디지털회로설계 HW#8

10진 업다운 카운터 설계

20161453 전자공학과

김규래

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| c |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | x | 0 | x | 0 | x | 1 | x |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | x | 0 | x | 1 | x | x | 1 |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | x | 0 | x | x | 0 | 1 | x |
| 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | x | 1 | x | x | 1 | x | 1 |
| 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | x | x | 0 | 0 | x | 1 | x |
| 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | x | x | 0 | 1 | x | x | 1 |
| 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | x | x | 0 | x | 0 | 1 | x |
| 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | x | x | 1 | x | 1 | x | 1 |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | x | 0 | 0 | x | 0 | x | 1 | x |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | x | 1 | 0 | x | 0 | x | x | 1 |
| 0 | 1 | 0 | 1 | 0 | d | d | d | d | d | d | d | d | d | d | d | d |
| 0 | 1 | 0 | 1 | 1 | d | d | d | d | d | d | d | d | d | d | d | d |
| 0 | 1 | 1 | 0 | 0 | d | d | d | d | d | d | d | d | d | d | d | d |
| 0 | 1 | 1 | 0 | 1 | d | d | d | d | d | d | d | d | d | d | d | d |
| 0 | 1 | 1 | 1 | 0 | d | d | d | d | d | d | d | d | d | d | d | d |
| 0 | 1 | 1 | 1 | 1 | d | d | d | d | d | d | d | d | d | d | d | d |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | x | 0 | x | 0 | x | 1 | x |
| 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | x | 0 | x | 0 | x | x | 1 |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | x | 0 | x | x | 1 | 1 | x |
| 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | x | 0 | x | x | 0 | x | 1 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | x | x | 1 | 1 | x | 1 | x |
| 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | x | x | 0 | 0 | x | x | 1 |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | x | x | 0 | x | 1 | 1 | x |
| 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | x | x | 0 | x | 0 | x | 1 |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | x | 1 | 1 | x | 1 | x | 1 | x |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | x | 1 | 0 | x | 0 | x | x | 1 |
| 1 | 1 | 0 | 1 | 0 | d | d | d | d | d | d | d | d | d | d | d | d |
| 1 | 1 | 0 | 1 | 1 | d | d | d | d | d | d | d | d | d | d | d | d |
| 1 | 1 | 1 | 0 | 0 | d | d | d | d | d | d | d | d | d | d | d | d |
| 1 | 1 | 1 | 0 | 1 | d | d | d | d | d | d | d | d | d | d | d | d |
| 1 | 1 | 1 | 1 | 0 | d | d | d | d | d | d | d | d | d | d | d | d |
| 1 | 1 | 1 | 1 | 1 | d | d | d | d | d | d | d | d | d | d | d | d |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| J3 | 00 | 01 | 11 | 10 |
| 000 | 0 | 0 | 0 | 0 |
| 001 | 0 | 0 | 1 | 0 |
| 011 | d | d | d | d |
| 010 | x | x | d | d |
| 110 | x | x | d | d |
| 111 | d | d | d | d |
| 101 | 0 | 0 | 0 | 0 |
| 100 | 1 | 0 | 0 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K3 | 00 | 01 | 11 | 10 |
| 000 | x | x | x | x |
| 001 | x | x | x | x |
| 011 | d | d | d | d |
| 010 | 0 | 1 | d | d |
| 110 | 1 | 1 | d | d |
| 111 | d | d | d | d |
| 101 | x | x | x | x |
| 100 | x | x | x | x |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| J2 | 00 | 01 | 11 | 10 |
| 000 | 0 | 0 | 1 | 0 |
| 001 | x | x | x | x |
| 011 | d | d | d | d |
| 010 | 0 | 0 | d | d |
| 110 | 1 | 0 | d | d |
| 111 | d | d | d | d |
| 101 | x | x | x | x |
| 100 | 0 | 0 | 0 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K2 | 00 | 01 | 11 | 10 |
| 000 | x | x | x | x |
| 001 | 0 | 0 | 1 | 0 |
| 011 | d | d | d | d |
| 010 | x | x | d | d |
| 110 | x | x | d | d |
| 111 | d | d | d | d |
| 101 | 1 | 0 | 0 | 0 |
| 100 | x | x | x | x |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| J1 | 00 | 01 | 11 | 10 |
| 000 | 0 | 1 | x | x |
| 001 | 0 | 1 | x | x |
| 011 | d | d | d | d |
| 010 | 0 | 0 | d | d |
| 110 | 1 | 0 | d | d |
| 111 | d | d | d | d |
| 101 | 1 | 0 | x | x |
| 100 | 0 | 0 | x | x |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K1 | 00 | 01 | 11 | 10 |
| 000 | x | x | 1 | 0 |
| 001 | x | x | 1 | 0 |
| 011 | d | d | d | d |
| 010 | x | x | d | d |
| 110 | x | x | d | d |
| 111 | d | d | d | d |
| 101 | x | x | 1 | 0 |
| 100 | x | x | 1 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| J0 | 00 | 01 | 11 | 10 |
| 000 | 1 | x | x | 1 |
| 001 | 1 | x | x | 1 |
| 011 | d | d | d | d |
| 010 | 1 | x | d | d |
| 110 | 1 | x | d | d |
| 111 | d | d | d | d |
| 101 | 1 | x | x | 1 |
| 100 | 1 | x | x | d |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K0 | 00 | 01 | 11 | 10 |
| 000 | x | 1 | 1 | x |
| 001 | x | 1 | 1 | x |
| 011 | d | d | d | d |
| 010 | x | 1 | d | d |
| 110 | x | 1 | d | d |
| 111 | d | d | d | d |
| 101 | x | 1 | 1 | x |
| 100 | x | 1 | 1 | x |