

EE 5811 : FPGA LAB

ASSIGNMENT 1

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Download the codes from

https://github.com/Shantanu2508/mtech/blob/master/FPGA_LAB/A1/A1.c

1 PROBLEM STATEMENT

Reduce the following Boolean Expression to its simplest form using K-Map.

$$F(X, Y, Z, W) = \sum(0, 1, 4, 5, 6, 8, 9, 11, 15) \quad (1)$$

2 SOLUTION

From the K-Map shown in Figure 0 the above expression can be simplified as,

		ZW			
		00	01	11	10
XY	00	1	1	0	0
	01	1	1	1	1
	11	0	0	1	0
	10	1	1	1	0

Fig. 0: K-Map

$$F(X, Y, Z, W) = \sum(0, 1, 4, 5, 6, 7, 8, 9, 11, 15) \quad (2)$$

$$= \bar{X}Y + \bar{Y}Z + XZW \quad (3)$$