

# EE5803 FPGA Lab Assignment 1

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## 1 Question

[CBSE 2018 Q6 (d)] : Reduce the following Boolean Expression to its simplest form using K-map

$$G(U, V, W, Z) = \sum(3, 5, 6, 7, 11, 12, 13, 15)$$

## 2 Solution

Simplification using K-map:

		WZ			
		00	01	11	10
UV	00	0	0	1	0
	01	0	1	1	1
	11	1	1	1	0
	10	0	0	1	0

Simplified expression from above map can be written as

$$G = WZ + VZ + UVW' + U'VW$$

NAND realization : To realize the above equation using NAND logic, the following steps are followed

$$(G')' = ((WZ + VZ + UVW' + U'VW)')'$$

$$G = ((WZ)'(VZ)')(UVW')'(U'VW)')$$