[13, 17] Trellis Diagram, Cost:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| state 0 | 0 | 2 | 4 | 4 | 3 | 4 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 5 | 6 | 3 | 5 | 5 | 6 |
| state 1 | 999 | 0 | 2 | 6 | 1 | 4 | 2 | 3 | 3 | 3 | 4 | 4 | 5 | 6 | 5 | 6 | 5 | 3 | 5 | 6 |
| state 2 | 999 | 999 | 0 | 4 | 1 | 2 | 4 | 2 | 4 | 4 | 4 | 4 | 5 | 5 | 3 | 5 | 6 | 5 | 5 | 6 |
| state 3 | 999 | 999 | 2 | 2 | 3 | 2 | 4 | 2 | 4 | 4 | 4 | 2 | 5 | 5 | 3 | 5 | 5 | 6 | 3 | 6 |
| state 4 | 999 | 999 | 999 | 1 | 4 | 1 | 3 | 3 | 2 | 4 | 4 | 5 | 5 | 4 | 5 | 3 | 6 | 5 | 6 | 5 |
| state 5 | 999 | 999 | 999 | 1 | 4 | 3 | 2 | 3 | 4 | 4 | 2 | 5 | 4 | 2 | 4 | 5 | 6 | 5 | 6 | 6 |
| state 6 | 999 | 999 | 999 | 3 | 3 | 3 | 2 | 4 | 4 | 2 | 4 | 5 | 2 | 4 | 5 | 5 | 4 | 5 | 6 | 5 |
| state 7 | 999 | 999 | 999 | 3 | 3 | 3 | 3 | 4 | 2 | 4 | 4 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 6 | 3 |

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| index | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| state 0 | 6 | 7 | 7 | 6 | 6 | 7 | 6 | 7 | 6 | 7 | 7 | 7 | 8 | 9 | 7 | 8 | 9 | 5 | 7 | 9 |
| state 1 | 5 | 7 | 7 | 4 | 6 | 7 | 7 | 7 | 6 | 7 | 5 | 8 | 8 | 9 | 9 | 8 | 9 | 7 | 5 | 7 |
| state 2 | 6 | 6 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 7 | 7 | 7 | 9 | 8 | 7 | 9 | 8 | 9 | 7 | 5 |
| state 3 | 6 | 6 | 5 | 7 | 4 | 7 | 7 | 8 | 8 | 7 | 7 | 5 | 9 | 8 | 5 | 9 | 8 | 7 | 9 | 7 |
| state 4 | 6 | 6 | 4 | 6 | 7 | 6 | 7 | 5 | 8 | 5 | 8 | 8 | 8 | 7 | 8 | 9 | 5 | 9 | 9 | 8 |
| state 5 | 6 | 4 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 7 | 5 | 8 | 7 | 7 | 9 | 9 | 8 |
| state 6 | 4 | 4 | 6 | 6 | 7 | 6 | 5 | 7 | 5 | 8 | 8 | 8 | 5 | 7 | 9 | 5 | 9 | 8 | 8 | 9 |
| state 7 | 4 | 6 | 6 | 6 | 7 | 4 | 5 | 5 | 7 | 7 | 8 | 8 | 7 | 9 | 9 | 7 | 7 | 8 | 8 | 9 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| index | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
| state 0 | 9 | 9 | 9 | 8 | 8 | 7 | 8 | 9 | 7 | 8 | 8 | 9 | 10 | 7 | 7 |
| state 1 | 9 | 7 | 9 | 8 | 8 | 7 | 7 | 9 | 9 | 7 | 10 | 9 | 999 | 999 | 999 |
| state 2 | 8 | 5 | 8 | 6 | 9 | 9 | 7 | 8 | 9 | 9 | 9 | 10 | 10 | 999 | 999 |
| state 3 | 8 | 7 | 8 | 6 | 9 | 9 | 9 | 8 | 7 | 8 | 7 | 10 | 999 | 999 | 999 |
| state 4 | 7 | 8 | 7 | 7 | 6 | 8 | 9 | 7 | 8 | 10 | 9 | 9 | 7 | 11 | 999 |
| state 5 | 5 | 8 | 5 | 8 | 8 | 9 | 9 | 7 | 8 | 10 | 9 | 9 | 999 | 999 | 999 |
| state 6 | 7 | 9 | 7 | 8 | 8 | 8 | 7 | 7 | 9 | 8 | 9 | 7 | 10 | 999 | 999 |
| state 7 | 9 | 9 | 9 | 9 | 6 | 6 | 7 | 9 | 9 | 8 | 9 | 9 | 999 | 999 | 999 |

Previous State:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| state 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 4 |
| state 1 | -1 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| state 2 | -1 | -1 | 1 | 1 | 5 | 1 | 1 | 1 | 5 | 1 | 1 | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 1 | 5 |
| state 3 | -1 | -1 | 1 | 1 | 5 | 5 | 1 | 5 | 1 | 5 | 1 | 1 | 1 | 1 | 5 | 1 | 5 | 5 | 1 | 5 |
| state 4 | -1 | -1 | -1 | 2 | 2 | 2 | 6 | 2 | 6 | 6 | 6 | 2 | 6 | 2 | 2 | 2 | 6 | 2 | 6 | 6 |
| state 5 | -1 | -1 | -1 | 2 | 2 | 2 | 6 | 2 | 6 | 6 | 2 | 6 | 6 | 2 | 2 | 2 | 6 | 2 | 6 | 2 |
| state 6 | -1 | -1 | -1 | 3 | 7 | 3 | 7 | 3 | 7 | 3 | 3 | 7 | 7 | 3 | 3 | 3 | 3 | 3 | 7 | 3 |
| state 7 | -1 | -1 | -1 | 3 | 7 | 3 | 7 | 3 | 7 | 3 | 7 | 3 | 7 | 7 | 3 | 7 | 3 | 3 | 3 | 7 |

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| index | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| state 0 | 4 | 0 | 4 | 0 | 4 | 0 | 0 | 4 | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 4 | 4 | 0 | 0 | 0 |
| state 1 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| state 2 | 1 | 1 | 1 | 1 | 5 | 1 | 5 | 5 | 1 | 1 | 1 | 5 | 1 | 1 | 1 | 1 | 1 | 5 | 1 | 1 |
| state 3 | 5 | 5 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 1 | 1 | 5 | 5 | 1 | 1 | 5 | 1 | 1 | 1 |
| state 4 | 2 | 6 | 2 | 2 | 2 | 6 | 2 | 6 | 2 | 6 | 2 | 2 | 2 | 2 | 6 | 2 | 6 | 2 | 6 | 6 |
| state 5 | 2 | 6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 2 | 2 | 2 | 2 | 6 | 2 | 6 | 2 | 2 | 6 |
| state 6 | 3 | 3 | 3 | 7 | 7 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 3 | 3 |
| state 7 | 3 | 3 | 3 | 3 | 7 | 7 | 3 | 7 | 3 | 3 | 3 | 3 | 3 | 3 | 7 | 3 | 7 | 3 | 7 | 3 |

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| index | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
| state 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 |
| state 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 |
| state 2 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| state 3 | 1 | 1 | 5 | 1 | 1 | 5 | 1 | 1 | 1 | 1 | 5 | 1 | 0 | 0 | 0 |
| state 4 | 2 | 6 | 6 | 2 | 2 | 2 | 6 | 6 | 2 | 2 | 2 | 6 | 6 | 6 | 0 |
| state 5 | 2 | 6 | 6 | 2 | 2 | 2 | 6 | 6 | 2 | 2 | 2 | 6 | 0 | 0 | 0 |
| state 6 | 3 | 7 | 3 | 3 | 7 | 7 | 3 | 3 | 7 | 3 | 7 | 3 | 3 | 0 | 0 |
| state 7 | 3 | 7 | 3 | 3 | 3 | 7 | 3 | 3 | 7 | 3 | 7 | 3 | 0 | 0 | 0 |

State Transition Map:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 99999 | 99999 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 0 | 1 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 0 | 1 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 99999 | 99999 | 0 | 1 |
| 0 | 1 | 99999 | 99999 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 0 | 1 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 0 | 1 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 99999 | 99999 | 0 | 1 |

Output Map:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 3 | 99999 | 99999 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 3 | 0 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 2 | 1 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 99999 | 99999 | 1 | 2 |
| 3 | 0 | 99999 | 99999 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 0 | 3 | 99999 | 99999 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 1 | 2 | 99999 | 99999 |
| 99999 | 99999 | 99999 | 99999 | 99999 | 99999 | 2 | 1 |

[25, 27, 33, 37] Trellis Diagram, Cost:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| state 0 | 0 | 0 | 3 | 4 | 6 | 9 | 11 | 5 | 8 | 10 | 11 | 8 | 11 | 13 | 12 | 10 | 13 | 14 | 11 | 13 |
| state 1 | 999 | 4 | 1 | 6 | 6 | 7 | 11 | 1 | 6 | 10 | 11 | 10 | 9 | 13 | 14 | 10 | 11 | 14 | 9 | 13 |
| state 2 | 999 | 999 | 6 | 5 | 9 | 8 | 10 | 6 | 3 | 7 | 12 | 7 | 10 | 10 | 13 | 13 | 12 | 13 | 6 | 10 |
| state 3 | 999 | 999 | 6 | 1 | 7 | 8 | 8 | 8 | 3 | 9 | 12 | 7 | 10 | 10 | 13 | 11 | 12 | 13 | 10 | 12 |
| state 4 | 999 | 999 | 999 | 8 | 8 | 11 | 9 | 9 | 8 | 4 | 7 | 10 | 9 | 7 | 12 | 12 | 15 | 12 | 13 | 9 |
| state 5 | 999 | 999 | 999 | 8 | 6 | 11 | 9 | 11 | 8 | 6 | 9 | 10 | 9 | 5 | 12 | 10 | 15 | 12 | 13 | 7 |
| state 6 | 999 | 999 | 999 | 7 | 1 | 8 | 10 | 8 | 9 | 7 | 12 | 11 | 8 | 8 | 11 | 5 | 12 | 13 | 14 | 12 |
| state 7 | 999 | 999 | 999 | 9 | 5 | 10 | 10 | 8 | 11 | 3 | 10 | 9 | 10 | 10 | 11 | 9 | 12 | 13 | 12 | 12 |
| state 8 | 999 | 999 | 999 | 999 | 10 | 9 | 1 | 11 | 10 | 10 | 7 | 10 | 11 | 11 | 8 | 12 | 13 | 8 | 15 | 13 |
| state 9 | 999 | 999 | 999 | 999 | 10 | 9 | 5 | 11 | 10 | 10 | 5 | 8 | 9 | 11 | 10 | 12 | 13 | 6 | 13 | 13 |
| state 10 | 999 | 999 | 999 | 999 | 11 | 8 | 8 | 10 | 13 | 9 | 8 | 11 | 4 | 10 | 9 | 13 | 12 | 11 | 14 | 14 |
| state 11 | 999 | 999 | 999 | 999 | 9 | 8 | 6 | 10 | 13 | 11 | 8 | 11 | 8 | 10 | 5 | 11 | 12 | 11 | 14 | 14 |
| state 12 | 999 | 999 | 999 | 999 | 8 | 1 | 9 | 9 | 8 | 12 | 9 | 8 | 9 | 11 | 10 | 12 | 5 | 14 | 13 | 15 |
| state 13 | 999 | 999 | 999 | 999 | 10 | 5 | 9 | 11 | 10 | 10 | 9 | 4 | 9 | 9 | 10 | 12 | 9 | 14 | 13 | 15 |
| state 14 | 999 | 999 | 999 | 999 | 11 | 8 | 8 | 10 | 11 | 11 | 4 | 7 | 10 | 12 | 11 | 13 | 12 | 11 | 14 | 14 |
| state 15 | 999 | 999 | 999 | 999 | 11 | 6 | 8 | 10 | 9 | 11 | 6 | 9 | 10 | 12 | 13 | 13 | 10 | 13 | 14 | 14 |

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| index | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| state 0 | 13 | 13 | 15 | 16 | 13 | 16 | 17 | 17 | 19 | 19 | 17 | 18 | 20 | 22 | 22 | 22 | 23 | 23 | 22 | 24 |
| state 1 | 13 | 13 | 15 | 16 | 15 | 14 | 17 | 17 | 19 | 19 | 13 | 20 | 20 | 22 | 22 | 22 | 21 | 19 | 20 | 24 |
| state 2 | 14 | 14 | 14 | 17 | 14 | 17 | 14 | 18 | 18 | 18 | 18 | 17 | 21 | 21 | 23 | 23 | 22 | 22 | 21 | 23 |
| state 3 | 14 | 12 | 14 | 17 | 10 | 17 | 16 | 18 | 18 | 20 | 20 | 13 | 21 | 23 | 21 | 21 | 22 | 22 | 21 | 21 |
| state 4 | 11 | 13 | 15 | 16 | 15 | 14 | 19 | 17 | 19 | 19 | 19 | 20 | 18 | 22 | 22 | 24 | 25 | 21 | 20 | 22 |
| state 5 | 13 | 11 | 15 | 16 | 15 | 14 | 19 | 15 | 19 | 17 | 19 | 20 | 20 | 22 | 22 | 24 | 25 | 23 | 22 | 24 |
| state 6 | 14 | 8 | 12 | 13 | 14 | 13 | 18 | 18 | 18 | 18 | 18 | 21 | 17 | 23 | 23 | 23 | 22 | 18 | 21 | 23 |
| state 7 | 14 | 12 | 16 | 15 | 16 | 11 | 18 | 18 | 18 | 18 | 18 | 21 | 13 | 23 | 23 | 23 | 22 | 18 | 19 | 23 |
| state 8 | 11 | 13 | 15 | 12 | 17 | 16 | 15 | 17 | 17 | 13 | 21 | 22 | 22 | 20 | 20 | 20 | 19 | 19 | 22 | 22 |
| state 9 | 11 | 13 | 15 | 10 | 15 | 16 | 17 | 17 | 17 | 17 | 21 | 20 | 22 | 20 | 20 | 20 | 21 | 19 | 22 | 22 |
| state 10 | 10 | 14 | 14 | 13 | 14 | 17 | 16 | 18 | 16 | 18 | 18 | 21 | 21 | 21 | 23 | 23 | 20 | 20 | 25 | 21 |
| state 11 | 8 | 16 | 12 | 13 | 14 | 17 | 16 | 16 | 16 | 16 | 20 | 21 | 21 | 23 | 21 | 21 | 16 | 18 | 25 | 23 |
| state 12 | 13 | 15 | 9 | 14 | 15 | 16 | 15 | 17 | 13 | 19 | 21 | 20 | 20 | 18 | 18 | 18 | 17 | 21 | 20 | 22 |
| state 13 | 15 | 15 | 11 | 12 | 15 | 16 | 15 | 15 | 15 | 19 | 19 | 20 | 22 | 20 | 20 | 16 | 17 | 23 | 20 | 22 |
| state 14 | 14 | 16 | 14 | 17 | 16 | 17 | 14 | 12 | 18 | 20 | 20 | 19 | 23 | 17 | 15 | 15 | 20 | 24 | 21 | 19 |
| state 15 | 14 | 16 | 14 | 15 | 16 | 17 | 12 | 16 | 18 | 20 | 20 | 21 | 23 | 13 | 15 | 19 | 22 | 24 | 19 | 19 |

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| index | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 |
| state 0 | 23 | 25 | 27 | 25 | 24 | 24 | 27 | 29 | 31 | 32 | 33 | 34 | 35 | 29 | 30 | 30 |
| state 1 | 25 | 25 | 27 | 27 | 26 | 26 | 25 | 29 | 31 | 30 | 33 | 34 | 999 | 999 | 999 | 999 |
| state 2 | 24 | 24 | 26 | 28 | 25 | 29 | 26 | 28 | 32 | 31 | 32 | 33 | 36 | 999 | 999 | 999 |
| state 3 | 24 | 26 | 26 | 26 | 25 | 27 | 26 | 26 | 30 | 31 | 32 | 33 | 999 | 999 | 999 | 999 |
| state 4 | 23 | 25 | 21 | 27 | 28 | 28 | 31 | 27 | 31 | 32 | 33 | 26 | 35 | 37 | 999 | 999 |
| state 5 | 23 | 25 | 23 | 25 | 28 | 26 | 31 | 29 | 29 | 32 | 33 | 30 | 999 | 999 | 999 | 999 |
| state 6 | 22 | 24 | 24 | 24 | 27 | 27 | 28 | 28 | 26 | 31 | 32 | 33 | 34 | 999 | 999 | 999 |
| state 7 | 24 | 24 | 24 | 24 | 25 | 27 | 28 | 28 | 30 | 31 | 32 | 31 | 999 | 999 | 999 | 999 |
| state 8 | 23 | 25 | 25 | 23 | 26 | 26 | 29 | 29 | 29 | 32 | 33 | 34 | 27 | 37 | 36 | 999 |
| state 9 | 23 | 25 | 25 | 23 | 28 | 26 | 29 | 31 | 29 | 30 | 31 | 34 | 999 | 999 | 999 | 999 |
| state 10 | 24 | 20 | 24 | 26 | 27 | 29 | 28 | 32 | 30 | 31 | 26 | 35 | 34 | 999 | 999 | 999 |
| state 11 | 24 | 22 | 22 | 24 | 27 | 27 | 28 | 30 | 30 | 31 | 30 | 35 | 999 | 999 | 999 | 999 |
| state 12 | 23 | 23 | 25 | 25 | 24 | 28 | 29 | 29 | 29 | 30 | 33 | 34 | 35 | 33 | 999 | 999 |
| state 13 | 19 | 21 | 25 | 25 | 26 | 28 | 29 | 29 | 31 | 26 | 33 | 34 | 999 | 999 | 999 | 999 |
| state 14 | 20 | 24 | 24 | 26 | 27 | 27 | 28 | 30 | 30 | 31 | 32 | 33 | 32 | 999 | 999 | 999 |
| state 15 | 22 | 24 | 24 | 26 | 25 | 27 | 28 | 30 | 30 | 31 | 32 | 33 | 999 | 999 | 999 | 999 |

Previous State:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| state 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 | 8 | 0 | 0 | 8 | 8 | 0 | 0 | 8 | 0 |
| state 1 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 8 | 0 | 8 | 8 | 0 |
| state 2 | -1 | -1 | 1 | 1 | 1 | 1 | 1 | 9 | 1 | 1 | 1 | 9 | 9 | 1 | 9 | 9 | 1 | 1 | 9 | 1 |
| state 3 | -1 | -1 | 1 | 1 | 1 | 1 | 1 | 9 | 1 | 1 | 1 | 9 | 9 | 9 | 9 | 9 | 1 | 1 | 9 | 1 |
| state 4 | -1 | -1 | -1 | 2 | 2 | 2 | 2 | 10 | 2 | 2 | 2 | 10 | 2 | 10 | 2 | 10 | 2 | 10 | 10 | 2 |
| state 5 | -1 | -1 | -1 | 2 | 2 | 2 | 10 | 2 | 2 | 2 | 10 | 10 | 2 | 10 | 2 | 10 | 2 | 2 | 10 | 2 |
| state 6 | -1 | -1 | -1 | 3 | 3 | 3 | 3 | 11 | 3 | 3 | 3 | 11 | 3 | 11 | 3 | 11 | 3 | 3 | 3 | 3 |
| state 7 | -1 | -1 | -1 | 3 | 3 | 3 | 3 | 11 | 3 | 3 | 3 | 11 | 3 | 3 | 11 | 11 | 11 | 11 | 11 | 3 |
| state 8 | -1 | -1 | -1 | -1 | 4 | 12 | 12 | 4 | 12 | 4 | 4 | 4 | 4 | 4 | 4 | 12 | 12 | 12 | 4 | 4 |
| state 9 | -1 | -1 | -1 | -1 | 4 | 4 | 12 | 4 | 4 | 4 | 4 | 4 | 12 | 4 | 4 | 12 | 4 | 12 | 4 | 12 |
| state 10 | -1 | -1 | -1 | -1 | 5 | 5 | 13 | 5 | 5 | 5 | 5 | 5 | 13 | 5 | 5 | 5 | 5 | 13 | 5 | 13 |
| state 11 | -1 | -1 | -1 | -1 | 5 | 5 | 13 | 13 | 5 | 5 | 5 | 5 | 13 | 13 | 5 | 13 | 5 | 13 | 5 | 5 |
| state 12 | -1 | -1 | -1 | -1 | 6 | 6 | 6 | 14 | 6 | 6 | 6 | 14 | 14 | 6 | 6 | 14 | 6 | 6 | 14 | 14 |
| state 13 | -1 | -1 | -1 | -1 | 6 | 6 | 14 | 6 | 14 | 6 | 6 | 14 | 14 | 6 | 6 | 6 | 6 | 6 | 14 | 6 |
| state 14 | -1 | -1 | -1 | -1 | 7 | 7 | 15 | 15 | 7 | 15 | 7 | 15 | 7 | 7 | 7 | 7 | 7 | 15 | 7 | 7 |
| state 15 | -1 | -1 | -1 | -1 | 7 | 7 | 15 | 15 | 7 | 15 | 7 | 15 | 15 | 7 | 7 | 7 | 7 | 7 | 15 | 7 |

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| index | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| state 0 | 8 | 8 | 0 | 0 | 8 | 0 | 8 | 8 | 0 | 8 | 8 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 8 | 0 |
| state 1 | 0 | 8 | 0 | 8 | 8 | 0 | 0 | 8 | 0 | 8 | 8 | 0 | 0 | 0 | 8 | 8 | 8 | 8 | 8 | 0 |
| state 2 | 1 | 1 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 9 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 9 | 1 | 1 |
| state 3 | 9 | 9 | 1 | 1 | 9 | 1 | 9 | 9 | 9 | 1 | 1 | 1 | 9 | 1 | 9 | 9 | 9 | 1 | 1 | 1 |
| state 4 | 2 | 10 | 10 | 2 | 10 | 2 | 2 | 2 | 10 | 2 | 10 | 2 | 2 | 10 | 2 | 10 | 2 | 10 | 10 | 2 |
| state 5 | 2 | 10 | 2 | 2 | 10 | 10 | 2 | 2 | 2 | 10 | 2 | 2 | 2 | 2 | 10 | 2 | 2 | 2 | 2 | 2 |
| state 6 | 3 | 11 | 3 | 11 | 11 | 3 | 11 | 3 | 11 | 11 | 11 | 3 | 3 | 3 | 11 | 3 | 11 | 11 | 11 | 3 |
| state 7 | 3 | 11 | 3 | 3 | 11 | 3 | 3 | 3 | 11 | 11 | 11 | 11 | 3 | 3 | 3 | 3 | 3 | 11 | 11 | 3 |
| state 8 | 4 | 4 | 4 | 12 | 4 | 12 | 4 | 12 | 4 | 12 | 4 | 4 | 4 | 4 | 12 | 12 | 12 | 12 | 4 | 4 |
| state 9 | 4 | 4 | 4 | 12 | 12 | 4 | 4 | 12 | 12 | 12 | 4 | 4 | 4 | 4 | 12 | 12 | 12 | 12 | 12 | 4 |
| state 10 | 5 | 5 | 5 | 13 | 13 | 5 | 5 | 13 | 13 | 13 | 5 | 5 | 5 | 5 | 5 | 5 | 13 | 13 | 5 | 13 |
| state 11 | 5 | 5 | 5 | 13 | 13 | 5 | 5 | 13 | 5 | 13 | 5 | 5 | 13 | 5 | 13 | 13 | 13 | 13 | 5 | 5 |
| state 12 | 6 | 14 | 6 | 14 | 6 | 6 | 6 | 14 | 14 | 6 | 6 | 6 | 14 | 6 | 14 | 14 | 14 | 14 | 6 | 14 |
| state 13 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 14 | 14 | 14 | 6 | 6 | 6 | 6 | 14 | 14 | 14 | 6 | 6 | 6 |
| state 14 | 7 | 7 | 7 | 7 | 15 | 7 | 7 | 15 | 15 | 7 | 7 | 7 | 7 | 7 | 15 | 15 | 15 | 7 | 7 | 7 |
| state 15 | 7 | 7 | 7 | 15 | 7 | 15 | 7 | 15 | 15 | 7 | 7 | 7 | 7 | 7 | 15 | 15 | 15 | 7 | 7 | 15 |

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| index | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 |
| state 0 | 8 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 8 | 0 | 0 |
| state 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 |
| state 2 | 9 | 9 | 1 | 1 | 9 | 1 | 1 | 1 | 1 | 9 | 1 | 9 | 1 | 0 | 0 | 0 |
| state 3 | 9 | 1 | 9 | 9 | 9 | 1 | 9 | 1 | 1 | 9 | 1 | 9 | 0 | 0 | 0 | 0 |
| state 4 | 10 | 10 | 10 | 2 | 10 | 2 | 2 | 2 | 2 | 10 | 2 | 10 | 2 | 2 | 0 | 0 |
| state 5 | 10 | 2 | 10 | 10 | 10 | 2 | 2 | 2 | 2 | 10 | 2 | 10 | 0 | 0 | 0 | 0 |
| state 6 | 3 | 3 | 11 | 11 | 3 | 3 | 11 | 3 | 3 | 11 | 3 | 3 | 3 | 0 | 0 | 0 |
| state 7 | 3 | 11 | 11 | 11 | 11 | 3 | 3 | 3 | 3 | 3 | 11 | 11 | 0 | 0 | 0 | 0 |
| state 8 | 12 | 4 | 12 | 4 | 12 | 12 | 4 | 12 | 4 | 4 | 4 | 4 | 4 | 4 | 12 | 0 |
| state 9 | 4 | 4 | 12 | 4 | 4 | 12 | 12 | 4 | 4 | 12 | 12 | 12 | 0 | 0 | 0 | 0 |
| state 10 | 13 | 13 | 13 | 5 | 5 | 5 | 5 | 5 | 13 | 5 | 13 | 5 | 5 | 0 | 0 | 0 |
| state 11 | 13 | 13 | 13 | 5 | 5 | 13 | 5 | 13 | 5 | 5 | 13 | 5 | 0 | 0 | 0 | 0 |
| state 12 | 6 | 6 | 6 | 6 | 6 | 14 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 14 | 0 | 0 |
| state 13 | 14 | 14 | 14 | 14 | 14 | 6 | 6 | 14 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 |
| state 14 | 15 | 15 | 15 | 7 | 7 | 7 | 15 | 7 | 7 | 7 | 7 | 15 | 7 | 0 | 0 | 0 |
| state 15 | 15 | 15 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 15 | 15 | 7 | 0 | 0 | 0 | 0 |

State Transition Map:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 |
| 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 0 | 1 |

Output Map:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 15 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 14 | 1 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 11 | 4 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 5 | 10 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 12 | 3 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 2 | 13 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 7 | 8 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 9 | 6 |
| 15 | 0 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 1 | 14 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 4 | 11 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 10 | 5 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 3 | 12 | 999 | 999 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 13 | 2 | 999 | 999 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 8 | 7 | 999 | 999 |
| 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 999 | 6 | 9 |