**BLG231 Digital Circuits HW5**

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State Transition Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State\AB** | **00** | **01** | **10** | **11** |
| **X** | **X** | **X** | **X** | **Y** |
| **Y** | **X** | **X** | **X** | **Z** |
| **Z** | **X** | **X** | **X** | **K** |
| **E** | **E** | **E** | **E** | **E** |
| **K** | **K** | **E** | **E** | **L** |
| **L** | **S** | **E** | **E** | **M** |
| **M** | **K** | **E** | **E** | **S** |
| **S** | **S** | **S** | **S** | **S** |

State, Output Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State\AB** | **00** | **01** | **10** | **11** |
| **X** | **X,0,0** | **X,0,0** | **X,0,0** | **Y,0,0** |
| **Y** | **X,0,0** | **X,0,0** | **X,0,0** | **Z,0,0** |
| **Z** | **X,0,0** | **X,0,0** | **X,0,0** | **K,0,0** |
| **E** | **E,0,1** | **E,0,1** | **E,0,1** | **E,0,1** |
| **K** | **K,0,0** | **E,0,0** | **E,0,0** | **L,0,0** |
| **L** | **S,0,0** | **E,0,0** | **E,0,0** | **M,0,0** |
| **M** | **K,0,0** | **E,0,0** | **E,0,0** | **S,0,0** |
| **S** | **S,1,0** | **S,1,0** | **S,1,0** | **S,1,0** |

State Transition Diagram

A=0,B=1,S=0,E=0

A=0,B=0,S=0,E=0

A=0,B=0,S=1,E=0

A=0,B=1,S=1,E=0

A=1,B=0,S=1,E=0

A=1,B=1,S=1,E=0

A=0,B=0,S=0,E=0

A=0,B=1,S=0,E=0

A=1,B=0,S=0,E=0

A=1,B=1,S=0,E=0

A=0,B=0,S=0,E=0

A=0,B=0,S=0,E=0

A=0,B=1,S=0,E=0

A=1,B=0,S=0,E=0

A=0,B=0,S=0,E=1

A=0,B=1,S=0,E=1

A=1,B=0,S=0,E=1

A=1,B=1,S=0,E=1

A=0,B=1,S=0,E=0 A=1,B=0,S=0,E=0

A=0,B=1,S=0,E=0 A=1,B=0,S=0,E=0

A=0,B=0,S=0,E=0

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| B | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| State | X | X | X | Y | Z | K | K | L | M | K | K | L | M | S | S |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Output: S=1 E=0

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| B | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| State | X | Y | X | Y | Z | K | K | E | E | E | E | E | E | E | E |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Outout: S=0 E=1

A=1,B=1,S=0,E=0

A=1,B=1,S=0,E=0

A=1,B=1,S=0,E=0

A=1,B=1,S=0,E=0

A=0,B=0,S=0,E=0

A=0,B=1,S=0,E=0

A=1,B=0,S=0,E=0

A=1,B=1,S=0,E=0