REPORT 3

7 SEGMENT DISPLAY

Function and Design :

There are 4 anodes present on the Basys-3 board. Each of which is connected to 7 cathodes. The combination of anode and cathodes makes 7 LEDs (A to G) present on a Basys-3 Board. 4 inputs b3 b2 b1 b0 are given to the decoder which represents the binary digits of the number which we have to display by using the 7 segment LED.

The decoder which is used is 4:16 decoder which returns 16 outputs representing 16 digits from 0 to 15. D0 represents 0, D1 represents 1 and so on.

The anode which we want to light up to give the single digit display is given a constant value 0 and rest all the anodes are given 1.

Conventions :

If the output at the cathode of any LED is 0, then it represents that the LED lights up and if the output is 1 then LED is off.

Example:

In representing 0 on display LED G didn't light up. Hence its value is 1 and rest all the values are 0.

b3 b2 b1 b0		A	B	C	D	E	F	G
0 0 0 0	D0	0	0	0	0	0	0	1
0 0 0 1	D1	1	0	0	1	1	1	1
0 0 1 0	D2	0	0	1	0	0	1	0
0 0 1 1	D3	0	0	0	0	1	1	0
0 1 0 0	D4	1	0	0	1	1	0	0
0 1 0 1	D5	0	1	0	0	1	0	0
0 1 1 0	D6	0	1	0	0	0	0	0
0 1 1 1	D7	0	0	0	1	1	1	1
1 0 0 0	D8	0	0	0	0	0	0	0
1 0 0 1	D9	0	0	0	0	1	0	0
1 0 1 0	D10	0	0	0	1	0	0	0
1 0 1 1	D11	1	1	0	0	0	0	0
1 1 0 0	D12	0	1	1	0	0	0	1
1 1 0 1	D13	1	0	0	0	0	1	0
1 1 1 0	D14	0	1	1	0	0	0	0
1 1 1 1	D15	0	1	1	1	0	0	0

Test Cases:

Input:

b3 = 0

b2 = 0

b1 = 0

b0 = 1

Output

A = 1

B = 0

C = 0

D = 1

E = 1

F = 1
G = 1

Test Case2:
Input :
b3 = 0
b2 = 1
b1 = 0
b0 = 1

Output:
A = 0
B = 1
C = 0
D = 0
E = 1
F = 0
G = 0

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