

Staircase Switch through 7447

V.MEGHANA

CONTENTS

| | | |
|---|------------|---|
| 1 | Abstract | 1 |
| 2 | Components | 1 |
| 3 | Hardware | 1 |
| 4 | Procedure | 1 |
| 5 | Code | 1 |

1 ABSTRACT

This manual shows the implementation of the Staircase switch using XNOR GATE and 7447.

2 COMPONENTS

| Component | Value | Quantity |
|-----------------------|---------|----------|
| Resistor | 220 Ohm | 1 |
| Arduino | UNO | 1 |
| Seven Segment Display | | 1 |
| Decoder | 7447 | 1 |
| Jumper Wires | M-M | 20 |
| Breadboard | | 1 |

3 HARDWARE

| 7447 | \bar{a} | \bar{b} | \bar{c} | \bar{d} | \bar{e} | \bar{f} | \bar{g} |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Display | a | b | c | d | e | f | g |

TABLE I

Connect 7 segment display to 7447 shown in table II

4 PROCEDURE

1. Connect the circuit as per Table 2
2. Connect A pin of 7447 to D2.
3. Connect B,C and D pins of 7447 to GND.
4. Vary the D5 and D6 and observe the output accordingly in the seven segment display.

| Input | 0 | 1 |
|---------|---|---|
| Arduino | 5 | 6 |

TABLE II

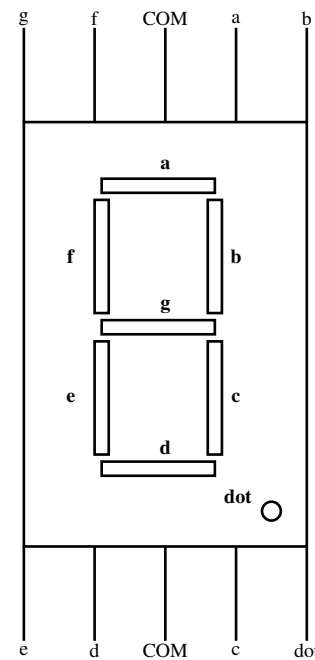


Fig. 1: 7 segment display

5 CODE

Observe the circuit by executing the link provided below.

<https://github.com/Meghana9121/FWC/tree/main/ide>

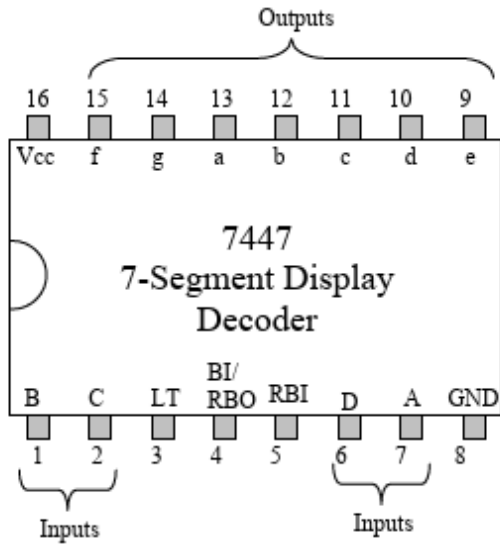


Fig. 2: 7447

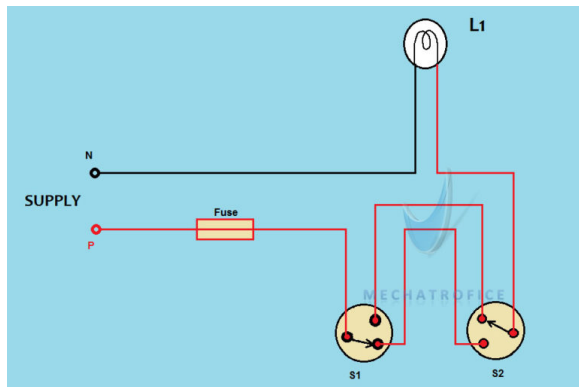


Fig. 3: Switches OFF-ON

| | W | X | Z |
|---|---|---|---|
| 0 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 2 | 1 | 0 | 0 |
| 3 | 1 | 1 | 1 |

TABLE III: Truth table

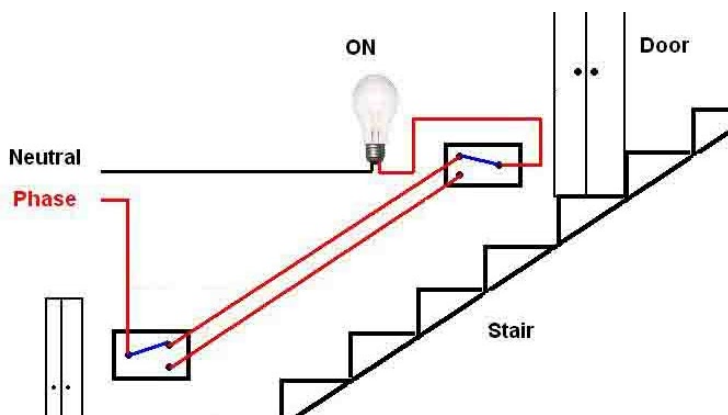


Fig. 4: Staircase Switch when both are on