2 to 4 Decoder

|  |  |  |
| --- | --- | --- |
| a b | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |

d0

|  |  |  |
| --- | --- | --- |
| a b | 0 | 1 |
| 0 | 0 | 1 |
| 1 | 0 | 0 |

d1

|  |  |  |
| --- | --- | --- |
| a b | 0 | 1 |
| 0 | 0 | 0 |
| 1 | 1 | 0 |

d2

|  |  |  |
| --- | --- | --- |
| a b | 0 | 1 |
| 0 | 0 | 0 |
| 1 | 0 | 1 |

d3

4 to 2 Encoder

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ab cd | 00 | 01 | 11 | 10 |
| 00 | X | 0 | X | 0 |
| 01 | 1 | X | X | X |
| 11 | X | X | X | X |
| 10 | 1 | X | X | X |

e0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ab cd | 00 | 01 | 11 | 10 |
| 00 | X | 0 | X | 1 |
| 01 | 0 | X | X | X |
| 11 | X | X | X | X |
| 10 | 1 | X | X | X |

e1

BCD to Decimal Decoder

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 1 | 0 | 0 |
| 01 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 1 |
| 01 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 1 | 0 |
| 01 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 1 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 1 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 0 | 1 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d6

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 1 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |

d7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 1 | 0 | 0 | 0 |

d8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a3a2 a1a0 | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 10 | 0 | 1 | 0 | 0 |

d9

4 to 1 MUX

s1s0 = 00

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ab cd | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 0 | 0 |
| 11 | 1 | 1 | 1 | 1 |
| 10 | 1 | 1 | 1 | 1 |

s1s0 = 01

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ab cd | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 1 | 1 | 1 | 1 |
| 11 | 1 | 1 | 1 | 1 |
| 10 | 0 | 0 | 0 | 0 |

s1s0 = 10

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ab cd | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 1 | 1 |
| 01 | 0 | 0 | 1 | 1 |
| 11 | 0 | 0 | 1 | 1 |
| 10 | 0 | 0 | 1 | 1 |

s1s0 = 11

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ab cd | 00 | 01 | 11 | 10 |
| 00 | 0 | 1 | 1 | 0 |
| 01 | 0 | 1 | 1 | 0 |
| 11 | 0 | 1 | 1 | 0 |
| 10 | 0 | 1 | 1 | 0 |

1 to 4 deMUX

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a s0s1 | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 |

o1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a s0s1 | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 |

o2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a s0s1 | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 0 | 0 |

o3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a s0s1 | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 | 0 |

o4