Full adder using Half adder:

	x	y	z	S	C
0	0	0	0	0	0
1	0	0	1	1	0
2	0	1	0	1	0
3	0	1	1	0	1
4	1	0	0	1	0
5	1	0	1	0	1
6	1	1	0	0	1
7	1	1	1	1	1

S

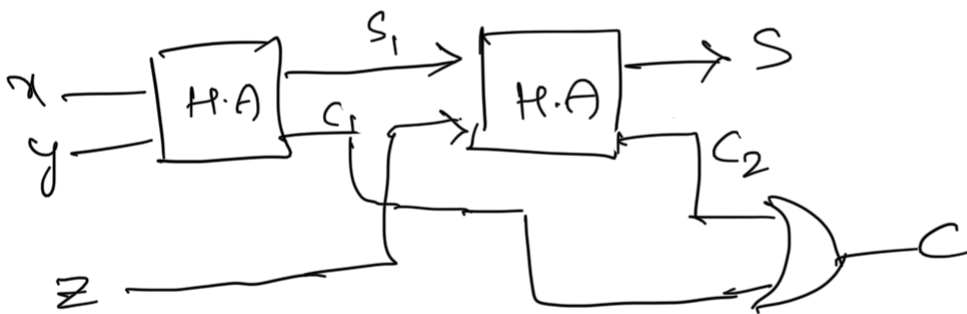| $x \backslash yz$	00	01	11	10
0	0	1	0	1
1	1	0	1	0

$$S = \bar{x}\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\bar{z} + xyz$$

$$S = x \oplus y \oplus z$$

C

$x \backslash yz$	00	01	11	10
0			1	
1		1	1	1

$$C = xy + yz + zx$$

$$s' = x \oplus y \quad ; \quad S = S_1 \oplus z = x \oplus y \oplus z$$

$$C_1 = xy \quad ; \quad C_2 = S_1 z = (x \oplus y)z$$

$$= (x\bar{y} + \bar{x}y)z$$

$$C = C_1 + C_2 = xy + x\bar{y}z + \bar{x}yz$$
$$= y(x + xz) + x\bar{y}z$$
$$= xy + yz + zx$$