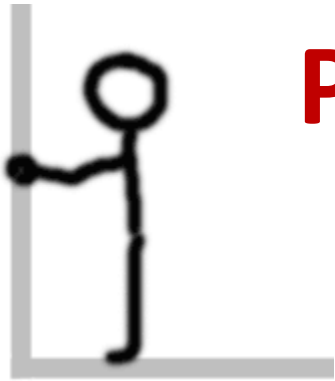
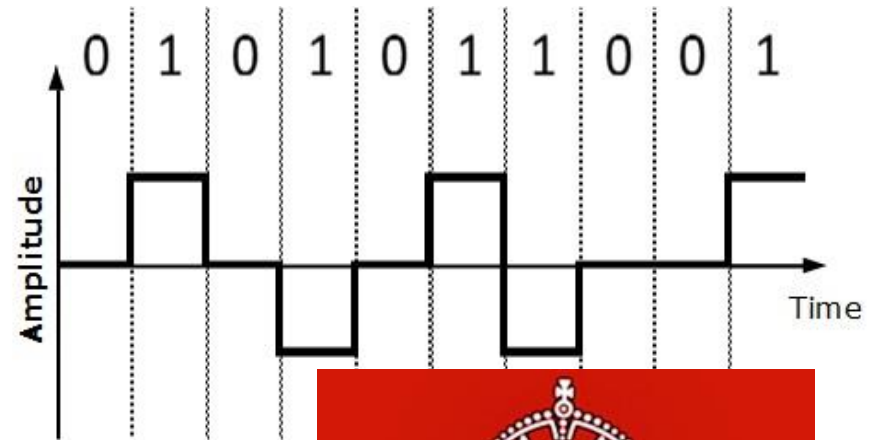
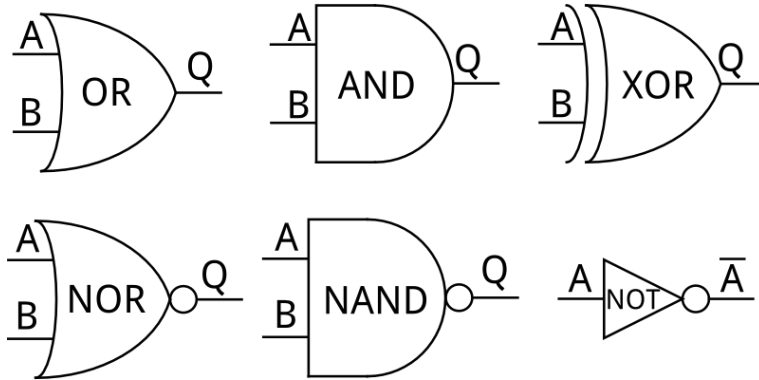




Proiectare Logica

Digital Logic Design

Lab 01



Profesorii dvs la PROIECTARE LOGICA sunt:

- **NICULAE Cornel Mironel**
- **Acesta sunt eu** (e drept poza este facuta acum cativa ani)
- **Note curs laborator:**
<https://cnic.ro/pl/20-21/>
- Acesta este Dl
Chirosca Alecsandru
- **Email-uri institutionale:**
- cornel.nicolae@unibuc.ro,
alecsandru.chirosca@unibuc.ro



Cum se va lua nota la laborator?

- Fiecare student va trimite pe email (sau pe classroom) un fisier (docx, pdf, pptx, etc) pe care de aici incolo il vom numi *Jurnal de laborator* (pe scurt Jurnal).
- Numele acestui fisier trebuie sa fie **16x_Nume_Prenume_Jurnal_s01.xxx** , de exemplu pentru saptamana 1.
- Saptamana a 2-a se va trimite un fisier **16x_Nume_Prenume_Jurnal_s02.xxx** , s.a.m.d.
- In esenta Jurnalul saptamanii **yy** va contine toate jurnalele anterioare (eventual cu imbunatatirile aduse ca urmare a acumularii de cunostinte)

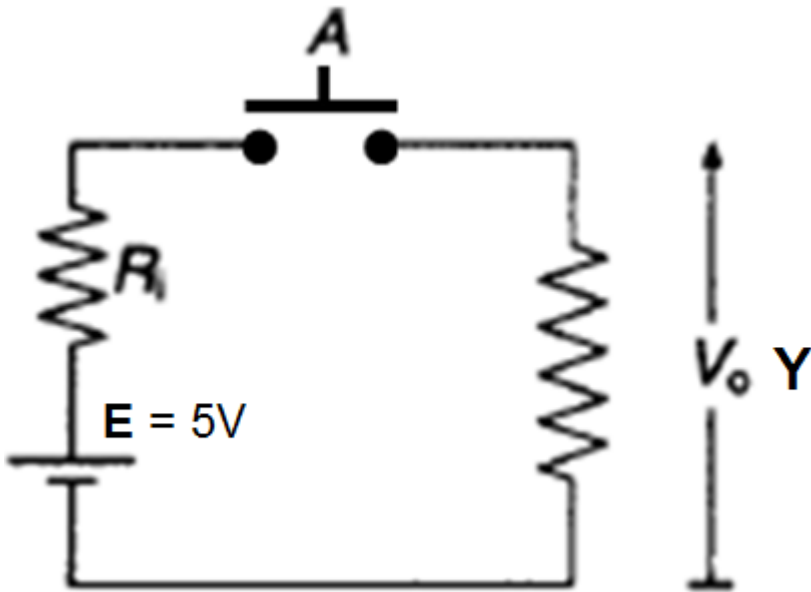
Cum se va lua nota la laborator?

- Asociat acestui jurnal fiecare student trebuie sa aiba un fisier in care sa formuleze propriile intrebari legate de subiectul laboratorului sau cursului. Acest fisier il vom numi **Intrebari**. *Nu trebuie trimis acest fisier.* Intrebarile este preferabile sa fie puse pe chat-ul Meet-ingului sau oral in acelasi context.
- Asociat jurnalului saptamanal trebuie trimise fisiere cu extensie speciala (grid, tdiag, etc) care au fost lucrate in saptamana curenta si a caror imagine, insotit de explicatii, trebuie sa se regaseasca in jurnalul saptamanii curente. Aceste fisiere trebuie sa ajunga la mine la fel cu jurnalul.
- ***Jurnalul si fisierele asociate trebuie sa fie originale*** (plagiarea nu este permisa).

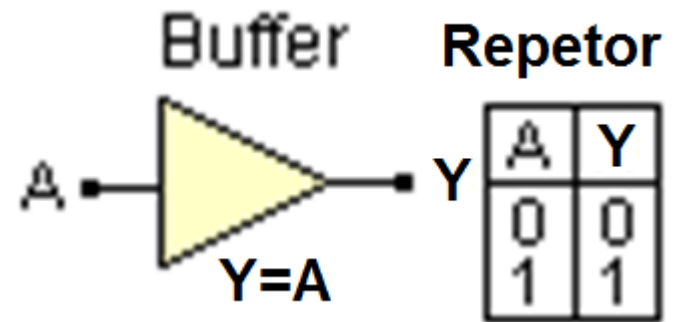
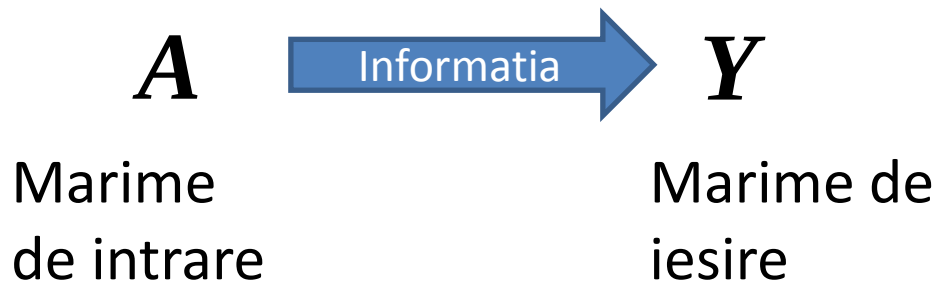
Circuite logice cu intrerupatoare

Repetorul logic: *Buffer, Driver*

Intrerupator NO=Normal Open



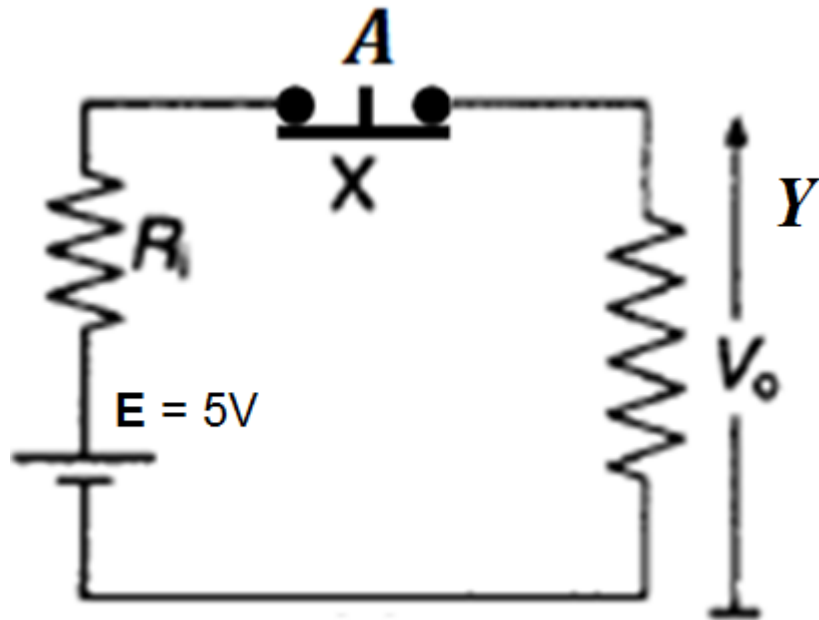
A		Stare	$V_o =$	Y
Apasat	1	ON	5 V	1
Liber	0	OFF	0 V	0



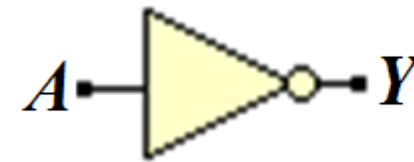
Circuite logice cu intrerupatoare

Inversorul logic: *NOT*

Intrerupator NC=Normal Close



Inverter (NOT)

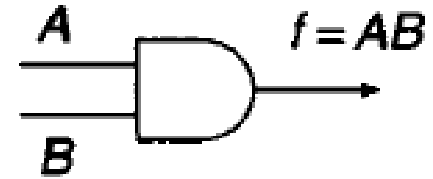
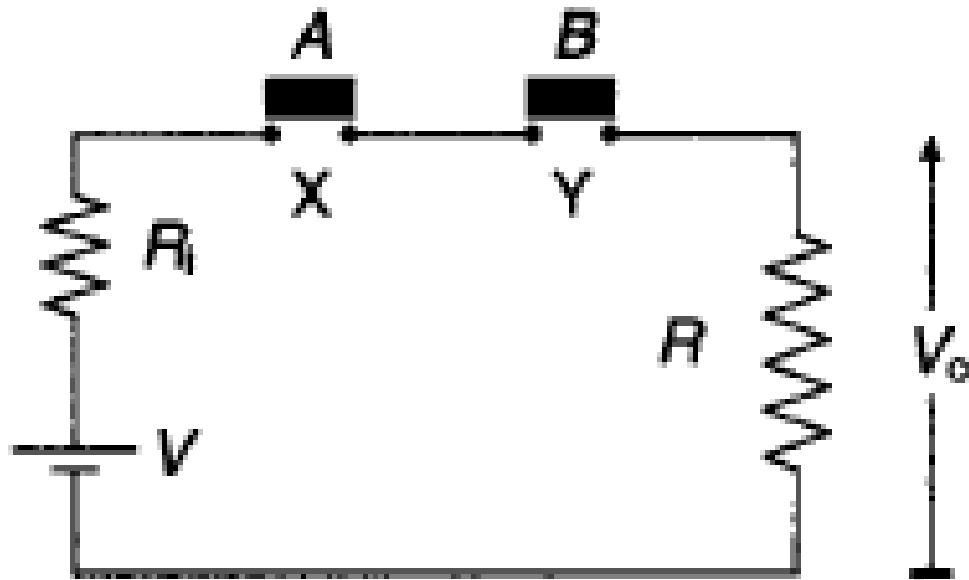


$$Y = \bar{A}$$

A	Y
0	1
1	0

A		Stare	V _o =	Y
Apasat	1	OFF	0 V	0
Liber	0	ON	5 V	1

Funcția SI (AND) cu intrerupatoare



A	B	f
0	0	0
0	1	0
1	0	0
1	1	1

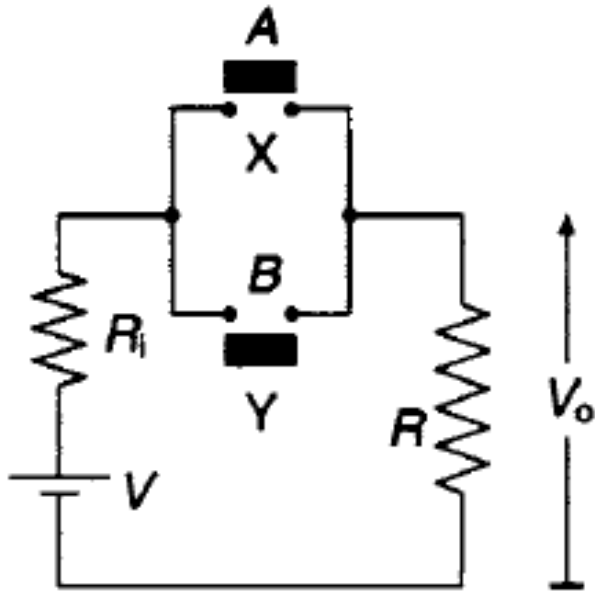
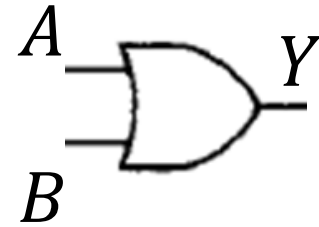
$$0 \cdot 0 = 0$$

$$0 \cdot 1 = 0$$

$$1 \cdot 0 = 0$$

$$1 \cdot 1 = 1$$

Functia SAU (OR) cu intrerupatoare



A	B	f
0	0	0
0	1	1
1	0	1
1	1	1

$$0+0=0$$

$$0+1=1$$

$$1+0=1$$

$$1+1=1$$

Boolean
addition

$$0+0=0$$

$$0+1=1$$

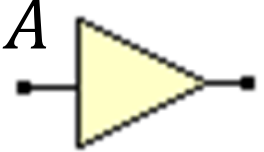
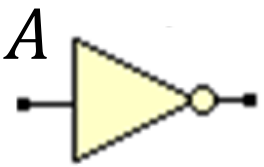
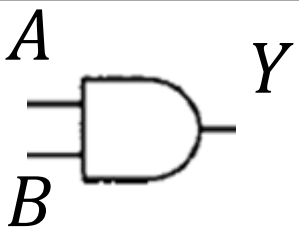
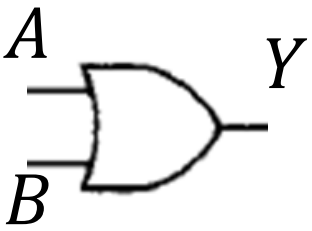
$$1+0=1$$

$$1+1=0 \text{ Carry } 1$$

Binary
addition

Simboluri operatori logici

- Simbolurile clasice ale operatorilor logici

	Repetor	$Y = A$
	Inversor (NOT)	$Y = \bar{A} = A'$
	SI (AND)	$Y = A \cdot B$
	SAU (OR)	$Y = A + B$

A	Y
0	0
1	1

A	Y
0	1
1	0

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

Tabele de adevar

- Fie functia logica: $Y = (A+B).C'$ 3 variabile, A, B si C
→ 2^3 stari in tabel
- Completati tabela de adevar a functiei Y

A	B	C	A+B	C'	(A+B).C'	Y

Fisier tabele

→ [aici](#)

Tabele de adevar

- Fie functia logica:
 $Y = (A + B) \cdot (C + D')$
4 variabile, A, B si C
➔ 2^4 stari in tabel
- Completati tabela de adevar a functiei Y folosind tabelul 2 de [aici](#).

Aplicatia Logic Grid (Wronex)

- Implementati in wronex functiile:

$$Y=(A+B).C'$$

$$Y=(A+B).(C+D')$$

si salvati gridul astfel obtinut

- Aplicatia Wronex o gasiti aici:

<https://cnic.ro/pl/lg/>