Part 1 Output Tables (the Hex column should express each row as a hexadecimal value)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| R9 🡨 NOT (RB) | | | | | | | | | | |
| State  (2 bits) | OPR  (4 bits) | Addr  (4 bits) | WordR | WordW | T1CE | T1OE | T2CE | T2OE | Next State | Hex  (16 bit) |
| 00 | 0111 | 1011 | 1 | 0 | 0 | 0 | 1 | 0 | 01 | 00007B89 |
| 01 | 0000 | 1001 | 0 | 1 | 0 | 0 | 0 | 1 | *00* | 00000944 |
| 10 | - | - | - | - | - | - | - | - | - | - |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| R8 🡨 RB – R9 | | | | | | | | | | |
| State  (2 bits) | OPR  (4 bits) | Addr  (4 bits) | WordR | WordW | T1CE | T1OE | T2CE | T2OE | Next State | Hex  (16 bit) |
| 00 | 0000 | 1011 | 1 | 0 | 1 | 0 | 0 | 0 | 01 | 00000BA1 |
| 01 | 0010 | 1001 | 1 | 0 | 0 | 1 | 1 | 0 | 10 | 0000299A |
| 10 | 0000 | 1000 | 0 | 1 | 0 | 0 | 0 | 1 | *00* | 00000844 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RA 🡨 R8 XOR R9 | | | | | | | | | | |
| State  (2 bits) | OPR  (4 bits) | Addr  (4 bits) | WordR | WordW | T1CE | T1OE | T2CE | T2OE | Next State | Hex  (16 bit) |
| 00 | 0000 | 1000 | 1 | 0 | 1 | 0 | 0 | 0 | 01 | 000008A1 |
| 01 | 0110 | 1001 | 1 | 0 | 0 | 1 | 1 | 0 | 10 | 0000699A |
| 10 | 0000 | 1010 | 0 | 1 | 0 | 0 | 0 | 1 | *00* | 00000A44 |

Part 2 Output Table (the Hex column should express each row as a hexadecimal value)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| State | AOP | ANOP | DR | SXR | SYR | WordR | WordW | T1CE | T1OE | T2CE | T2OE | Next State | Hex |
| 00  (decode) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 01  (default) | 00000801 |
| 01 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 10 | 00000AA2 |
| 10 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 11 | 000119B |
| 11 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | *00* | 00000C44 |

Part 2 Encoded Instruction Table

|  |  |
| --- | --- |
| Operation | Encoded 16-bit Value |
| R9 🡨 NOT (RB) | 0111 1001 XXXX 1011  (79XB) |
| R8 🡨 RB – R9 | 0010 1000 1011 1001  (28B9) |
| RA 🡨 R8 XOR R9 | 0110 1010 1000 1001  (6A89) |