Decoder Circuit using IC 7447

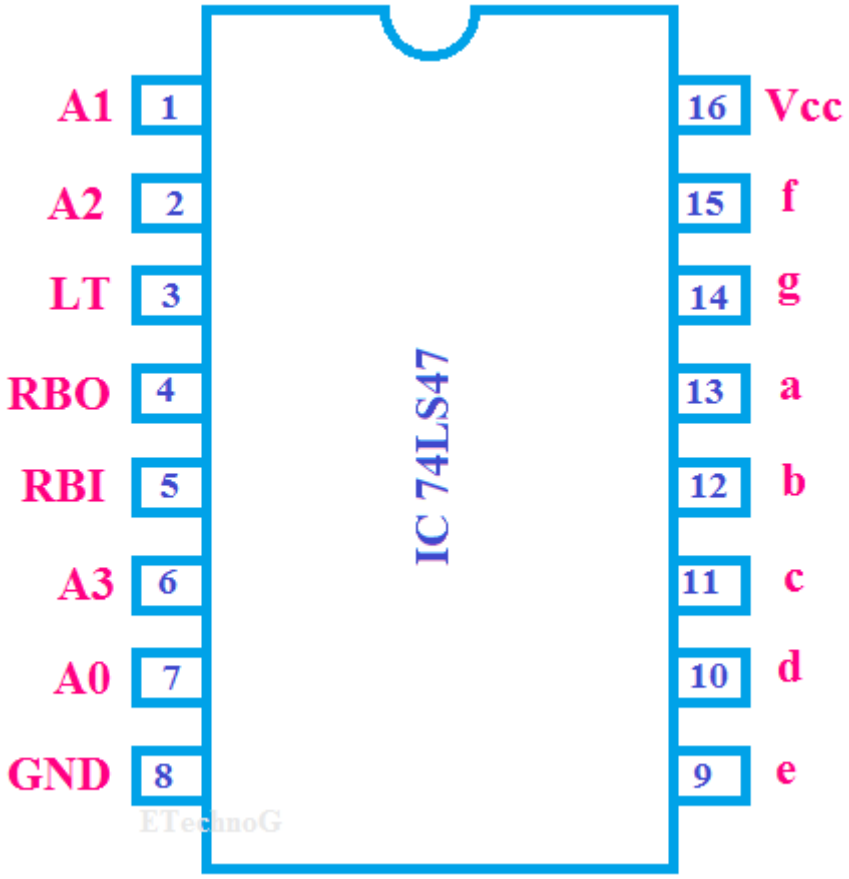
We already published the article about **3 to 8 decoder circuit** using basic logic gates(AND, OR, NOT Gates) with Seven Segment display as well as LEDs. That circuit was very complex but that gives you a good knowledge about Decoder Circuit. In this article, we are going to know **BCD to Seven Segment Display Decoder**(using a single IC) with examples and circuit diagrams.

BCD means **Binary Coded Decimal**. We can represent each of the decimal numbers by its four-bit binary numbers.

To drive a Seven Segment Display we need BCD to Seven Segment Display Decoder circuit. So here we used an **IC 74LS47** for this work.

So before making the circuit let's know about the IC 74LS47.

Pin Diagram of IC 74LS47 :



- A0, A1, A2, A3 are the BCD input pins.
- LT - for display test
- RBO, RBI is the Ripple blanking output and Ripple blanking Input pins respectively.
- a, b, c, d, e, f, g are the outputs for seven segment display.

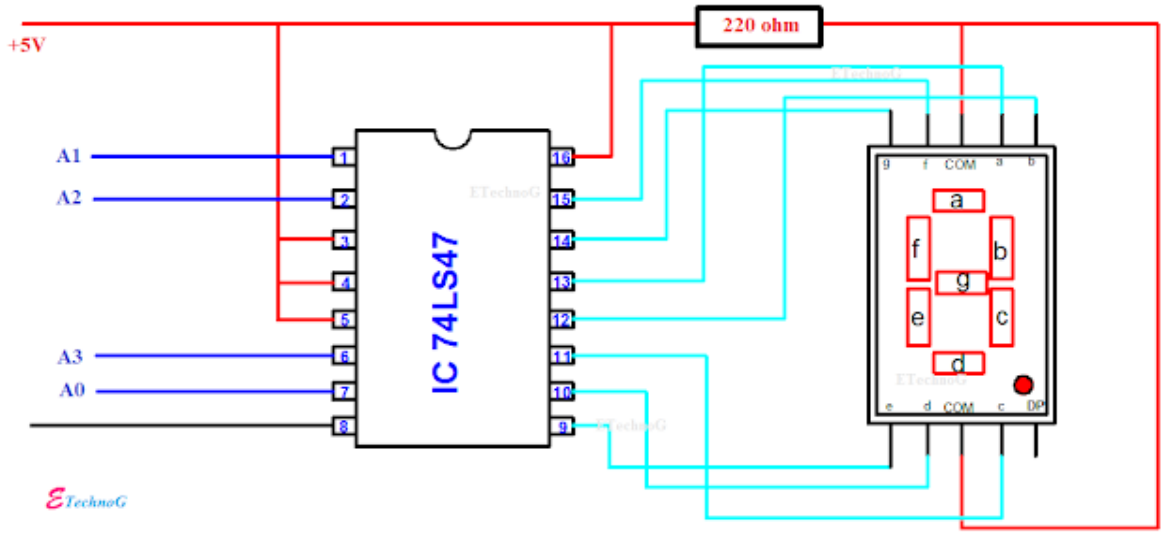
Now let's make the circuit with a Common Anode Seven Segment Display,

We have four pins to give BCD inputs so we can display from 0 to 15 numbers but we have need two seven segment display. In the below circuit diagram one seven segment display is used so here 0 to 9 numbers can be shown.

The **truth table** is given below for the circuit,

INPUTS						OUTPUTS							
LT	RBO	A3	A2	A1	A0	a	b	c	d	e	f	g	Decimal Number show in display
0	0	0	0	0	0	1	1	1	1	1	1	0	0
0	0	0	0	0	1	0	1	1	0	0	0	0	1
0	0	0	0	1	0	1	1	0	1	1	0	1	2
0	0	0	0	1	1	1	1	1	1	0	0	1	3
0	0	0	1	0	0	0	1	1	0	0	1	1	4
0	0	0	1	0	1	1	0	1	1	0	1	1	5
0	0	0	1	1	0	1	0	1	1	1	1	1	6
0	0	0	1	1	1	1	1	1	0	0	0	0	7
0	0	1	0	0	0	1	1	1	1	1	1	1	8
0	0	1	0	0	1	1	1	1	1	0	1	1	9

Circuit diagram of Decoder Circuit:


220 ohm
+5V
A1
A2
A3
A0
IC 74LS47
1
2
3
4
5
6
7
8
16
15
14
13
12
11
10
9
g
f
COM
a
b
e
d
COM
c
DP
ETechnoG