Project Report

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TRUTH TABLE

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PRESENT STATES | | | | |  | INPUTS | | | | | | | |  |  |  | NEXT STATES | | | | |
| S4 | S3 | S2 | S1 | S0 | res | gr\_cnt | ent | l\_eql | found | kp\_disp | kp\_cnt | fail | win | go |  | N4 | N3 | N2 | N1 | N0 |
| 0 | 0 | 0 | 0 | 0 | 0 | x | x | x | x | x | x | x | x | x |  |  | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | X | X | X | X | X | X | 0 |  |  | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | X | X | X | X | X | X | 1 |  |  | 0 | 1 | 0 | 0 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | X | X | X | X | X | X | 0 |  |  | 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | X | x | x | X | x | X | 1 |  |  | 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | x | x | X | X | X | X | X | X |  |  | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 0 | 0 | x | x | x | x | x | x | x | x | x |  |  | 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 0 | 0 | 1 | 1 | 0 | X | 0 | X | x | x | x | x | x | x |  |  | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 1 | 0 | x | 1 | X | X | X | X | X | X | X |  |  | 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 1 | 0 | X |  | x | X | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 0 | 0 | 1 | 1 | 0 | X |  | X | X | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 0 | 1 | 0 | 0 | 0 | x | X | x | x | x | x | 0 | x | x |  |  | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 0 | 0 | 0 | X | X | X | X | X | X | 1 | X | X |  |  | 1 | 1 | 0 | 1 |
| 0 | 0 | 1 | 0 | 0 | 0 | X | X | X | X | X | X |  | X | X |  |  |  |  |  |  |
| 0 | 0 | 1 | 0 | 0 | 0 | X | X | X | X | X | X |  | X | X |  |  |  |  |  |  |
| 0 | 0 | 1 | 0 | 1 | 0 | x | 0 | x | x | x | x | x | x | x |  |  | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 0 | 1 | 0 | X | 1 | X | X | X | X | X | X | X |  | 1 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 1 | 0 | X |  | X | X | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 0 | 1 | 0 | 1 | 0 | X |  | X | X | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 0 | 1 | 1 | 0 | 0 | x | x | 0 | x | x | 0 | x | x | x |  |  | 1 | 0 | 0 | 1 |
| 0 | 0 | 1 | 1 | 0 | 0 | X | X | 0 | X | X | 1 | X | X | X |  |  | 1 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 0 | 0 | X | X | 1 | X | X | 0 | X | X | X |  |  | 1 | 0 | 0 | 1 |
| 0 | 0 | 1 | 1 | 0 | 0 | X | X | 1 | X | X | 1 | X | X | X |  |  | 0 | 1 | 1 | 1 |
| 0 | 0 | 1 | 1 | 1 | 0 |  |  |  |  |  |  |  |  |  |  |  | 1 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 | 0 |  |  |  |  |  |  |  |  |  |  |  | 1 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 | 0 |  |  |  |  |  |  |  |  |  |  |  | 1 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 | 0 |  |  |  |  |  |  |  |  |  |  |  | 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 1 | 0 | x | x | x | 0 | x | x | x | x | x |  |  | 1 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 | 1 | 0 | X | X | X | 1 | X | X | X | X | X |  |  | 1 | 0 | 1 | 1 |
| 0 | 1 | 0 | 0 | 1 | 0 | X | X | X |  | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 0 | 0 | 1 | 0 | X | X | X |  | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  | 1 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 1 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 1 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0 | 1 | 0 | 1 | 1 | 0 | X | X | X | X | 0 | X | X | X | X |  |  | 1 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 1 | 0 | X | X | X | X | 1 | X | X | X | X |  |  | 1 | 1 | 0 | 0 |
| 0 | 1 | 0 | 1 | 1 | 0 | X | X | X | X |  | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 0 | 1 | 1 | 0 | X | X | X | X |  | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 1 | 0 | 0 | 0 | X | X | X | X | 0 | X | X | 0 | X |  |  | 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 | 0 | X | X | X | X | 0 | X | X | 1 | X |  |  | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 0 | 0 | X | X | X | X | 1 | X | X | 0 | X |  |  | 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 | 0 | X | X | X | X | 1 | X | X | 1 | X |  |  | 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 | 1 | 0 | X | X | X | X | 0 | 0 | X | X | X |  |  | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 | 0 | X | X | X | X | 0 | 1 | X | X | X |  |  | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 1 | 0 | X | X | X | X | 1 | 0 | X | X | X |  |  | 1 | 1 | 1 | 0 |
| 0 | 1 | 1 | 0 | 1 | 0 | X | X | X | X | 1 | 1 | X | X | X |  |  | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 | 0 | X | X | X | X | 0 | X | X | X | X |  |  | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 0 | 0 | X | X | X | X | 1 | X | X | X | X |  |  | 1 | 1 | 1 | 0 |
| 0 | 1 | 1 | 1 | 0 | 0 | X | X | X | X |  | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 1 | 1 | 0 | 0 | X | X | X | X |  | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 1 | 1 | 1 | 0 | X | X | X | X | X | X | X | X | X |  |  | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 0 | X | X | X | X | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 1 | 1 | 1 | 0 | X | X | X | X | X | X | X | X | X |  |  |  |  |  |  |
| 0 | 1 | 1 | 1 | 1 | 0 | X | X | X | X | X | X | X | X | X |  |  |  |  |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | x | 0 | x | x |  |  |  |  |  |  | 0 | 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | x | 1 | x | x |  |  |  |  |  |  | 1 | 0 | 0 | 0 | 0 |
| X | X | X | X | X | 1 | X | X | X | X | X | X | X | X | X |  |  | 0 | 0 | 0 | 0 |

In all situations that R = 1, the next state will be “Start (S\_0000)”.

Boolean Equations

N3 = R’[S3’.S2.S1’.S0’.fail + S3’.S2.S1.S0’.l\_eql’ + S3’.S2.S1.S0’.l\_eql.kp\_cnt’ + S3’.S2.S1.S0 + S3.S2’.S1’.S0 + S3.S2’.S1.S0’ + S3.S2’.S1.S0 + S3.S2.S1’.S0’.kp\_disp + S3.S2.S1’.S0’.kp\_disp’.win + S3.S2.S1’.S0 + S3.S2.S1.S0’ + S3.S2.S1.S0 ]

N3 = R’[S3’.S2.S1’.S0’.fail + S3’.S2.S1.S0’.l\_eql’ + S3’.S2.S1.S0’.l\_eql.kp\_cnt’ + S3.S2.S1’.S0’.kp\_disp + S3.S2.S1’.S0’.kp\_disp’.win + S3.S1 + S3.S0 + S2.S1.S0]

N2 = R’[S3’.S2’.S1’.S0.go.gr\_cnt’.ent’ + S3’.S2.S1’.S0’ + S3’.S2.S1’.S0 + S3’.S2.S1.S0’.l\_eql.kp\_cnt + S3.S2’.S1’.S0’ + S3.S2’.S1.S0 + S3.S2.S1’.S0’ + S3.S2.S1’.S0 + S3.S2.S1.S0’ + S3.S2.S1.S0]

N2 = R’[S3’.S2’.S1’.S0.go.gr\_cnt’.ent’ + S3’.S2.S1.S0’.l\_eql.kp\_cnt + S3.S2 + S3.S1.S0 + S3.S1’.S0’ + S2.S1’]

N1 = R’[S3’.S2’.S1’.S0.gr\_cnt’.ent + S3’.S2’.S1.S0’ + S3’.S2’.S1.S0.ent + S3’.S2.S1.S0’.l\_eql.kp\_cnt + S3.S2’.S1’.S0’ + S3.S2’.S1’.S0 + S3.S2’.S1.S0’ + S3.S2’.S1.S0.kp\_disp’ + S3.S2.S1’.S0’.kp\_disp’.win + S3.S2.S1’.S0.kp\_cnt’ + S3.S2.S1.S0’ + S3.S2.S1.S0]

N1 = R’[S3’.S2’.S1’.S0.gr\_cnt’.ent + S3’.S2’.S1.S0.ent + S3’.S2.S1.S0’.l\_eql.kp\_cnt + S3.S2’.S1.S0.kp\_disp’ + S3.S2.S1’.S0’.kp\_disp’.win + S3.S2.S1’.S0.kp\_cnt’ + S3.S2.S1 + S3.S2’.S1’ + S2’.S1.S0’]

N0 = R’[S3’.S2’.S1’.S0’ + S3’.S2’.S1’.S0.gr\_cnt’.ent’.go’ + S3’.S2’.S1.S0’ + S3’.S2’.S1.S0 + S3’.S2.S1’.S0’ + S3’.S2.S1’.S0.ent’ + S3’.S2.S1.S0’.l\_eql + S3’.S2.S1.S0’.l\_eql’.kp\_cnt’ + S3.S2’.S1’.S0.found + S3.S2’.S1.S0’ + S3.S2’.S1.S0.kp\_disp’ + S3.S2.S1’.S0’.kp\_disp’.win + S3.S2.S1’.S0.kp\_disp’ + S3.S2.S1’.S0.kp\_disp.kp\_cnt + S3.S2.S1.S0’.kp\_disp’ + S3.S2.S1.S0]

N0 = R’[S3’.S2’.S1’.S0.gr\_cnt’.ent’.go’ + S3’.S2.S1’.S0.ent’ + S3’.S2.S1.S0’.l\_eql + S3’.S2.S1.S0’. kp\_cnt’ + S3.S2’.S1’.S0.found + S3.S2’.S1.S0.kp\_disp’ + S3.S2.S1’.S0’.kp\_disp’.win + S3.S2.S1’.S0.kp\_cnt + S3.S2.kp\_disp’(S1 ⊕ S0’) + S3.S2.S1.S0 + S3’.S2’.S1 + S3’.S1’.S0’ + S2’.S1.S0’]

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PRESENT STATES | | | | | INPUTS | | | | | | | | | |  | |
| S4 | S3 | S2 | S1 | S0 | i\_res | İ\_inc | Len | Ltemp | res\_win | flag\_init | Disp\_cntr | res\_found | TTYRes | fail\_inc | res |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |