ASSIGNMENT 1

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1 Question

Derive a Canonical POS expression for a Boolean function G, represented by the following truth table:

X	Y	Z	G(X,Y,Z)
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

SOLUTION: G = $(X + Y + Z).(X + Y + \bar{Z}).\ (X + \bar{Y} + \bar{Z}).(\bar{X} + \bar{Y} + Z)$
Minimization Using K-Map : G = $(X + Y).(X + \bar{Z}).(\bar{X} + \bar{Y} + Z)$

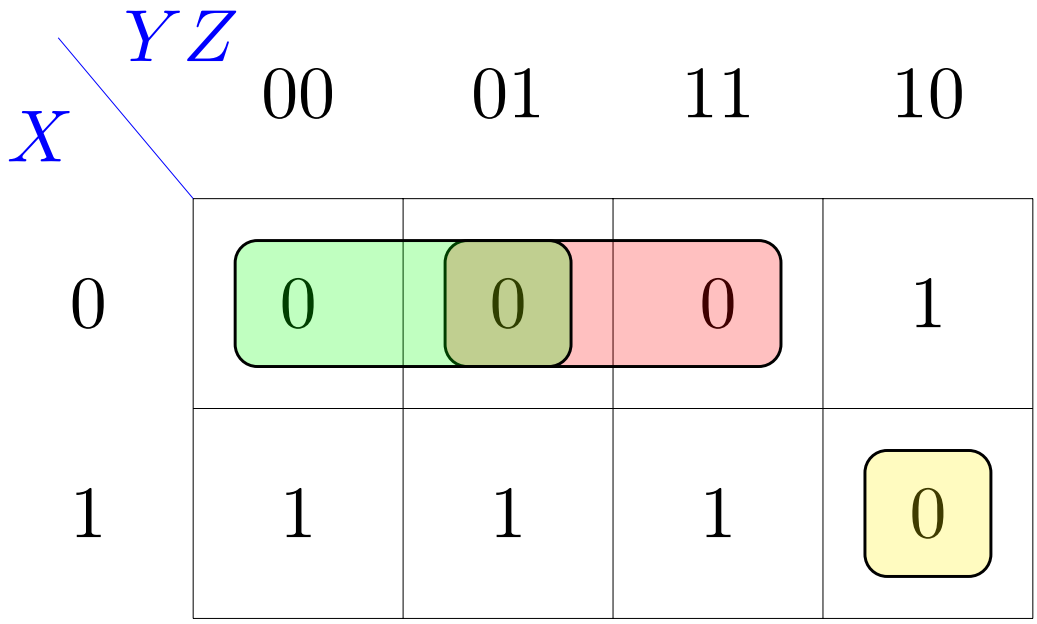
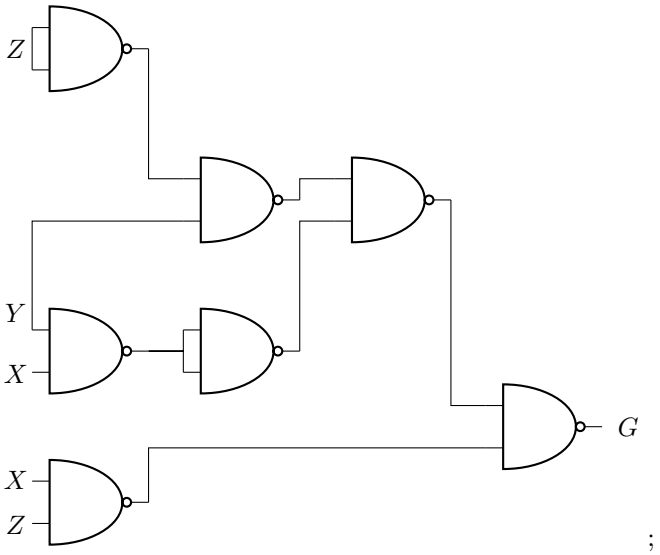


Figure 1: POS for G

1.1 Implement NAND Logic in SOP Form

$$X.Z + \overline{X}.Y.\overline{Z} + X.Y$$
$$X.Z + (Y(\overline{X}.\overline{Z} + X))$$
$$X.Z + (Y(\overline{Z} + X))$$
$$X.Z + Y.\overline{Z} + X.Y$$

Output Using NAND Gates.



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