|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Truth table for 3.1 Combinational Circuit | | | | | | | | | | | |
| Bits | A | B | C | LED Bit 0 | LED Bit 1 | LED Bit 2 | LED Bit 3 | LED Bit 4 | LED Bit 5 | LED Bit 6 |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| 3 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| 4 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 5 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 6 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |

|  |  |  |
| --- | --- | --- |
| State Table for Mod-8 Counter | | |
| Input/ | Reset | |
| Present State | 0 | 1 |
| A - 0 | B/001 | A/000 |
| B - 1 | C/010 | A/000 |
| C - 2 | D/011 | A/000 |
| D - 3 | E/100 | A/000 |
| E - 4 | F/101 | A/000 |
| F - 5 | G/110 | A/000 |
| G - 6 | H/111 | A/000 |
| H - 7 | A/000 | A/000 |

|  |  |  |
| --- | --- | --- |
| State Assignment for Mod-8 Counter | | |
| Input/ | Reset | |
| Present State | 0 | 1 |
| A-000 | 001/001 | 000/000 |
| B-001 | 010/010 | 000/000 |
| C-010 | 011/011 | 000/000 |
| D-011 | 100/100 | 000/000 |
| E-100 | 101/101 | 000/000 |
| F-101 | 110/110 | 000/000 |
| G-110 | 111/111 | 000/000 |
| H-111 | 000/000 | 000/000 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RESET - r(t) | s2(t) | s1(t) | s0(t) | s2s1s0(t+1) | q2q1q0(t+1) |
| 0 | 0 | 0 | 0 | 001 | 001 |
| 0 | 0 | 0 | 1 | 010 | 010 |
| 0 | 0 | 1 | 0 | 011 | 011 |
| 0 | 0 | 1 | 1 | 100 | 100 |
| 0 | 1 | 0 | 0 | 101 | 101 |
| 0 | 1 | 0 | 1 | 110 | 110 |
| 0 | 1 | 1 | 0 | 111 | 111 |
| 0 | 1 | 1 | 1 | 000 | 000 |
| 1 | 0 | 0 | 0 | 000 | 000 |
| 1 | 0 | 0 | 1 | 000 | 000 |
| 1 | 0 | 1 | 0 | 000 | 000 |
| 1 | 0 | 1 | 1 | 000 | 000 |
| 1 | 1 | 0 | 0 | 000 | 000 |
| 1 | 1 | 0 | 1 | 000 | 000 |
| 1 | 1 | 1 | 0 | 000 | 000 |
| 1 | 1 | 1 | 1 | 000 | 000 |

