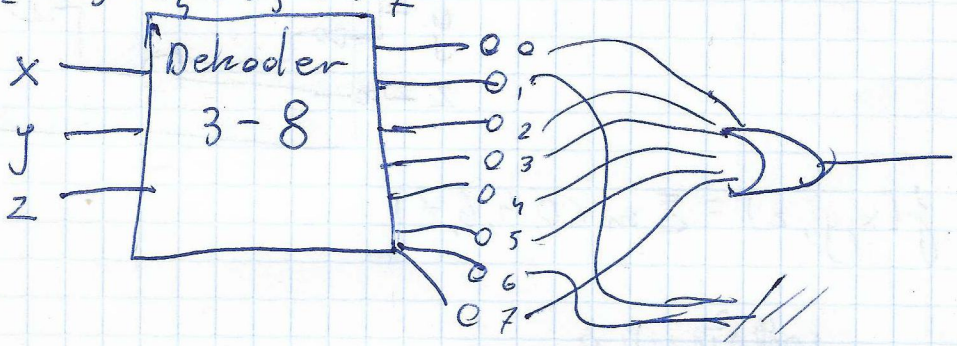
1. $f(x,y,z) = \Sigma m(0,2,3,4,5,7)$

x	y	z	O_7	O_6	O_5	O_4	O_3	O_2	O_1	O_0
0	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0
0	1	0	0	0	0	0	0	1	0	0
0	1	1	0	0	0	0	1	0	0	0
1	0	0	0	0	0	1	0	0	0	0
1	0	1	0	0	1	0	0	0	0	0
1	1	0	0	1	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0	0

$f(x,y,z) = O_0 + O_2 + O_3 + O_4 + O_5 + O_7$

Do bramki or wystarczy iść tylko podpiąć odpowiednie wyjścia dekodera.



$O_0 = \bar{x}\bar{y}\bar{z}$

$O_1 = \bar{x}\bar{y}z$

$O_2 = \bar{x}y\bar{z}$

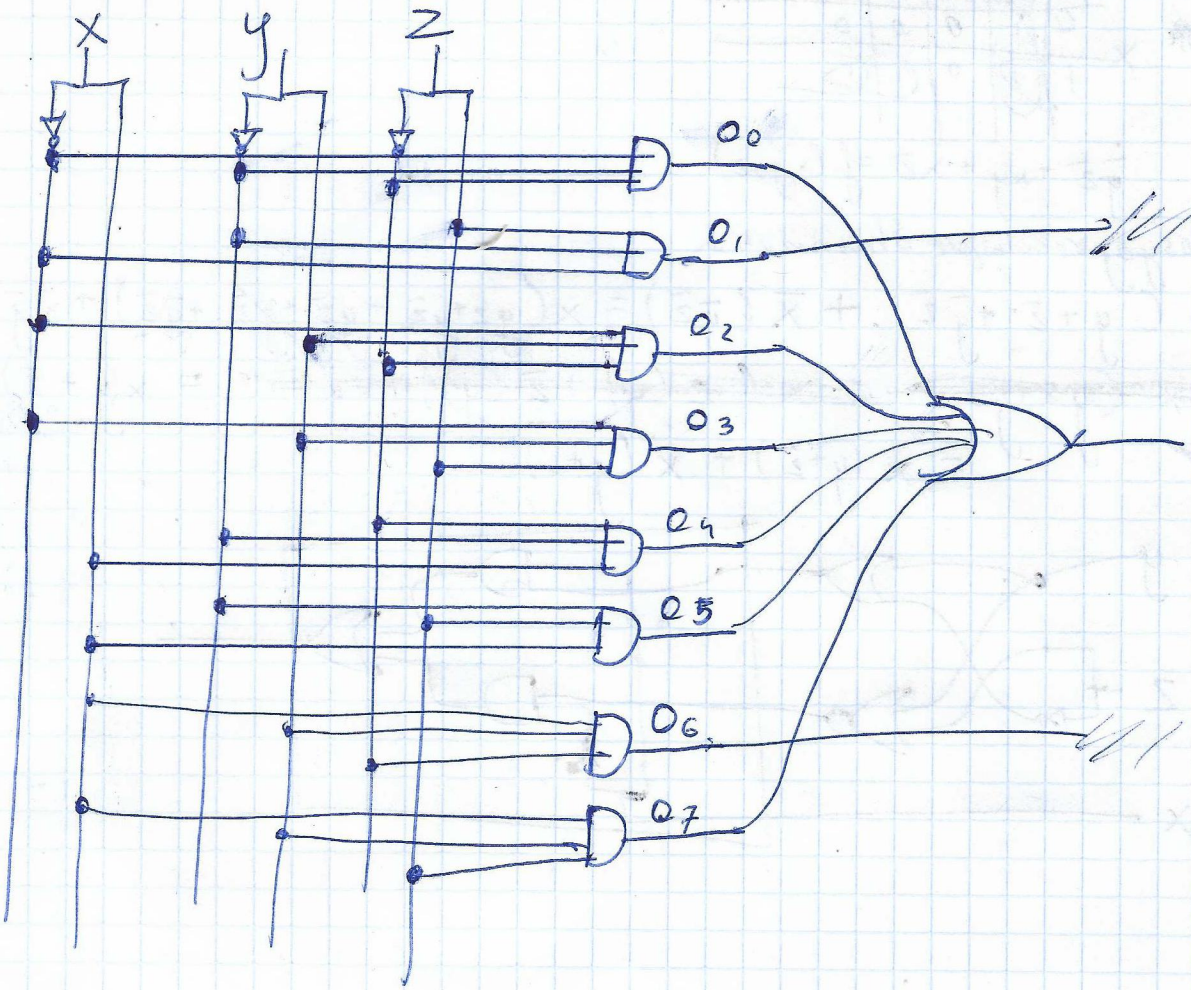
$O_3 = \bar{x}yz$

$O_4 = x\bar{y}\bar{z}$

$O_5 = x\bar{y}z$

$O_6 = xy\bar{z}$

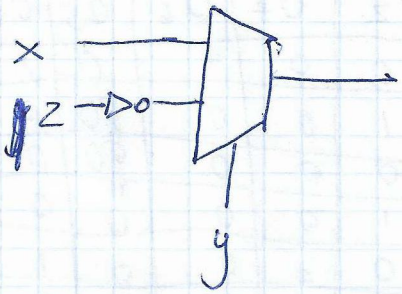
$O_7 = xyz$

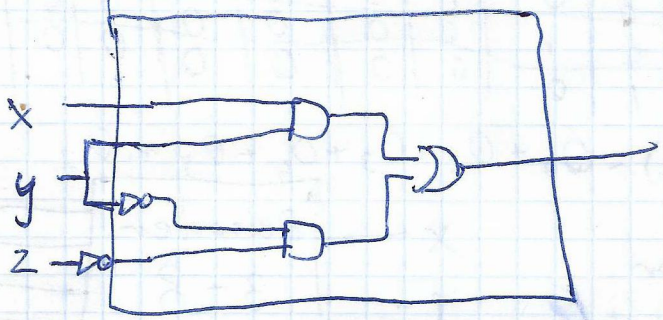


2. $f(x,y,z) = \bar{y}\bar{z} + xy$

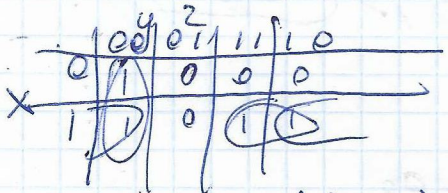
x	y	z	$\bar{y}\bar{z} + xy$
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

y	out
0	$\bar{z}$
1	x





3. $f(x,y,z) = \sum m(0,4,6,7)$



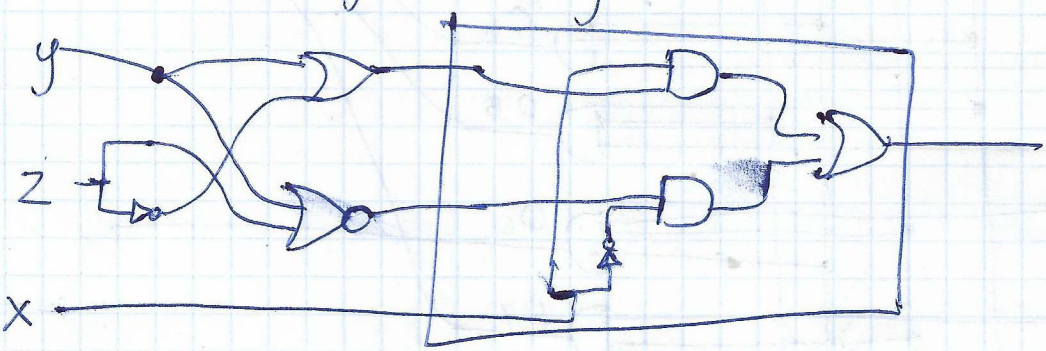
$\bar{y}\bar{z} + xy + x\bar{z} = f(x,y,z)$

Stosuję rozwinięcie Shannona

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

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

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



4. $f(x,y,z) = \bar{y} + \bar{x}\bar{z} + xz$ Stosujemy rozwinięcie Shannona

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

$= x\bar{y} + xz + \bar{x}\bar{y} + \bar{x}\bar{z} =$

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

$= yxz + y\bar{x}\bar{z} + \bar{y}x + \bar{y}\bar{x} + \bar{y}xz + \bar{y}\bar{x}\bar{z}$

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

$= zyx + z\bar{y}x + z\bar{y}\bar{x} + z\bar{y}x + \bar{z}\bar{y}\bar{x} + \bar{z}y\bar{x} + \bar{z}\bar{y}x + \bar{z}\bar{y}x =$

$= \sum m(0,1,2,4,5,7)$

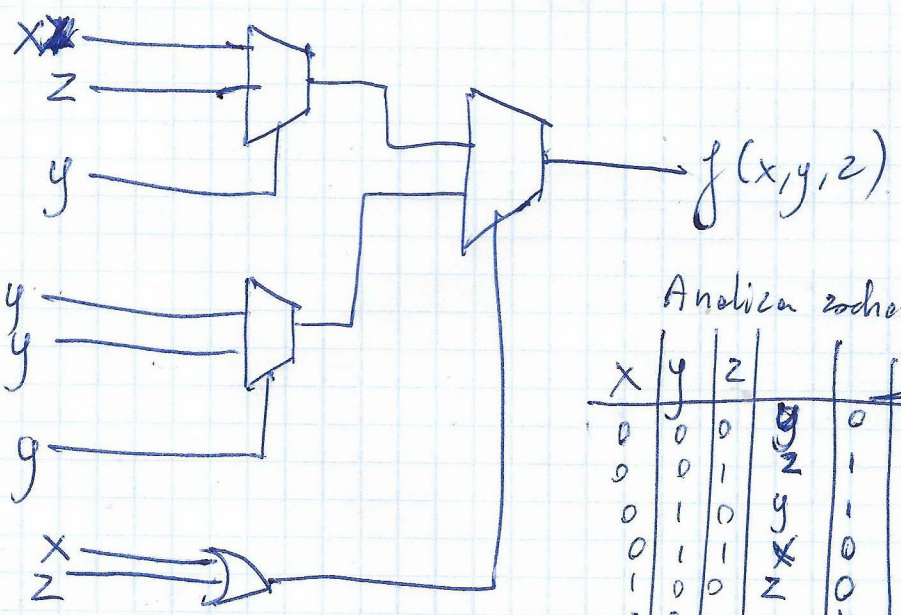
$\bar{y} + \bar{x}\bar{z} + xz$

x	y	z	wyjście
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

Zatem wyszkolimy wszystkie mintermy.

8. $f(x,y,z) = y\bar{z} + xz + \bar{y}z$

x	y	z	$f(x,y,z)$
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1



Analiza zachowania układu

x	y	z		
0	0	0	$\bar{y}$	0
0	0	1	z	1
0	1	0	y	1
0	1	1	x	0
1	0	0	z	0
1	0	1	z	1
1	1	0	x	1
1	1	1	x	1