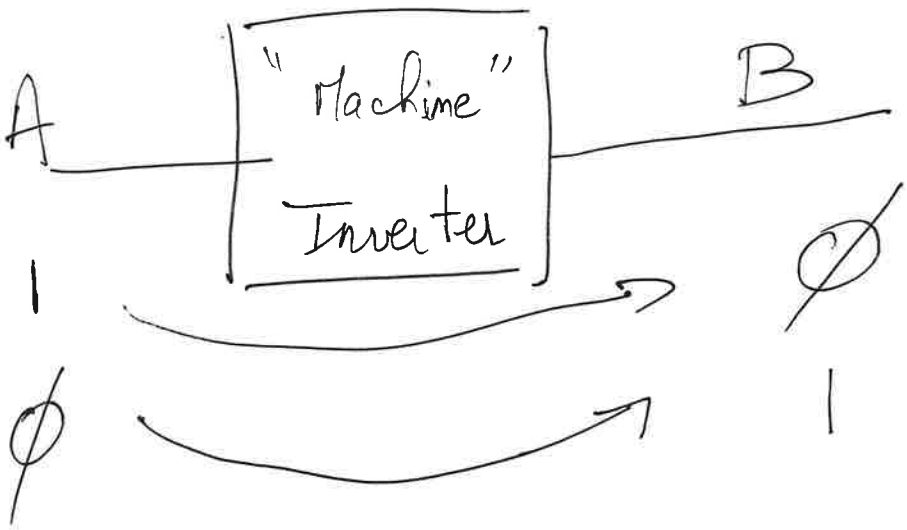
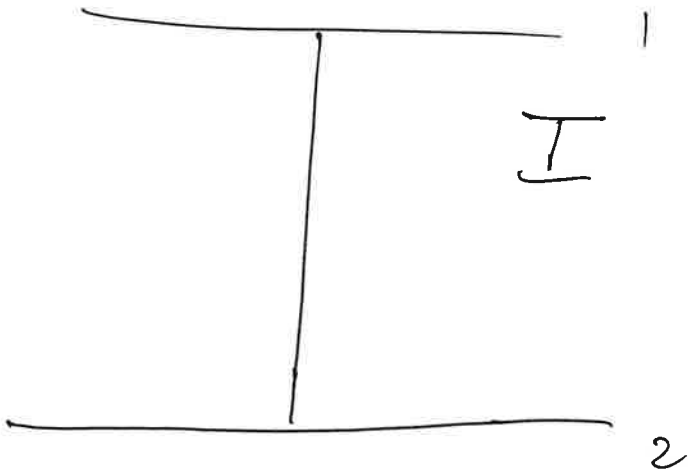
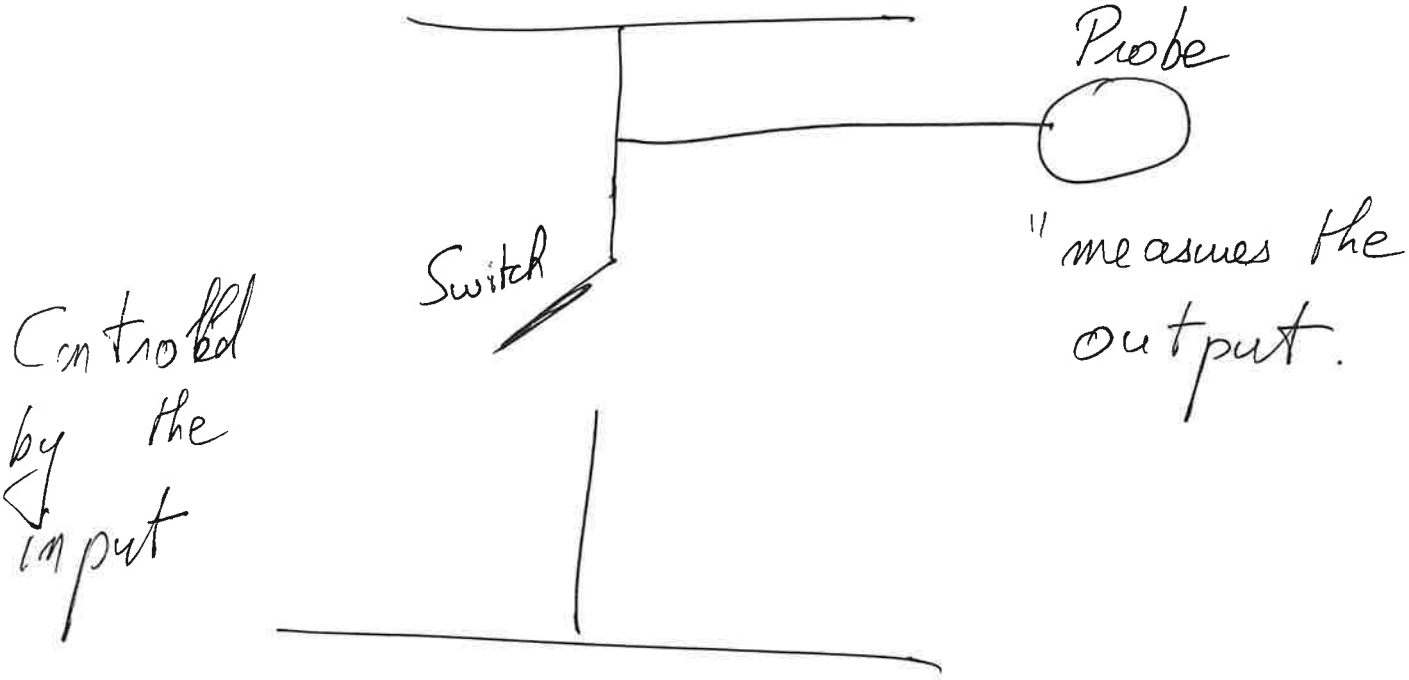
Compute

I) Simplest bit manipulation : Inverter



How could that work?

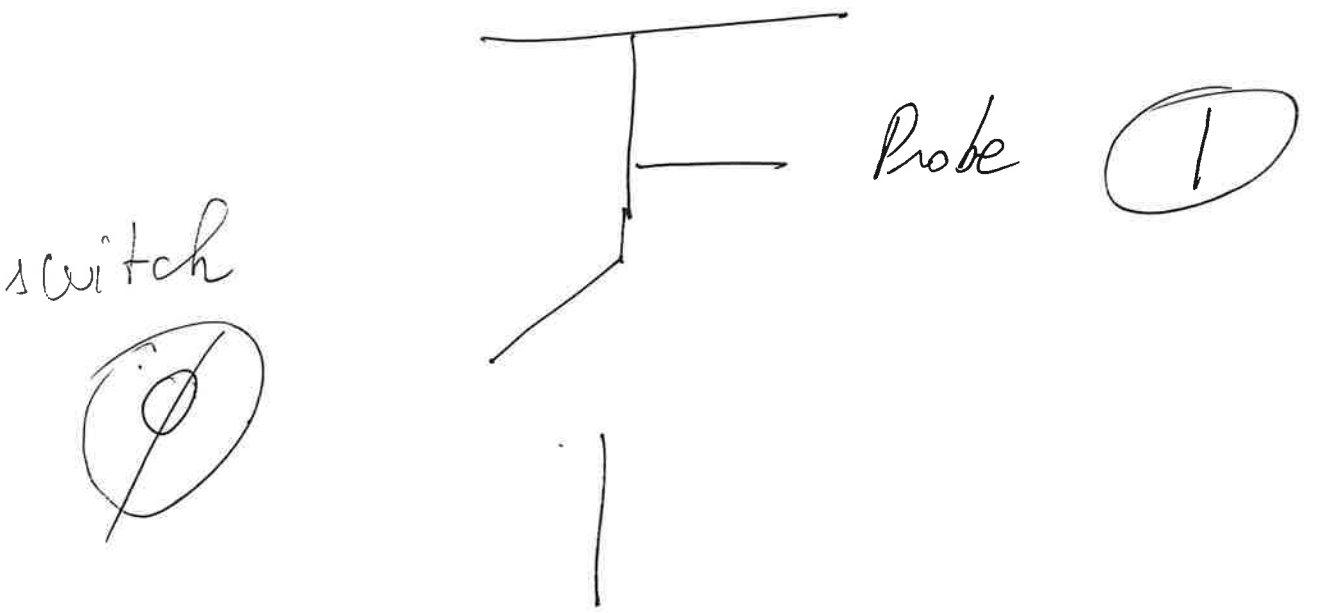


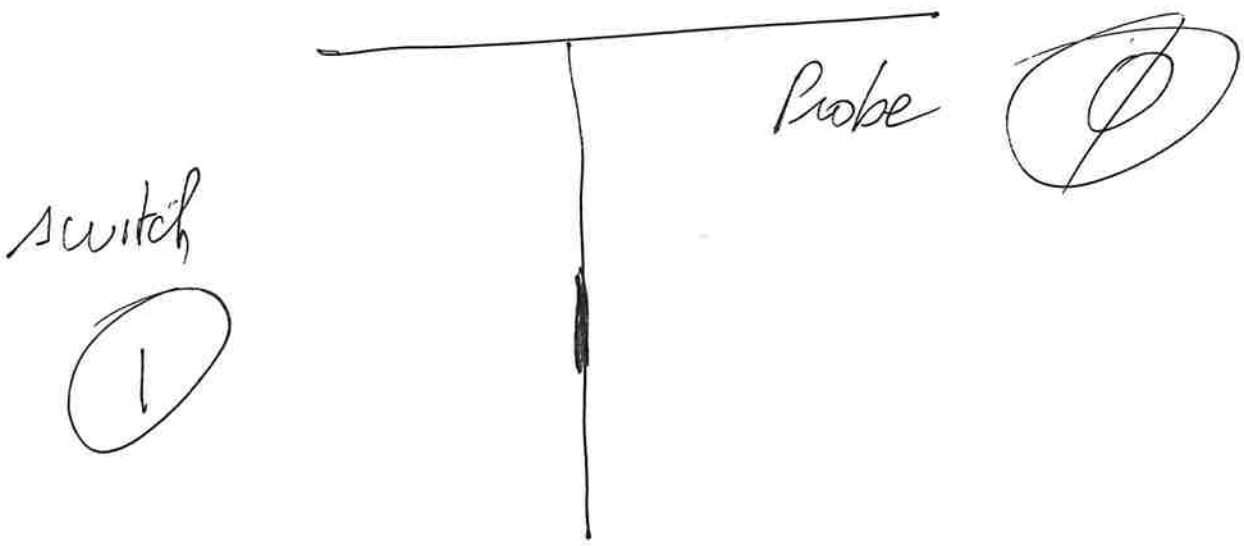


Probe: if the circuit is "working", the probe does not detect anything → ∅

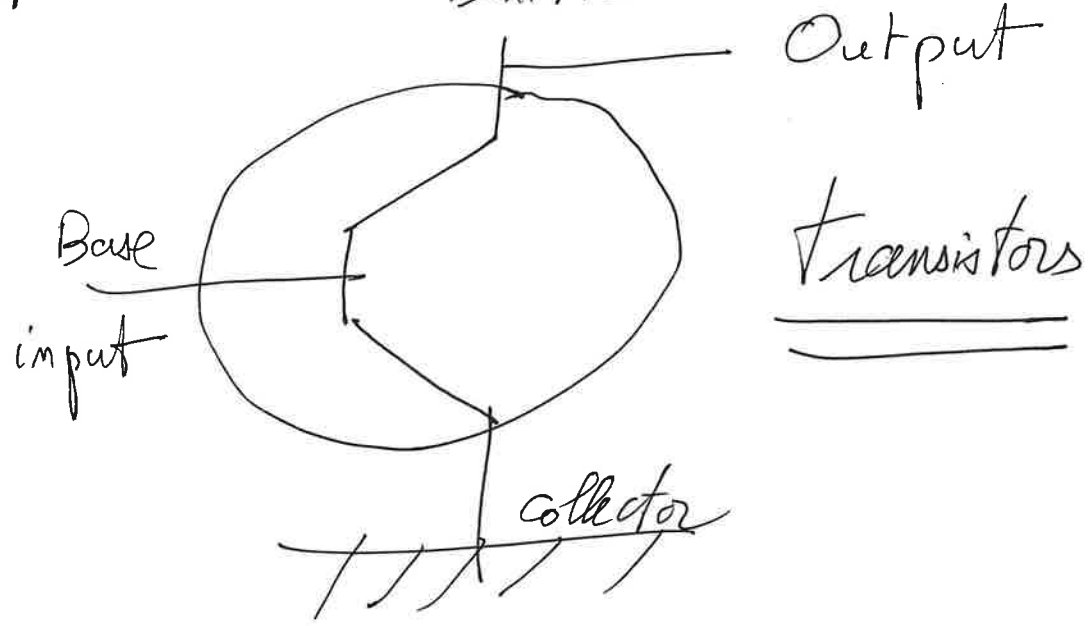
if the circuit is "broken", then the probe reacts → 1

Now let us see what happen with switch / probe:

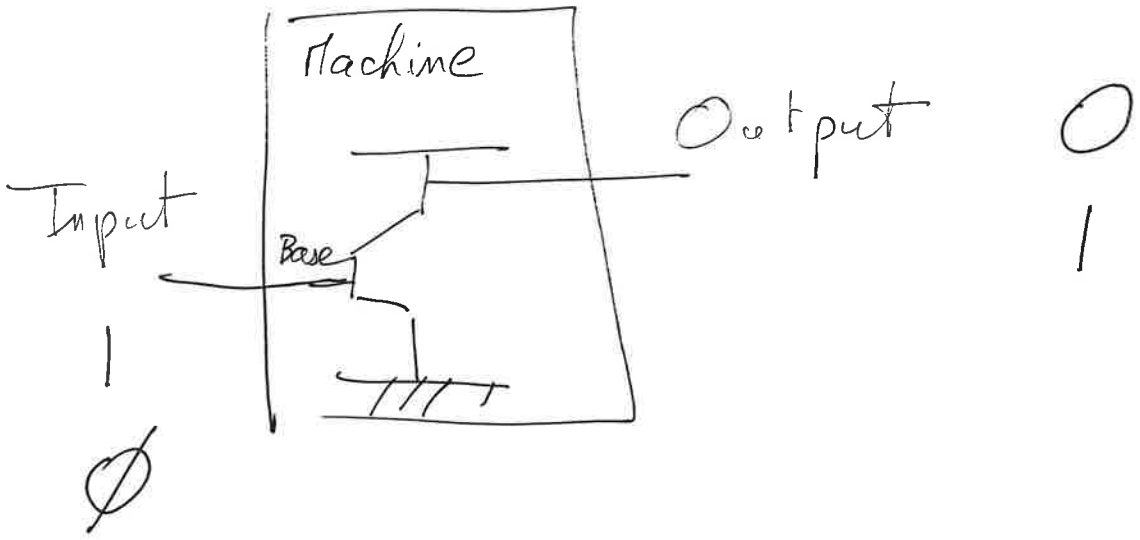




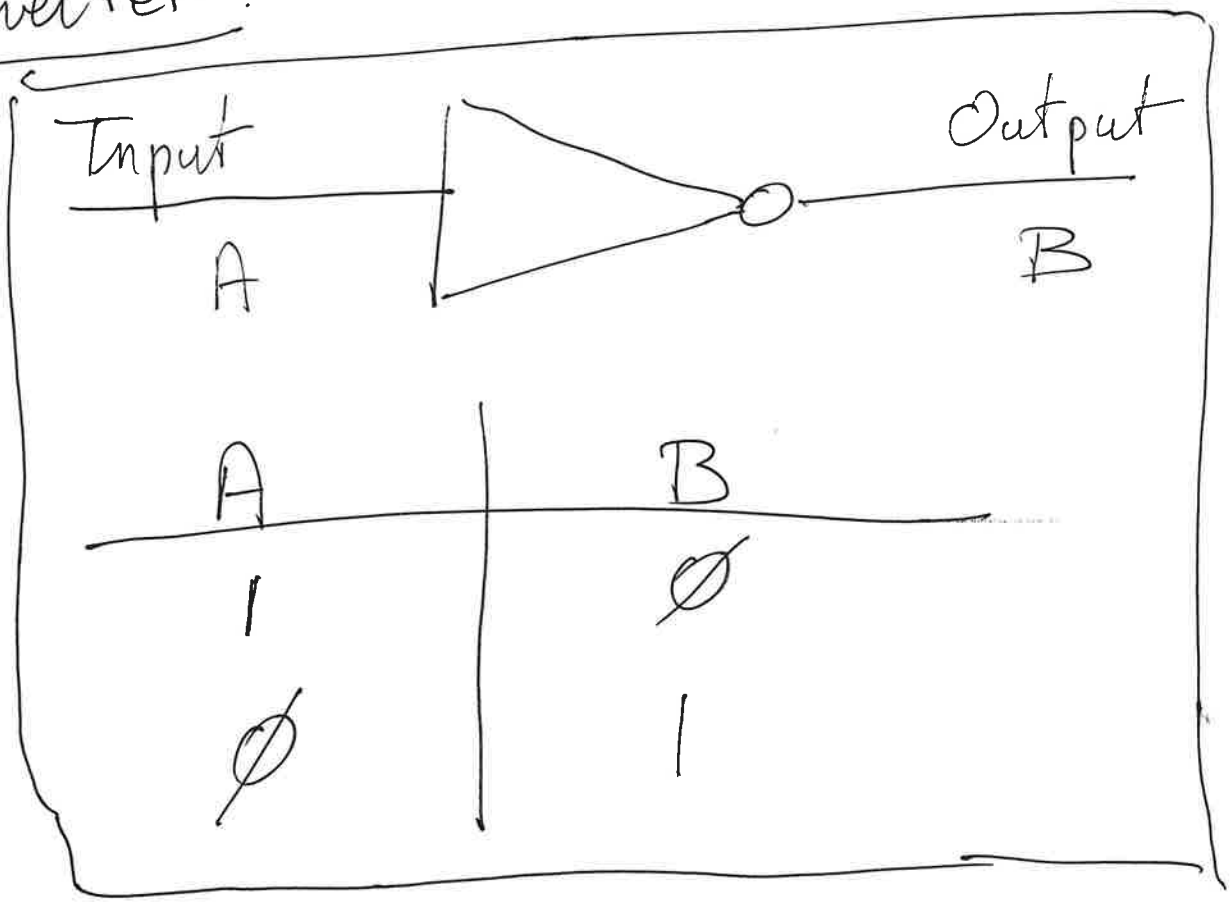
Represent it as Emitter



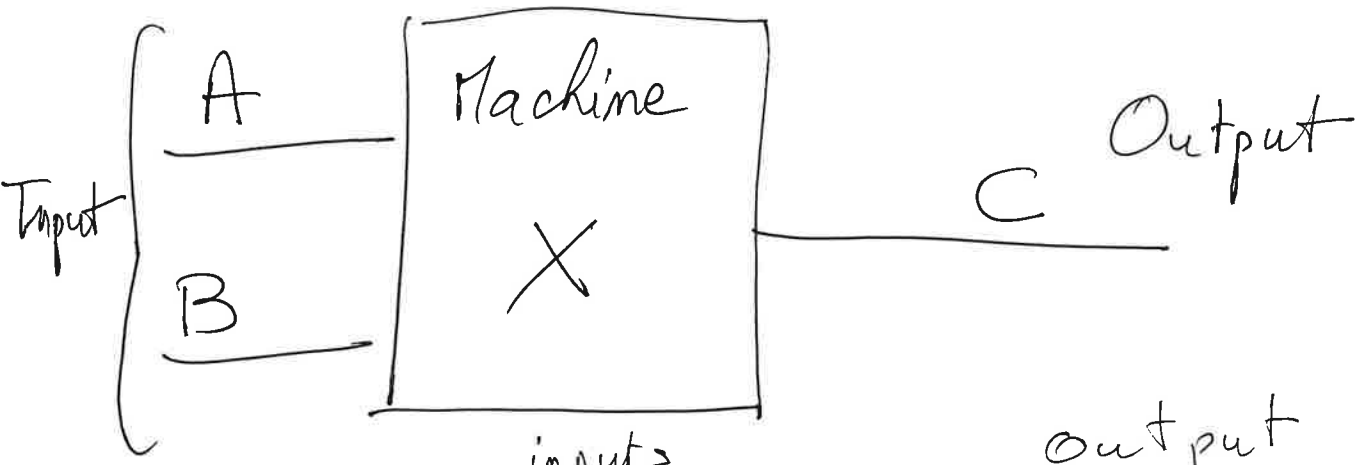
transistors



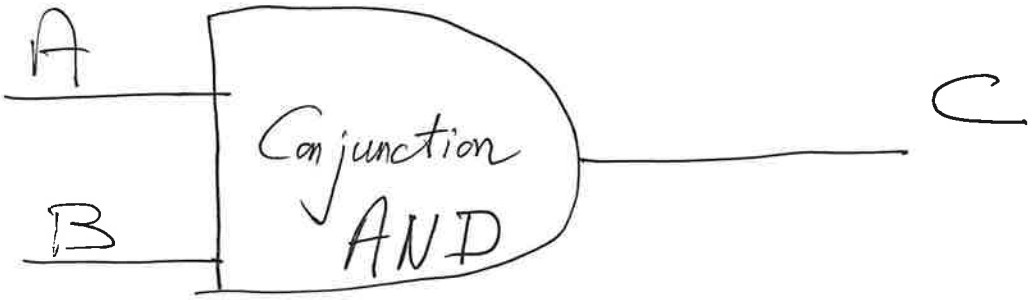
Inverter:



II) The multiplication



input		output
A	B	C
1	1	1
1	0	0
0	1	0
0	0	0



In math,

$$A \times B = C$$

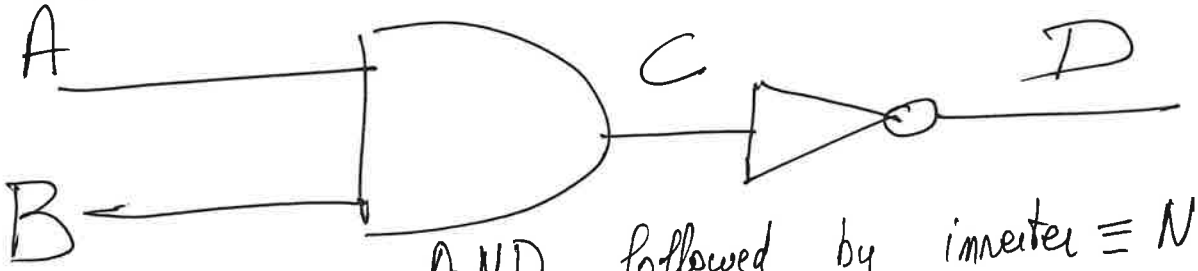
In logic

$$A \cdot B = C$$

or

$$A \wedge B = C$$

Combining machines:



AND followed by inverter ≡ NAND

A	B	C	D
1	1	1	0
1	0	0	1
0	1	0	1
0	0	0	1