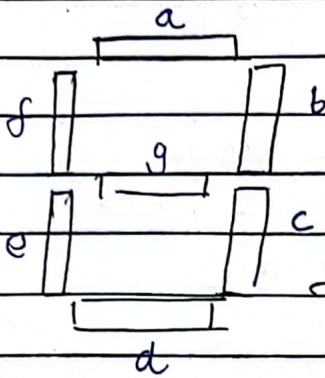


BCD (HEX) to 7 segment display

HEXA DECIMAL
4 BITS



0, 1, 2, 3, 4, 5, 6, 7, 8, 9,
A, B, C, D, E, F

| | A | B | C | D | | a | b | c | d | e | f | g | |
|----|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | m |
| 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | m |
| 2 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | m ₂ |
| 3 | 0 | 0 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | m ₃ |
| 4 | 0 | 1 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | m ₄ |
| 5 | 0 | 1 | 0 | 1 | 5 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | m ₅ |
| 6 | 0 | 1 | 1 | 0 | 6 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | m ₆ |
| 7 | 0 | 1 | 1 | 1 | 7 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | m ₇ |
| 8 | 1 | 0 | 0 | 0 | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | m ₈ |
| 9 | 1 | 0 | 0 | 1 | 9 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | m ₉ |
| 10 | 1 | 0 | 1 | 0 | A | 1 | 1 | 1 | 0 | 1 | 1 | 1 | m ₁₀ |
| 11 | 1 | 0 | 1 | 1 | B | 0 | 0 | 1 | 1 | 1 | 1 | 1 | m ₁₁ |
| 12 | 1 | 1 | 0 | 0 | C | 1 | 0 | 0 | 1 | 1 | 1 | 0 | m ₁₂ |
| 13 | 1 | 1 | 0 | 1 | D | 0 | 1 | 1 | 1 | 1 | 0 | 1 | m ₁₃ |
| 14 | 1 | 1 | 1 | 0 | E | 1 | 0 | 0 | 1 | 1 | 1 | 1 | m ₁₄ |
| 15 | 1 | 1 | 1 | 1 | F | 1 | 0 | 0 | 0 | 1 | 1 | 1 | m ₁₅ |

7 truth tables

Spiral

Segment a : $m_0 + m_2 + m_3 + m_5 + m_6 + m_7 + m_8 + m_9 + m_{10}$
 $+ m_{12} + m_{14} + m_{15}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 0 | 0 | 1 | 1 |
| 01 | 0 | 1 | 1 | 1 |
| 11 | 1 | 0 | 1 | 1 |
| 10 | 1 | 1 | 0 | 1 |

$$\rightarrow A'B'D' + A'BD + AC'D' + AB'C' + A'C + BC + CD'$$

Segment b : $m_0 + m_1 + m_2 + m_3 + m_4 + m_7 + m_8 + m_9 + m_{10}$
 $+ m_{13}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 1 | 1 | 1 | 1 |
| 01 | 1 | 0 | 1 | 0 |
| 11 | 0 | 1 | 0 | 0 |
| 10 | 1 | 1 | 0 | 1 |

$$= A'B' + A'C'D'$$

$$+ A'CD$$

$$+ AC'D$$

$$+ AB'D'$$

Segment c : $m_0 + m_1 + m_3 + m_4 + m_5 + m_6 + m_7$
 $+ m_8 + m_9 + m_{10} + m_{11} + m_{13}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 1 | 1 | 1 | 0 |
| 01 | 1 | 1 | 1 | 1 |
| 11 | 0 | 1 | 0 | 0 |
| 10 | 1 | 1 | 1 | 1 |

$$\rightarrow A'CD + A'C'$$

$$+ A'B + C'D$$

$$+ AB'$$

Segment d : $m_0 + m_2 + m_3 + m_5 + m_6 + m_8 + m_{11} + m_{12} + m_{13} + m_{14}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 1 | 0 | 1 | 1 |
| 01 | 0 | 1 | 0 | 1 |
| 11 | 1 | 1 | 0 | 1 |
| 10 | 1 | 0 | 1 | 0 |

$$= A'B'D' + B'CD + BC'D' + BCD' + AC'D'$$

Segment e : $m_0 + m_2 + m_6 + m_8 + m_{10} + m_{11} + m_{12} + m_{13} + m_{14} + m_{15}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 1 | 0 | 0 | 1 |
| 01 | 0 | 0 | 0 | 1 |
| 11 | 1 | 1 | 1 | 1 |
| 10 | 1 | 0 | 1 | 1 |

$$= B'C'D' + AB + CD' + AC$$

Segment f : $m_0 + m_4 + m_5 + m_6 + m_8 + m_9 + m_{10} + m_{11} + m_{12} + m_{14} + m_{15}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 1 | 0 | 0 | 0 |
| 01 | 1 | 1 | 0 | 1 |
| 11 | 1 | 0 | 1 | 1 |
| 10 | 1 | 1 | 1 | 1 |

$$= C'D' + AB' + AC + A'BC' + BCD'$$

Segment g: $m_2 + m_3 + m_4 + m_5 + m_6 + m_8 + m_9 + m_{10} + m_{11}$

| AB \ CD | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 0 | 0 | 1 | 1 |
| 01 | 1 | 1 | 0 | 1 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 1 | 1 | 1 | 1 |

$$\begin{aligned}
 &= A'B'C + A'B'C' \\
 &+ A'BD' + AB'
 \end{aligned}$$