CS1026 – Lab #3 - 16324334

One of the ways to implement a summing function with four variables is to use a Karnaugh map to find the most efficient circuit and hence find the lowest literal count possible for that function.

WX YZ	00	01	11	10
00	0	1	X	X
01	1	1	X	0
11	1	0	1	1
10	0	X	1	0

WX YZ	00	01	11	10
00	1	0	X	X
01	0	0	X	1
11	0	1	0	0
10	1	X	0	1

First I found the min terms of the Kernaugh map (The diagram on the left), but later found that if I used the max terms instead it would leave me with fewer groups. The two expressions I found were:

(YW'Z') + (WX) + (W'X'Z) + (XY') – Min Terms

((X'Z') + (WY') + (W'XY))' – Max Terms

The lowest literal count I found to be 7 terms.

I implemented the function with the max terms as it was more efficient which resulted in this circuit: