## Problem 1: Implement Exercise 2.35 Using Logisim

A close-up of a text

AI-generated content may be incorrect.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Number** | **A3 A2 A1 A0** | | | **Prime (P)** | | **Divisible by 3 (D)** | | |
| 0 | 0000 | | | 0 | | 1 | |
| 1 | 0001 | | | 0 | | 0 | |
| 2 | 0010 | | | 1 | | 0 | |
| 3 | 0011 | | | 1 | | 1 | |
| 4 | 0100 | | | 0 | | 0 | |
| 5 | 0101 | | | 1 | | 0 | |
| 6 | 0110 | | | 0 | | 1 | |
| 7 | 0111 | | | 1 | | 0 | |
| 8 | 1000 | | | 0 | | 0 | |
| 9 | 1001 | | | 0 | | 1 | |
| 10 | 1010 | | | 0 | | 0 | |
| 11 | 1011 | | | 1 | | 0 | |
| 12 | 1100 | | | 0 | | 1 | |
| 13 | 1101 | | | 1 | | 0 | |
| 14 | 1110 | | | 0 | | 0 | |
| 15 | 1111 | | | 0 | | 1 | |
| **Prime KMap** | | Y = A1A2 + A3A0 + A3’A2A1’A0 + A3A2A1A0’ | | | | |
| **A3A2\A1A0** | | 00 | 01 | | 11 | 10 |
| 00 | | 0 | 0 | | 1 | 1 |
| 01 | | 0 | 1 | | 1 | 1 |
| 11 | | 0 | 1 | | 0 | 1 |
| 10 | | 0 | 1 | | 0 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Divisible by 3 KMap** | Y = A1’A0’ + A1A0 | | | |
| **A3A2\A1A0** | 00 | 01 | 11 | 10 |
| 00 | 1 | 0 | 1 | 0 |
| 01 | 1 | 0 | 1 | 0 |
| 11 | 1 | 0 | 1 | 0 |
| 10 | 1 | 0 | 1 | 0 |