

Assignment-5
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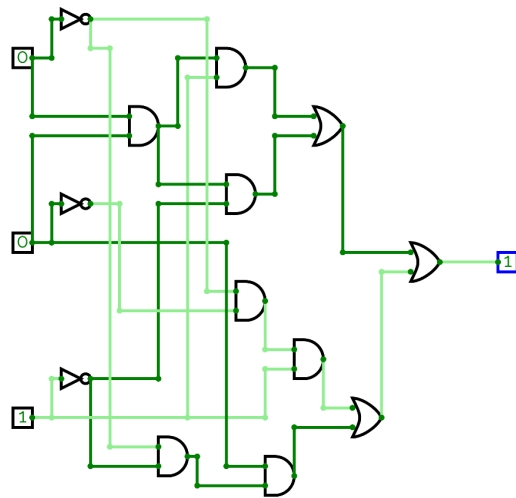
- Problem 1:** $F(x, y, z) = xy + x'y'z + x'yz'$

$$F(x, y, z) = xy(z + z') + x'y'z + x'yz'$$

$$F(x, y, z) = xyz + xyz' + x'y'z + x'yz'$$

K-map	yz	00	01	11	10
x	-	-	-	-	-
0	-	0	1	0	1
1	-	0	0	1	1

$$F(x, y, z) = \Sigma(1, 2, 6, 7)$$



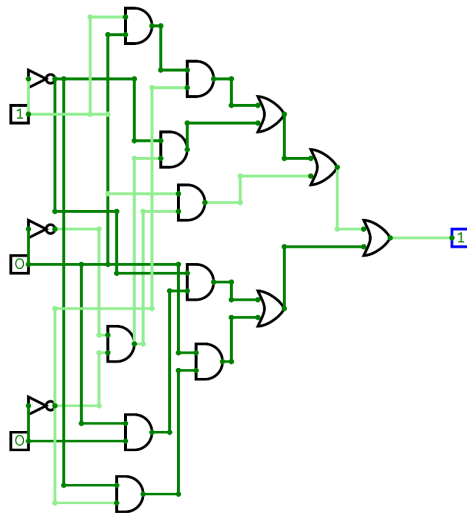
- Problem 2:** $F(x, y, z) = \Sigma(0, 2, 3, 4, 6)$

K-map	yz	00	01	11	10
x	-	-	-	-	-
0	-	1	0	1	1
1	-	1	0	0	1

$$F(x, y, z) = x'y'z' + xy'z' + x'yz + x'yz' + xyz' = y'z'(x + x') + x'yz + yz'(x + x')$$

$$F(x, y, z) = x'yz + y'z' + yz' = x'yz + z'(y + y')$$

$$F(x, y, z) = x'yz + z'$$



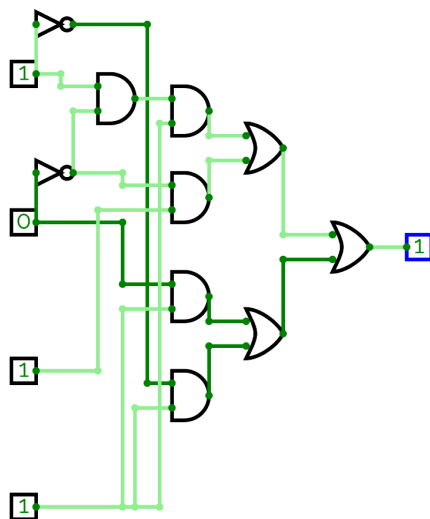
- **Problem 3:** $F(w, x, y, z) = w'z + xz + x'y + wx'z$

$$F(w, x, y, z) = w'z(xy + x'y + xy' + x'y') + xz(wy + w'y + wy' + w'y') + x'y(wz + w'z + wz' + w'z') + wx'z(y + y')$$

$$F(w, x, y, z) = w'xyz + w'x'yz + w'xy'z + w'x'y'z + wxyz + wxy'z + wx'y'z + wx'yz' + w'x'yz' + wx'y'z$$

K-map	yz	00	01	11	10
wx	-	-	-	-	-
00	-	0	1	1	1
01	-	0	1	1	0
11	-	0	1	1	0
10	-	0	1	1	1

$$F(x, y, z) = \Sigma(1, 2, 3, 5, 7, 9, 10, 11, 13, 15)$$



- **Problem 4:** $F(w, x, y, z) = \Sigma(0, 1, 2, 4, 5, 7, 11, 15)$

K-map	yz	00	01	11	10
wx	-	-	-	-	-
00	-	1	1	0	1
01	-	1	1	1	0
11	-	0	0	1	0
10	-	0	0	1	0

$$F(w, x, y, z) = w'x'y'z' + w'x'y'z + w'x'yz' + w'xy'z' + w'xy'z + w'xyz + wxyz + wx'yz$$

$$F(w, x, y, z) = w'x'y'(z + z') + wyz(x + x') + w'x'yz' + w'xy'z' + w'xy'z + w'xyz$$

$$F(w, x, y, z) = w'x'y' + wyz + w'x'yz' + w'xy'z' + w'xy'z + w'xyz$$

$$F(w, x, y, z) = w'x'y' + wyz + w'x'yz' + w'xy'(z' + z) + w'xyz$$

$$F(w, x, y, z) = w'x'y' + wyz + w'x'yz' + w'xy' + w'xyz$$

$$F(w, x, y, z) = w'y'(x + x') + wyz + w'x'yz' + w'xyz$$

$$F(w, x, y, z) = w'y' + wyz + w'x'yz' + w'xyz$$

