THIẾT KẾ LED 7 ĐOẠN

**I.Bảng chân trị:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D6 | D5 | D4 | D3 | D2 | D1 | D0 |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |

**II.Xây dựng công thức:**

* D0:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D0 |
| 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 1 |

D0 = ∑ (0, 2, 3, 5, 6, 8, 9)

D = ∑ (10,11,12,13,14,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 8 ô | 8,9,10,11,12,13,14,15 | I3 |
| 4 ô | 0,2,8,10 | ~I2~I0 |
| 2,6,10,14 | I1~I0 |
| 2,3,10,11 | I1~I2 |
| 2 ô | 5,13 | I2I0~I1 |

D0 = I3 + I1.I0’ + I1.I2’ + I0’.I2’ + I0.I1’.I2

* D1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D1 |
| 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

D1 = ∑ (0, 1, 3, 4, 5, 6, 7, 8, 9)

D = ∑ (10,11,12,13,14,15)

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 8 ô | 0,1,4,5,12,13,8,7 | ~I1 |
| 1,3,5,7,13,15,9,11 | I0 |
| 4,5,7,6,12,13,15,14 | I2 |

D1 = I1’ + I0 + I2

* D2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D2 |
| 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 0 |

D2 = ∑ (0, 2, 6, 8)

D = ∑ (10,11,12,13,14,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 4 ô | 0,2,8,10 | ~I0.~I2 |
| 2,6,14,10 | I1.~I0 |

D2 = I0’.I2’ + I1.I0’

* D3:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D3 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 1 |

D3 = ∑ (2, 3, 4, 5, 6, 8, 9)

D = ∑ (10,11,12,13,14,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 8 ô | 12,13,15,14,8,9,10,11 | I3 |
| 4 ô | 4,12,6,14 | I2~I0 |
| 3,2,11,10 | I1~I2 |
| 4,5,13,12 | I2~I1 |

D3 = I3 + I2.I0’ + I1.I2’ + I2.I1’

* D4:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D4 |
| 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 1 |

D4 = ∑ (0, 1, 2, 3, 4, 7, 8, 9)

D = ∑ (10,11,12,13,14,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 8 ô | 0,1,3,2,8,9,11,10 | ~I2 |
| 4 ô | 0,4,12,8 | ~I0~I1 |
| 3,7,15,11 | I1.I0 |

D4 = I2’ + I0’.I1’ + I0.I1

* D5:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D5 |
| 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 1 |

D5 = ∑ (0, 4, 5, 6, 8, 9)

D = ∑ (10,11,12,13,14,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 8 ô | 12,13,15,14,8,9,10,11 | I3 |
| 4 ô | 4,5,12,13 | I2~I1 |
| 4,12,6,14 | I2~I0 |
| 0,4,12,8 | ~I0~I1 |

D5 = I3 + I2.I1’ + I2.I0’ + I0’.I1’

* D6:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I3 | I2 | I1 | I0 | D5 |
| 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 1 | 1 |

D6 = ∑ (0, 2, 3, 5, 6, 7, 8, 9)

D = ∑ (10,11,12,13,14,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | I1 | |  |
|  | 0 | 1 | 3 | 2 |  |
|  | 4 | 5 | 7 | 6 | I2 |
| I3 | 12 | 13 | 15 | 14 |
| 8 | 9 | 11 | 10 |  |
|  |  | I0 | |  |  |

|  |  |  |
| --- | --- | --- |
| Nhóm | vị trí | Công thức |
| 8 ô | 12,13,15,14,8,9,10,11 | I3 |
| 3,2,7,6,15,14,11,10 | I1 |
| 4 ô | 5,7,13,15 | I0.I2 |
| 0,2,8,10 | ~I2~I0 |

D6 = I1 + I3 + I0.I2 + I0’.I2’