CS1026 – Lab #4 - 16324334

To find the sum of the given 4-bit values using the Quine-McCluskey algorithm the binary representation has to be shown first.

After the numbers have been listed each of the numbers needs to be grouped in how many ones it has (From 0 to 4 in this case)

0	0000
2	0010
5	0101
6	0110
9	1001
11	1011

0	0000		
1	0010		
2	0101	0110	1001
3	1011		

After that the binary numbers with only one bit of difference between them are found and that difference is changed to don't cares.

0	00-0		
1	0-10		
2	0101	0110	10-1
3	1011		

After this the same method is applied to the new binary numbers with don't cares, but when doing so on these values we find that we are unable to and must use these as our groups. We then get the expression:

A'BC'D +A'B'D'+A'CD'+AB'D

Implementing this gives us this circuit: