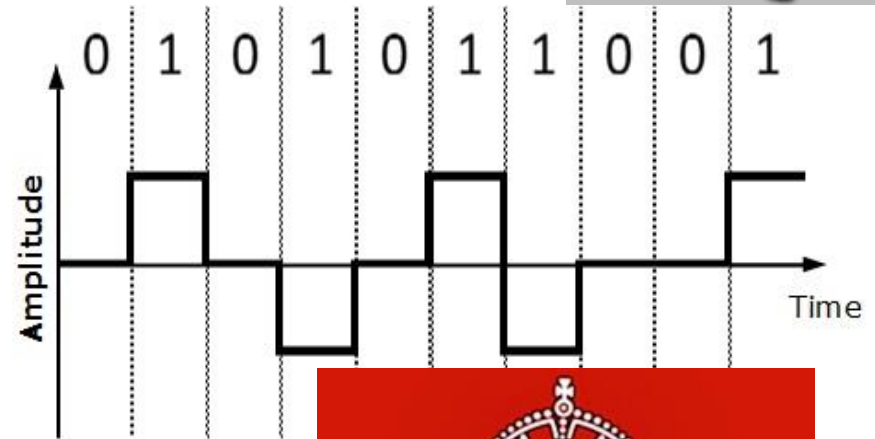
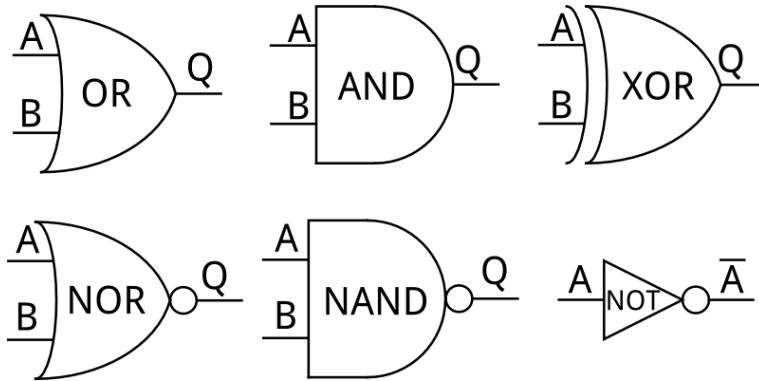


Proiectare Logica

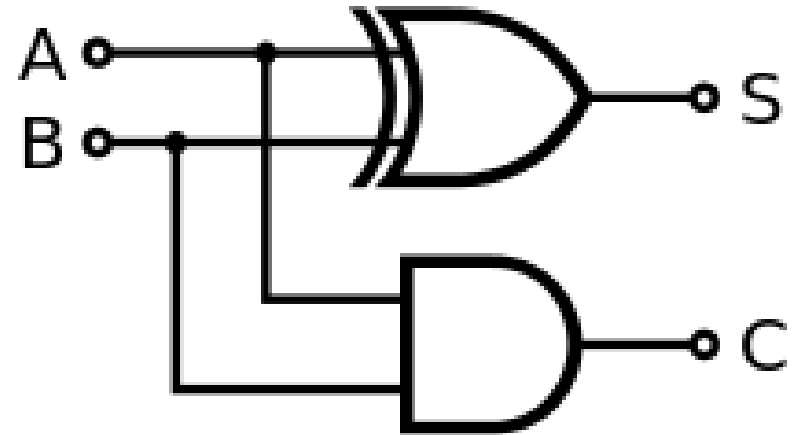
Digital Logic Design

Lab 05

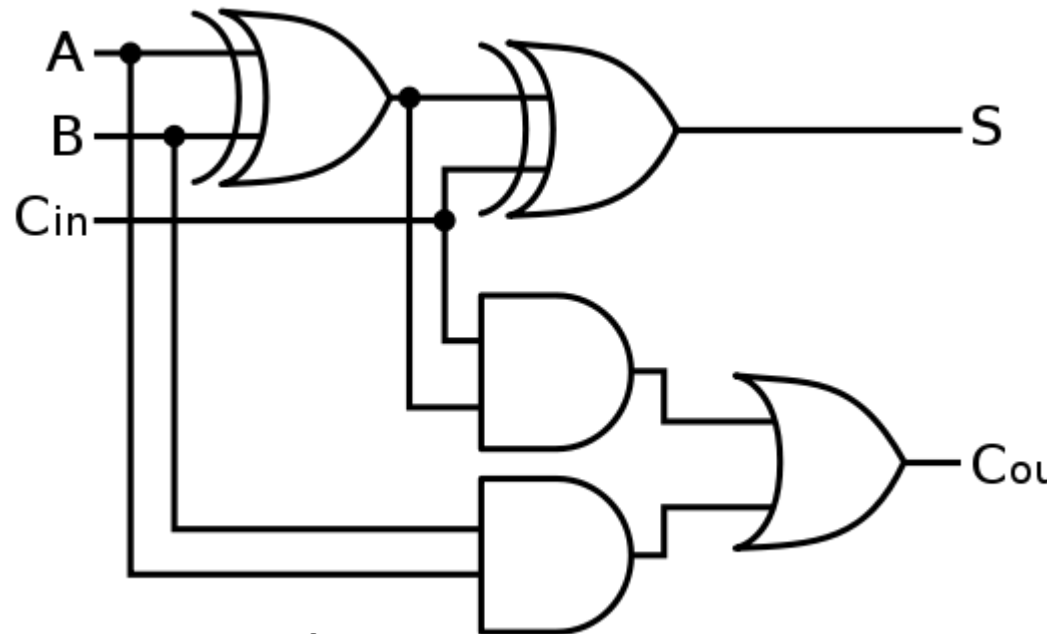


Implementati in wronex

- Semisumatorul

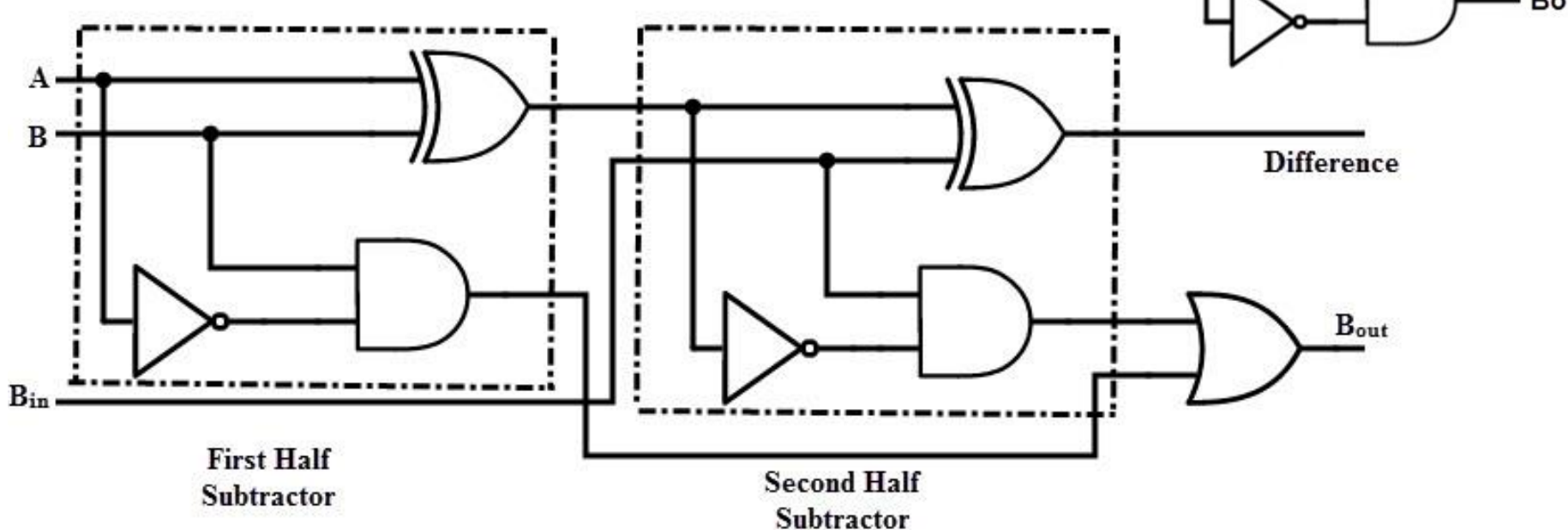


- Sumatorul Complet
- Incapsulati sumatorul complet
- Folositi capsula pentru a implementa un sumator pe 4 biti



Implementati in wronex

- Semiscazatorul
- Scazatorul complet



- Incapsulati Scazatorul complet
- Folositi capsula pentru a implementa un scazator pe 4 biti

Implementati cu NAND-uri votul majoritar cu 3-4 votanti

Verificati in wronex

Tabela de adevar

A	B	C	F (ABC)
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

1. Se cere optimizarea FCD
2. Schema folosind simbolurile clasice
3. Transformarea schemei in schema NUMAI cu NAND-uri

Tabela de adevar

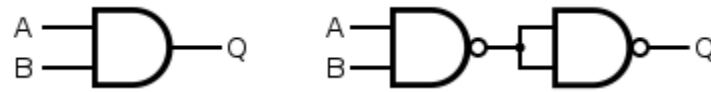
A	B	C	D	F (ABCD)
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Implementari folosind NAND-uri

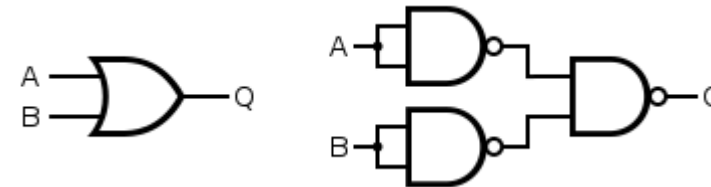
- NOT



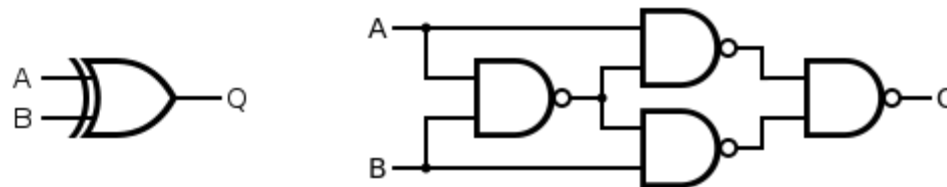
- AND



- OR

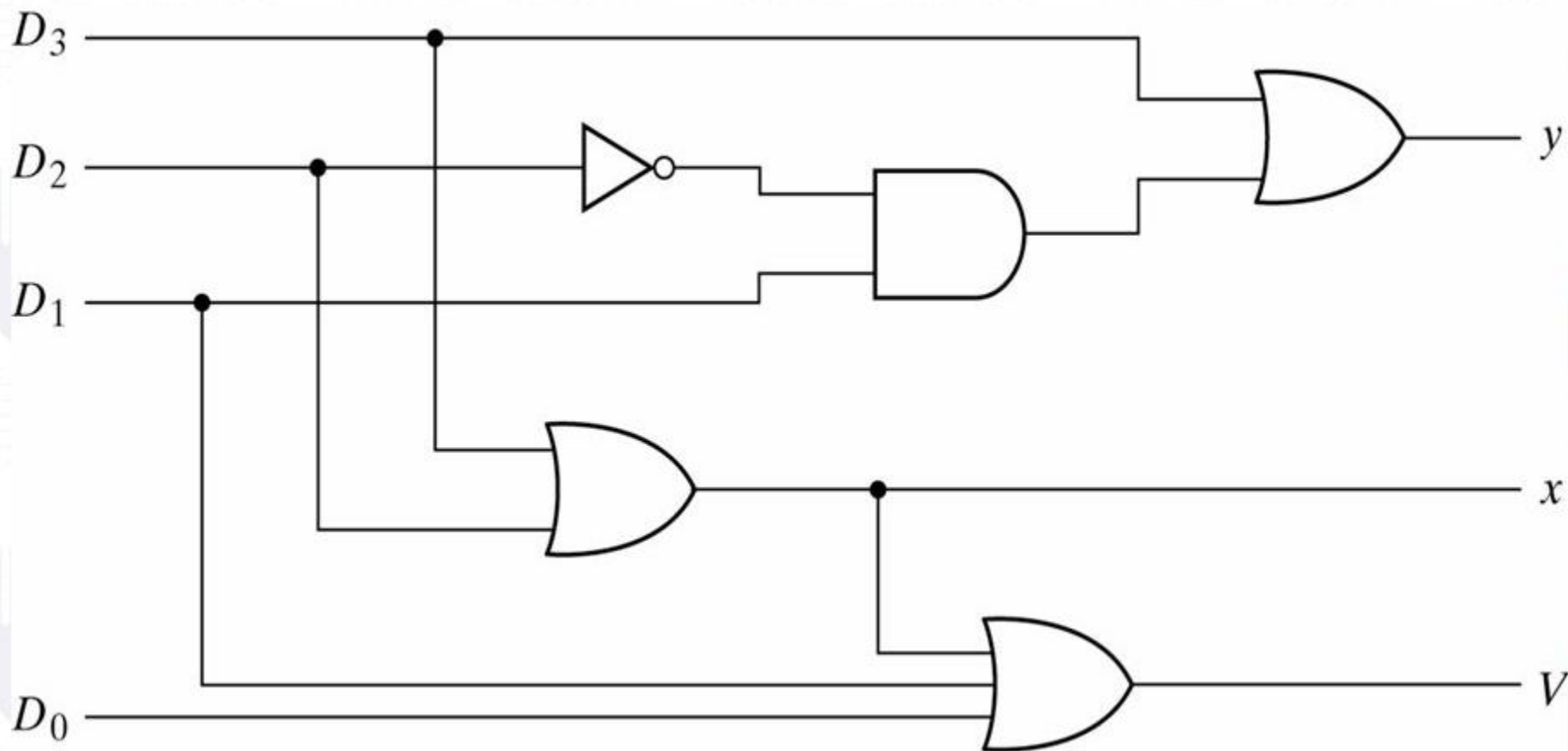


- XOR



4 to 2 priority encoder

- Implementati in wronex si construiti tabela de adevar pentru circuitul de mai jos. Discutati posibile aplicatii.



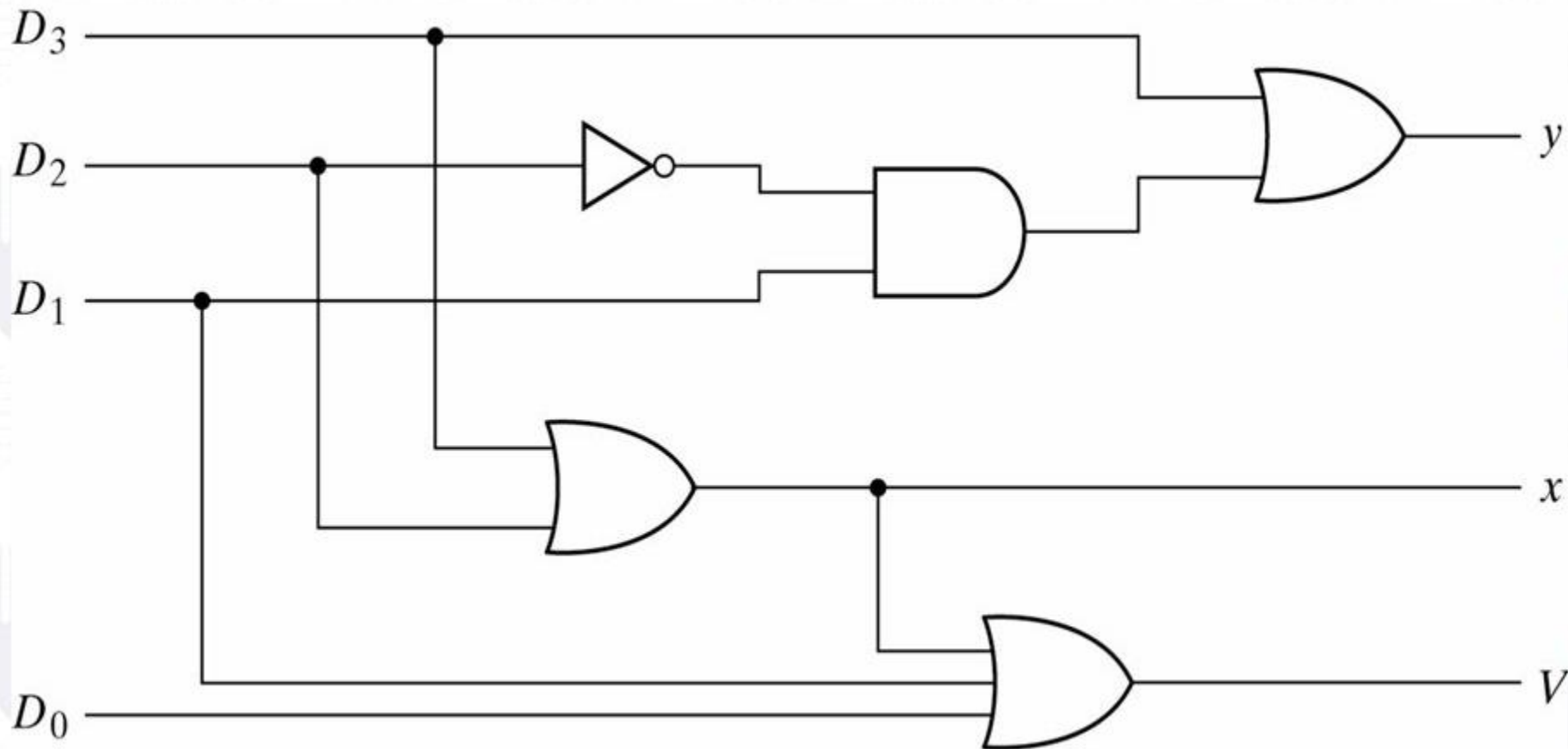
4 to 2 priority encoder

- O secretara deservește 4 directori.
- Ea are in birou o centrala telefonica pe care sunt 4 Becuri, cate unul pentru fiecare director.
- Directorii au ranguri diferite. In ordine descrescatoare a rangurilor ei sunt: D3, D2, D1 si D0.
- Daca 2 (sau mai multi) directori solicita simultan un serviciu de la secretara (fiecare apasand butonul din biroul sau) pe panoul secretarei se va aprinde doar becul directorului cel mai mare in rang dintre solicitatori.

				Codul celui mai mare in rang		Exista solicitare ?
D3	D2	D1	D0	O ₁	O ₀	V
0	0	0	0	0	0	0
0	0	0	1	0	0	1
0	0	1	X	0	1	1
0	1	X	X	1	0	1
1	X	X	X	1	1	1

4 to 2 priority encoder

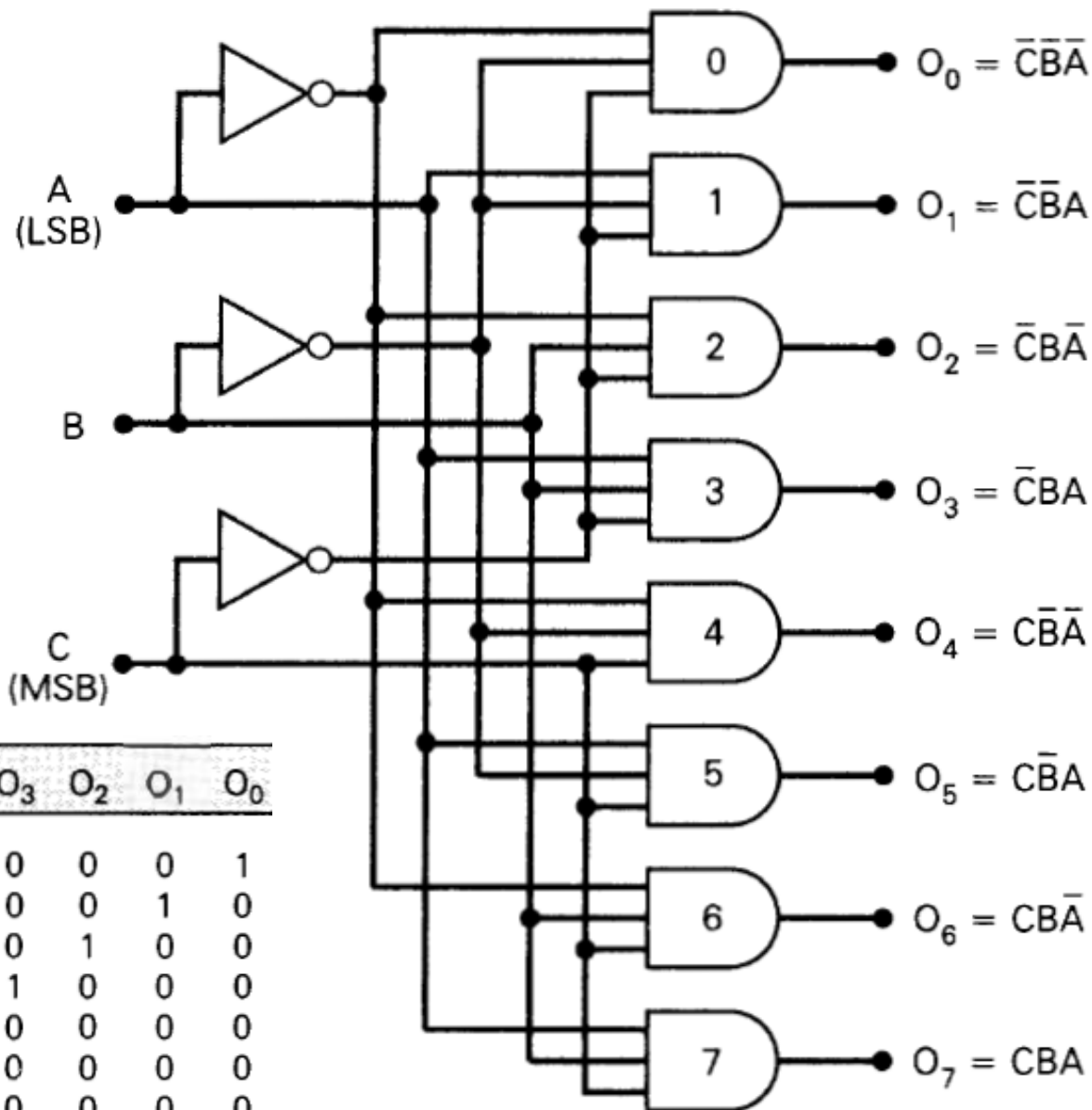
- Implementati in wronex si construiti tabela de adevar pentru circuitul de mai jos. Discutati posibile aplicatii. Cine este x si cine este y?



Decodificatorul 3-8

Simulati in wronex

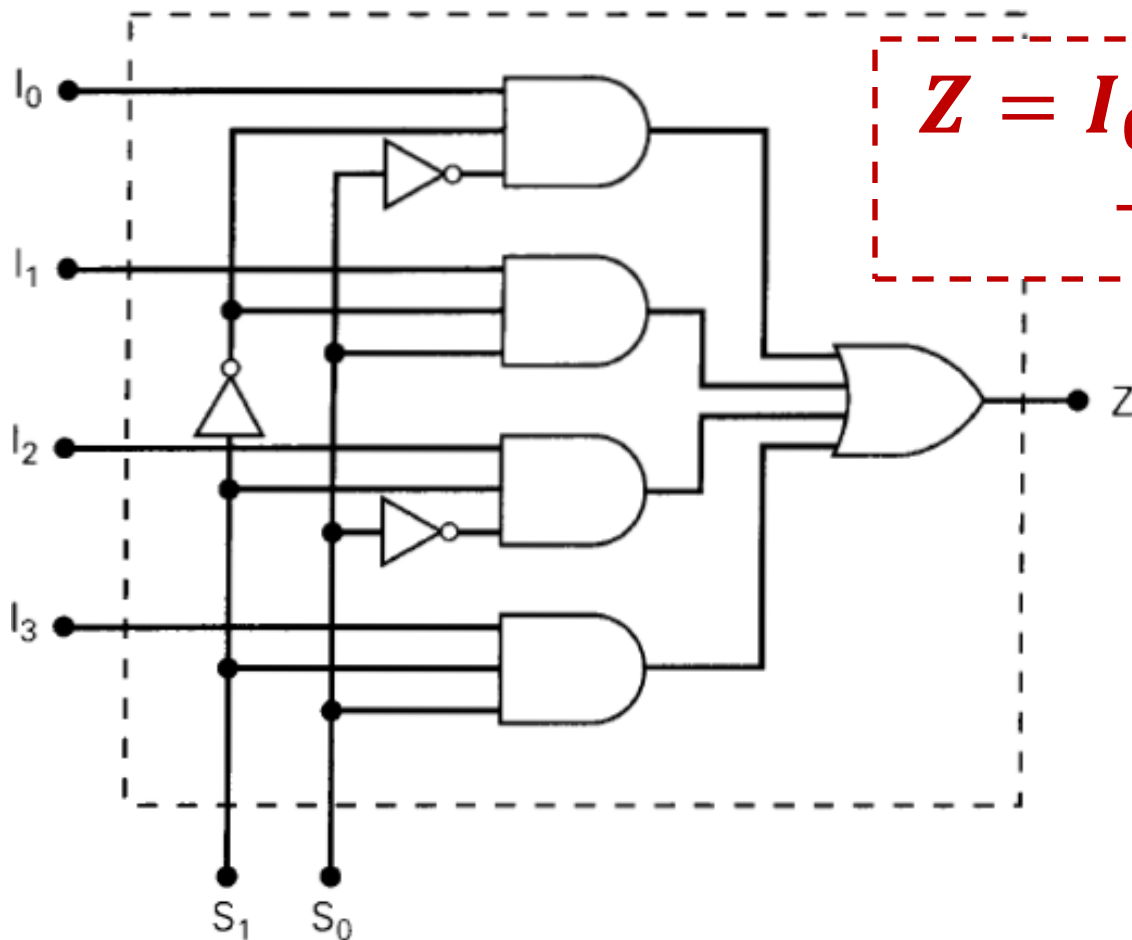
Are **3** intrari si
 $2^3=$ **8** iesiri.



C	B	A	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

MUX cu patru intrari

- Circuitul are 4 intrari digitale.
- Formula de functionare este:

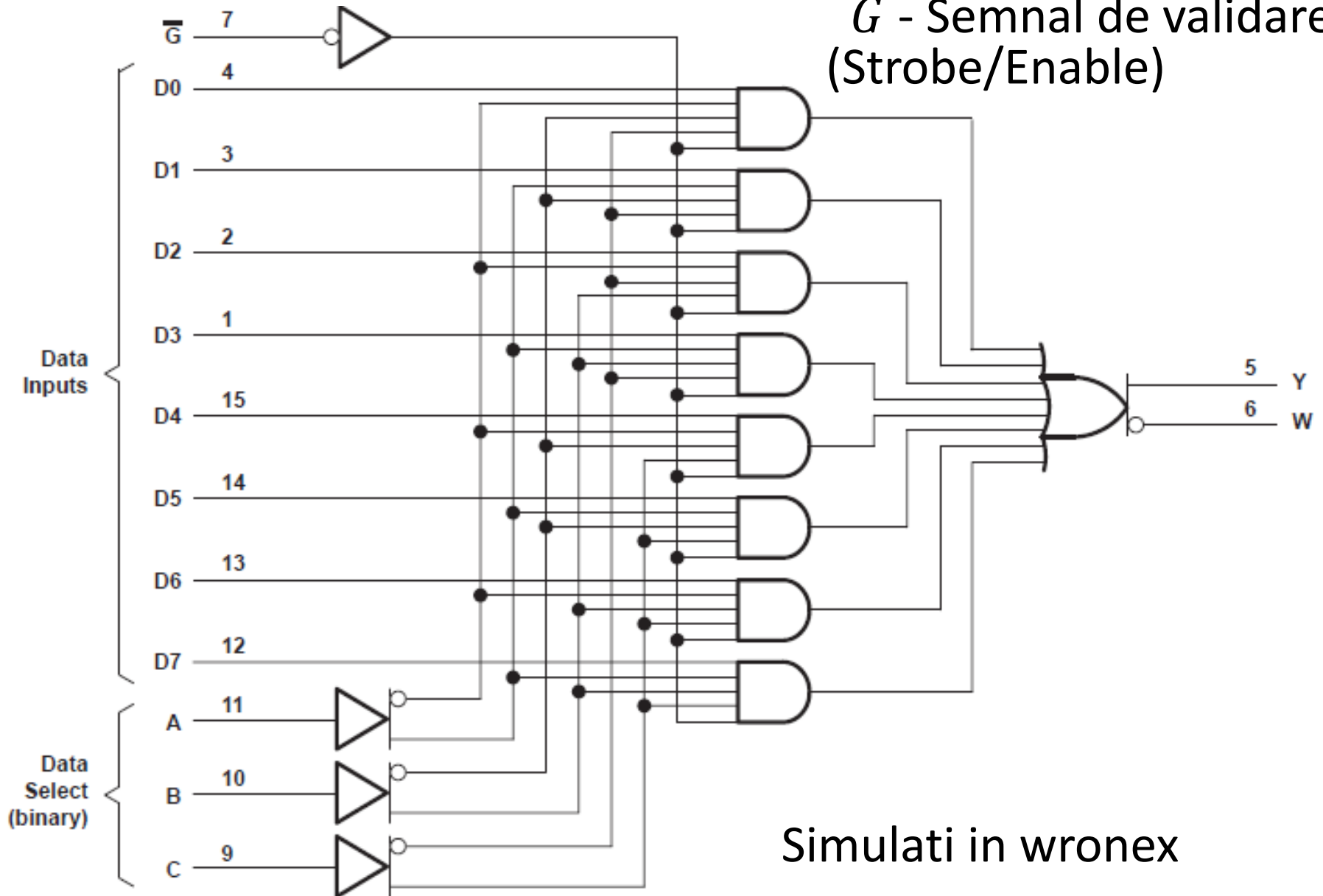


$$Z = I_0 \overline{S_0} \overline{S_1} + I_1 \overline{S_0} S_1 + I_2 S_0 \overline{S_1} + I_3 S_0 S_1$$

S_0	S_1	iesire
0	0	$Z = I_0$
0	1	$Z = I_1$
1	0	$Z = I_2$
1	1	$Z = I_3$

MUX cu opt intrari - 74ALS151

$\bar{G}$ - Semnal de validare
(Strobe/Enable)



Simulati in wronex