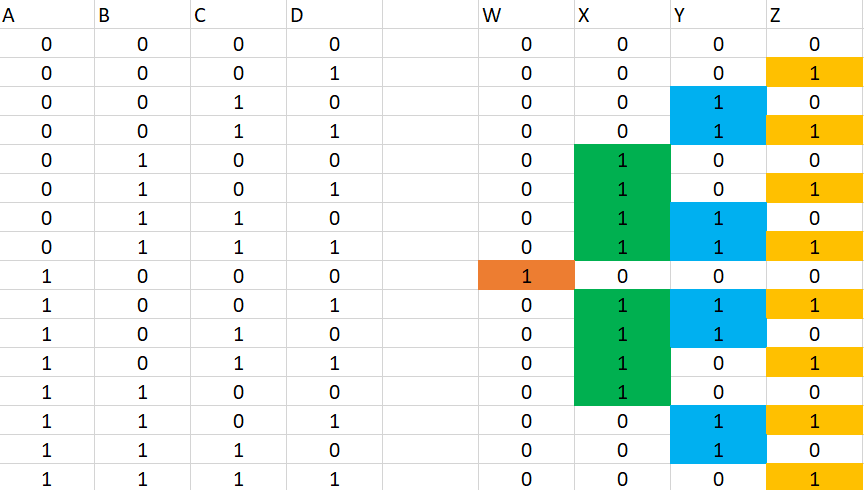
**Q3.**

**Truth Table:**

** Input 2’s complement**

Using K-Maps to simplify for W,X,Y,Z:

For W: The only minterm that has a value of 1 is which would result in so that is the equation for W

For the rest: The k-map for 4 variables is as follows:



|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |



For X the K-Map is as follows:

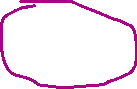


|  |  |  |  |
| --- | --- | --- | --- |
| 0 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

The maximum grouping has been labelled on the figure above. This grouping would result in the equation of X to be:



For Y the K-Map is as follows:



|  |  |  |  |
| --- | --- | --- | --- |
| 0 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

The maximum grouping has been labelled on the figure above. This grouping would result in the equation of Y to be:



For Z the K-Map is as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| 0 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

The maximum grouping has been labelled on the figure above. This grouping would result in the equation of Z to be:

