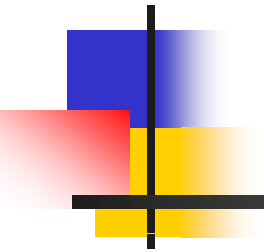
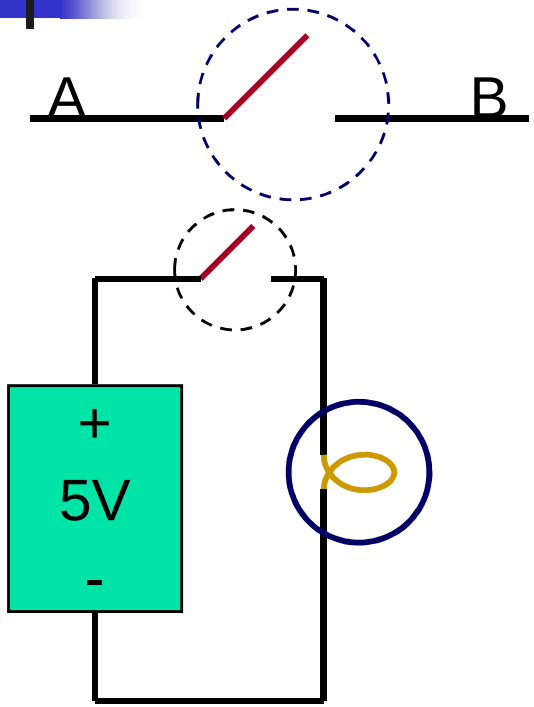


Lecture 6: SWITCH LOGIC

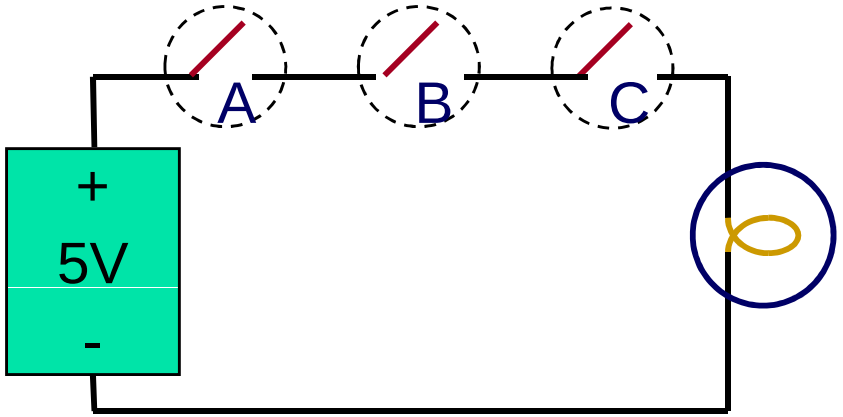
Biên soạn:Th.S Bùi Quốc Bảo

(Base on Floyd, Pearson Ed.)

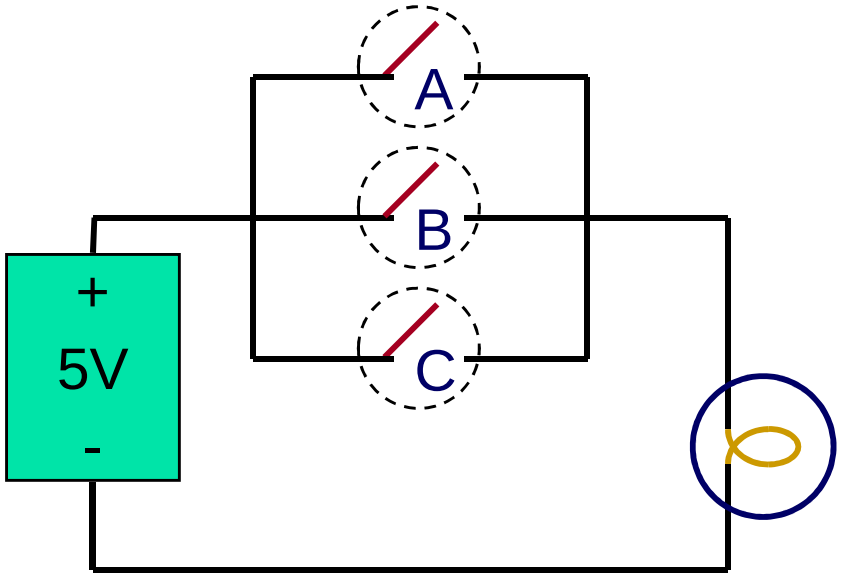
SWITCHES



IF switch is closed THEN light is on



IF switches A AND B AND C are closed THEN light is on



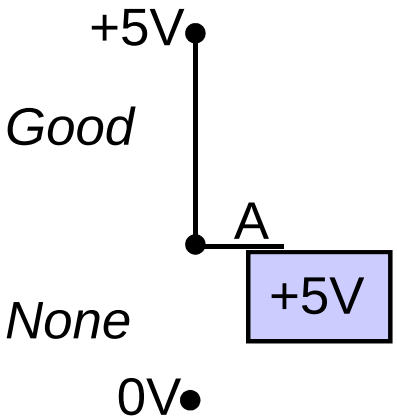
IF switches A OR B OR C are closed THEN light is on

Good Connection (A wire)

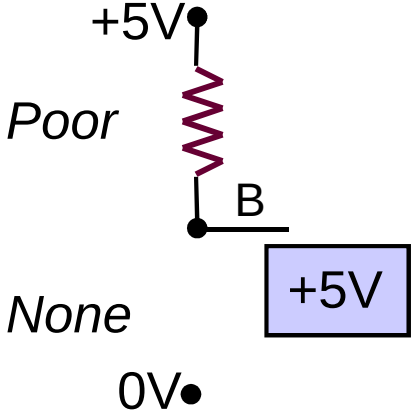
No Connection (Open)

Poor Connection (Resistor)

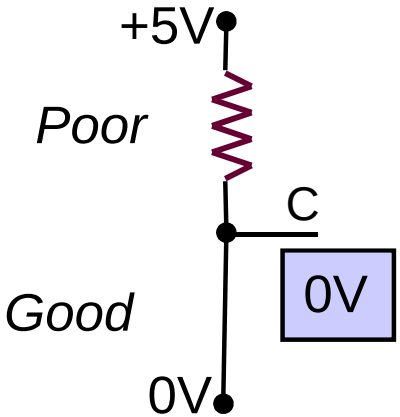
Consider these combinations:



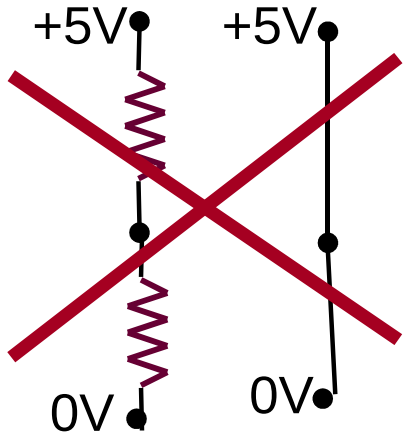
Good wins over None



Poor wins over None

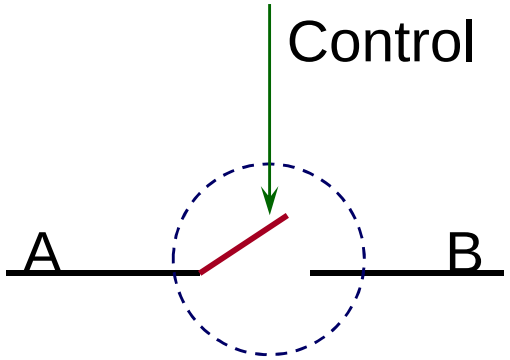


Good wins over Poor



Don’t do this!

CONTROL SWITCH



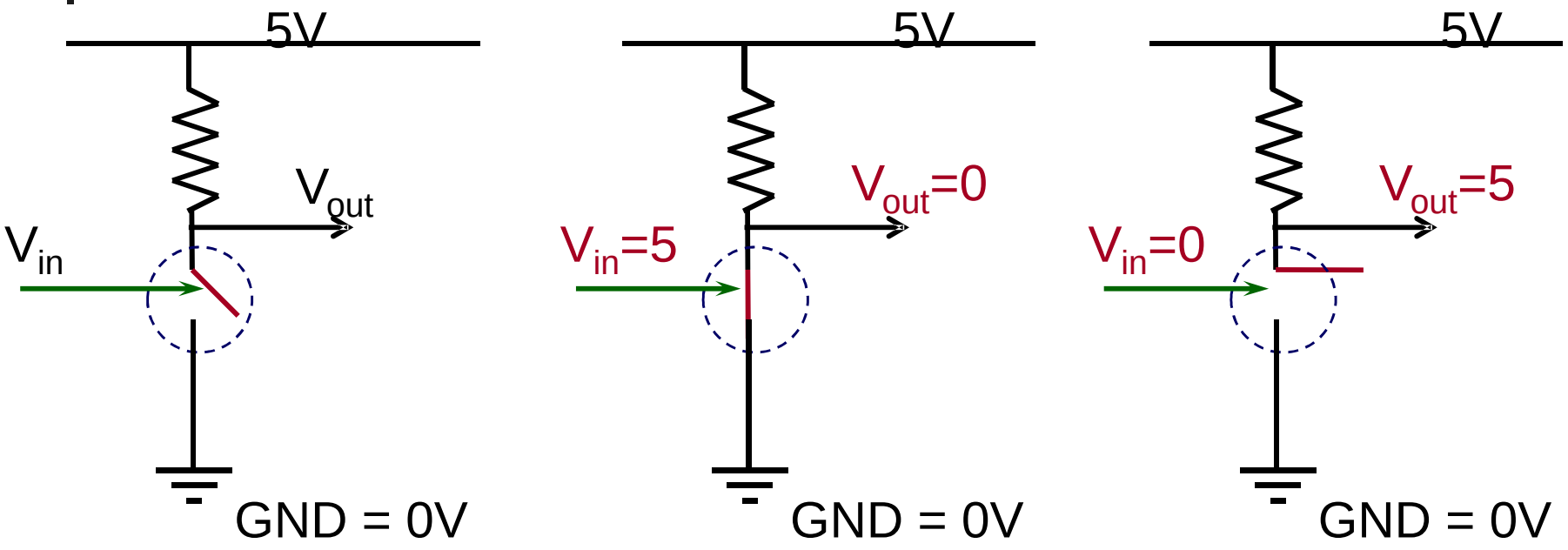
A simple on/off switch with control

Threshold

If *Control* is > **2.5V**, switch is closed
otherwise, switch is open.

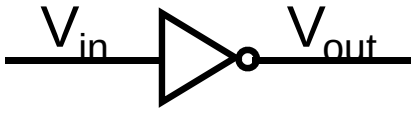
Note: Assume switches are always closed with higher voltage, open with lower voltage.

MẠCH ĐIỆN DÙNG SWITCH

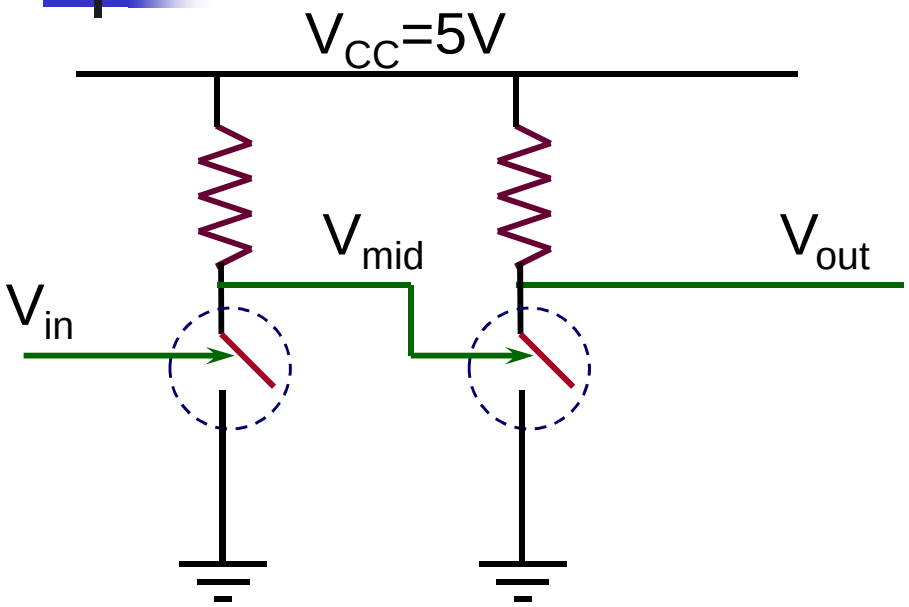


V_{in}	switch	V_{out}
0V	open	5V
5V	closed	0V

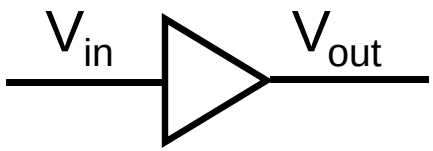
Inverter



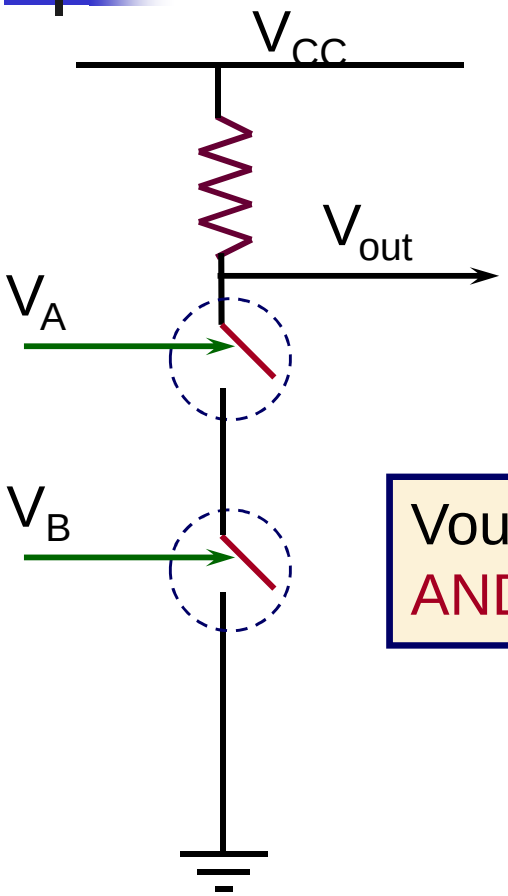
DÙNG OUTPUT LÀM INPUT



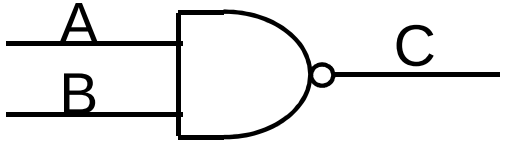
V_{in}	V_{mid}	V_{out}
0V	5V	0V
5V	0V	5V



Buffer

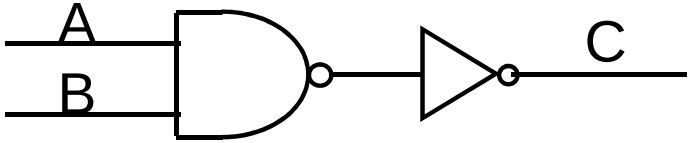


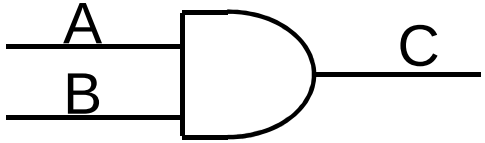
V_A	V_B	V_{out}
0V	0V	5V
0V	5V	5V
5V	0V	5V
5V	5V	0V



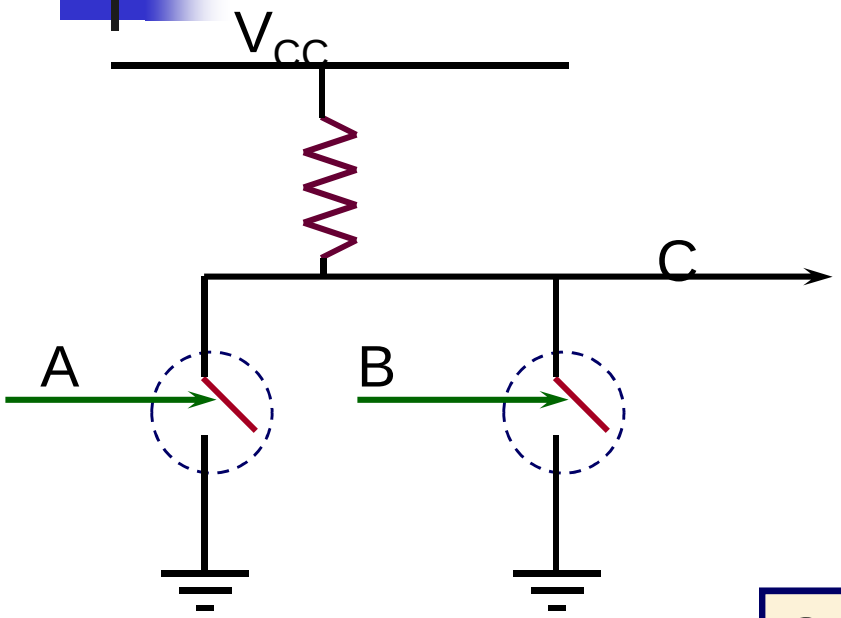
NAND gate

Vout is 0V only if V_A AND V_B are both 5V



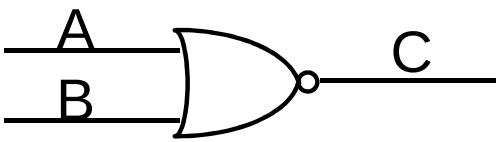


AND gate



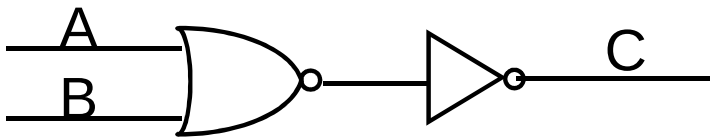
L = 0V, H = 5V

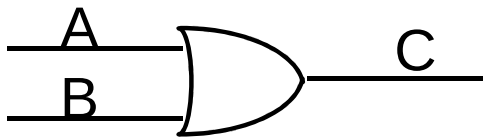
A	B	C
L	L	H
L	H	L
H	L	L
H	H	L



NOR gate

C is L if A OR B is H





OR gate