**FEDERAL UNIVERSITY OF AGRICULTURE, ABEOKUTA**

**DEPARTMENT OF COMPUTER SCIENCE**

**CSC 323 PRACTICAL WORK**

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**REPORT OF EXPERIMENT**

***Lecturer-in-charge***

***Engr. Abayomi Alli.***

**Question:**

A small cooperation has 100 shares of stock. Each share entitles its owner to 1 vote at the board meeting. Mr. Akin owns 10 shares, Mr. Bobby owns 20 shares, Mr. Clement owns 30 shares and Mr. Dayo owns 40 shares. If a 2/3 majority is required in order to make a decision. Each of the four men has a switch which he closes to vote YES for all his shares and opens to vote NO for all his shares. Design a switching circuit to turn on the light when the decision has been made

**AIM: To demonstrate the above question.**

**MATERIALS USED:** IDL – 400 logic trainer, 9 jumper wires, AC power source and a Bread Box

**EXPERIMENT:**

We connected the IDL – 400 logic trainer to the power source, then we inserted 4 jumper wires into the logical switch P0, P1, P2 and P3, then we inserted the other end P3 into G0 of thebread box input, then we inserted another two jumpers into G1 and G2 of the bread box. We then insert the other ends of P0, P1, and G1 as inputs of one of the AND gate unit “A”. Then we inserted P2 and G2 as inputs of another AND gate unit “B”. Then we inserted 2 jumper wires from the outputs of the AND gate “A and B” into an OR gate unit “C” as input, then we inserted a jumper wire from the output of the OR gate “C” into the LED display ‘0’.

We then change both of the logical switch P0, P1, P2, P3 from “0” to “1” and back to “0”.

**OBSERVATION:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **P0** | **P1** | **P2** | **P3** | **Output** |
| **0** | **0** | **0** | **0** | **0** |
| **0** | **0** | **0** | **1** | **0** |
| **0** | **0** | **1** | **0** | **0** |
| **0** | **0** | **1** | **1** | **1** |
| **0** | **1** | **0** | **0** | **0** |
| **0** | **1** | **0** | **1** | **0** |
| **0** | **1** | **1** | **0** | **0** |
| **0** | **1** | **1** | **1** | **1** |
| **1** | **0** | **0** | **0** | **0** |
| **1** | **0** | **0** | **1** | **0** |
| **1** | **0** | **1** | **0** | **0** |
| **1** | **0** | **1** | **1** | **1** |
| **1** | **1** | **0** | **0** | **0** |
| **1** | **1** | **0** | **1** | **1** |
| **1** | **1** | **1** | **0** | **0** |
| **1** | **1** | **1** | **1** | **1** |



**K-MAP REPRESENTATION**

**P0 P1 P2 P3**



**Output= P0P1P3 + P2P3**

***Implementation using the appropriate gate***

P0 P1 P2 P3



**Output=** 

***Implementation using NAND gate only***

**PRECAUTIONS:**

* We ensured that the jumper wires are well inserted into each units of the IDL – 400 logic trainer to avoid wrong output.
* We ensured that the IDL – 400 logic trainer is switched off before any connection is made to avoid electrical hazard.
* We ensured that the jumper wires did not break inside the IDL – 400 logic trainer.
* We ensured that the jumper wires are inserted into the right place on the Bread Box.

**CONCLUSION:**

We therefore concluded that the decision has been made since the light is ON.