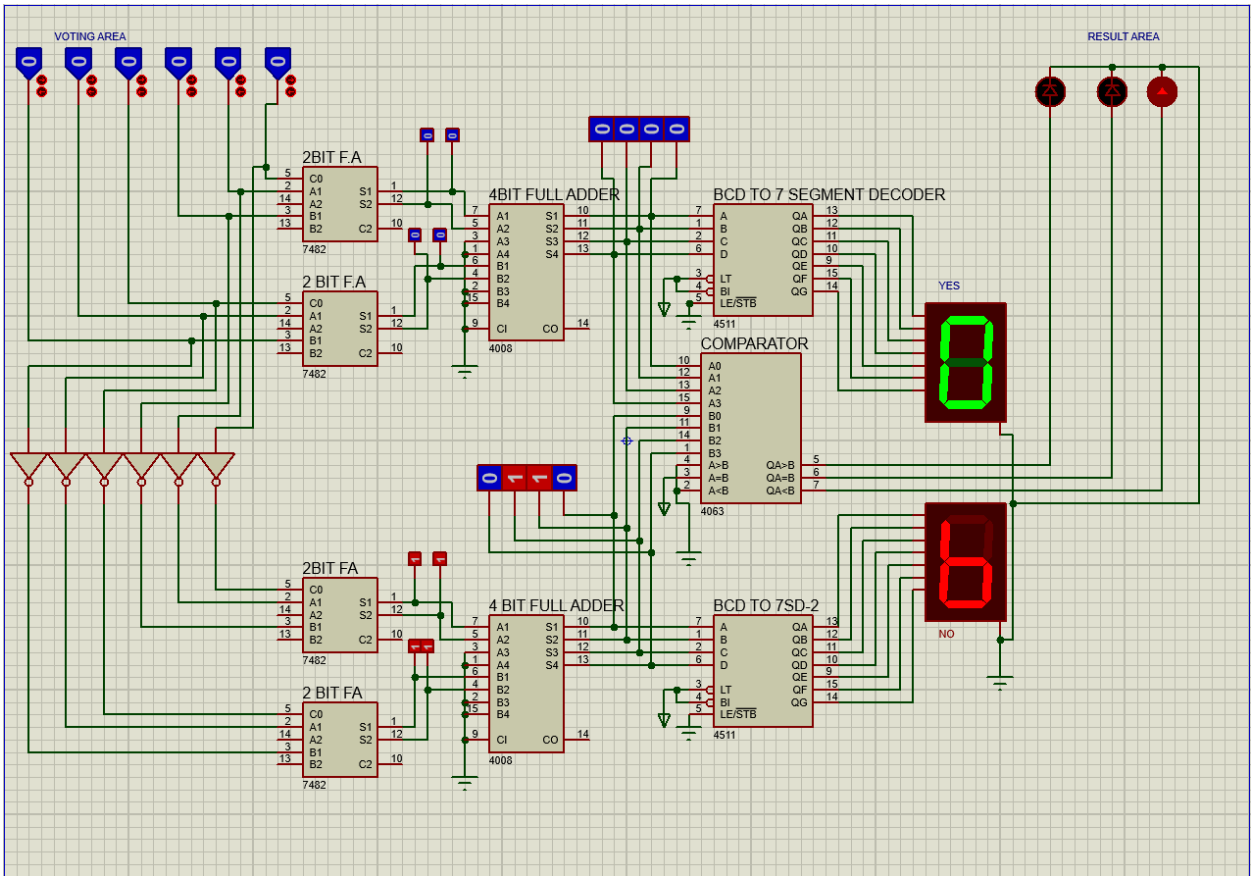


4063



7482

Circuit Diagram:



Explanation:

In our system, basically we have used two 2-bit full adder and each adder takes 3inputs. Then, it passes them to the 4-bit full adder (A1, A2 & B1, B2). And, rest other ports are connected to ground. After that, the two 4-bit full adder pass the data to two 7-segment converter which converts the binary value to decimal and it is shown in the 7-segment display (Yes/No block). In comparator, we use A0, A1, A2, A3(for the first 4-bit full adder) & B0, B1, B2, B3(for the second 4-bit full adder). Also, here we connect A>B & A<B ports to ground, and we use A=B to compare data. The first portion is basically the yes block. The other half part is the opposite of the first part like here we used NOT gate as first portion shows how many people are agreeing the statement, rest other would be disagreeing it. Therefore, QA>QB is for **green**, QA=QB is for **yellow** and QA<QB is for **red** signal.

Results and Analysis:

Voter 1	Voter 2	Voter 3	Sum in Binary(x)	Voter4	Voter5	Voter6	Sum in binary(y)
0	0	0	00	0	0	0	00
0	0	1	01	0	0	1	01
0	1	0	01	0	1	0	01
0	1	1	10	0	1	1	10
1	0	0	01	1	0	0	01
1	0	1	10	1	0	1	10
1	1	0	10	1	1	0	10
1	1	1	11	1	1	1	11

In this table, we can see that we have the result of 6 voters splitting them in 3/3 & get the values from 2 different “two-bit binary full adder”. After getting the sum of 2 “two-bit binary full adder”, we add the result of them through the “4bit binary full adder”. As we get total 64 combinations from these 2bit binary adders, the 64 combination is not shown in here. Instead of this, 4bit binary to decimal conversion is shown below here:

4 BIT BINARY RESULT	Decimal Value in 7 Segment Display
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6

In the result area, two “7-segment display” & three LED (green, yellow, red) are there. The “7-segment display” & LED properties are shown below here:

7segment(green)	7segment(red)	Led Color
0	6	RED
1	5	RED
2	4	RED
3	3	YELLOW
4	2	GREEN
5	1	GREEN
6	0	GREEN

The Majority voting system will work according to these 3 tables. The system is not that much complicated but there are lots of combinations. In the last table, we can see that, the **green** display will show opposite number of the **red** display & in the result area the LED’s will act

according to the comparator value. If the vote count is less or greater than 3, the red & green LED will light up accordingly. The yellow LED will only light up when the comparator gets equal values.

Conclusion:

In this project, we did try to make a majority voting system which is required for official use nowadays. It is easier to make decision through our system in a short period of time & everyone get the chance to vote being unbiased. Thus, this system serves it purpose well but there are always some limitations. As example, if we need to implement the same system with the same components for thousands of people, the system will cost a lot. There the system won't create much value if we consider the cost. Also, the complexity of the system will raise higher & fixing the problem within a short period of time won't be possible. But, for a small environment or for few people the system will work just fine. Finally, we tried our best to implement what we learned from this course and been able built this majority voting system after many trials and errors.