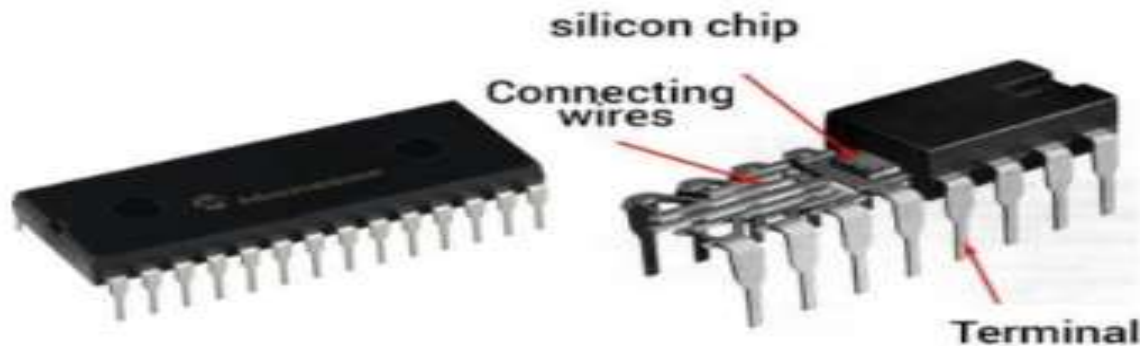




🔍 integrated circuit

Introduction to IC

- **Integrated Circuit** is a microchip or micro-electronic circuit, is a semiconductor wafer on which thousand of tiny resistors, capacitors, diodes & transistors are







Microsoft



**What comes to your mind
when you hear the word**

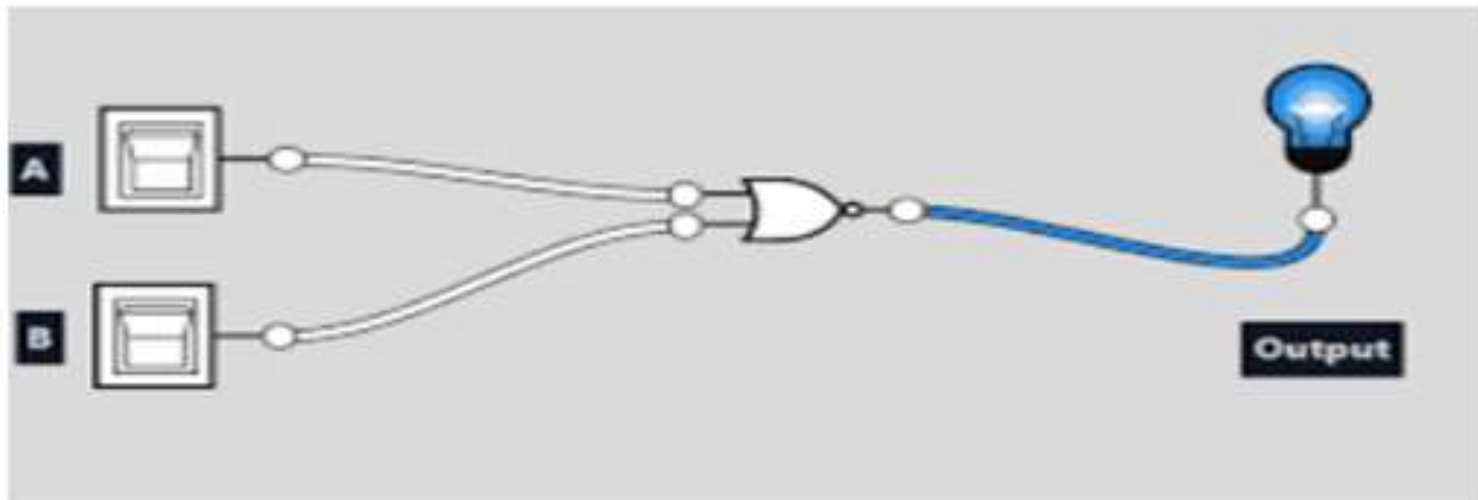
“ GATES ”



LOGIC
GATE

What is Logic Gates ?

- **Logic Gates are the electrical circuit with only one output and one or more inputs.**



Digital Logic Gates

- Digital electronic circuits operate with voltages of two logic levels:
 - Logic Low and Logic High.
 - The range of voltages corresponding to Logic Low is represented with '0'.
 - Similarly, the range of voltages corresponding to Logic High is represented with '1'.
 - The basic digital electronic circuit with one or more inputs and single output is called the Logic gate.

Logic Gates

❖ We can classify these Logic gates into the following three categories.

- Basic gates
- Universal gates
- Exclusive gates

➤ The basic gates are AND, OR & NOT



AND

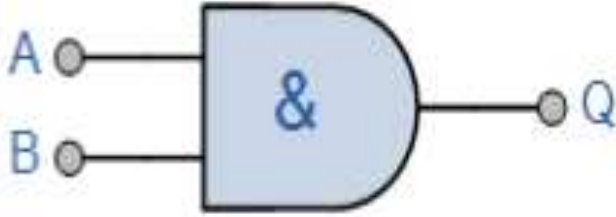


OR

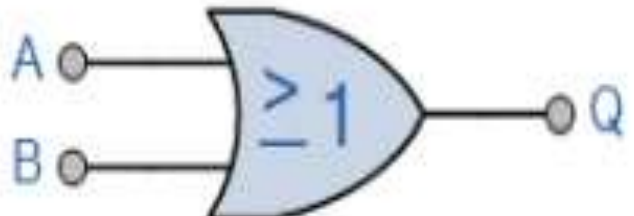


NOT

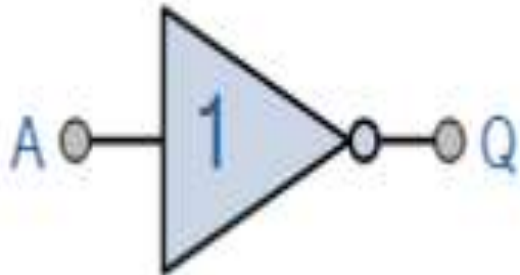
The Logic AND Gate

Symbol	Truth Table		
 <p>2-input AND Digital Logic Gate</p>	B	A	Q
	0	0	0
	0	1	0
	1	0	0
	1	1	1
Boolean Expression $Q = A.B$	Read as A AND B gives Q		

The Logic OR Gate

Symbol	Truth Table		
	B	A	Q
	0	0	0
	0	1	1
	1	0	1
	1	1	1
Boolean Expression $Q = A + B$	Read as A OR B gives Q		

The NOT gate (Inverter)

Symbol	Truth Table	
	A	Q
	0	1
	1	0
Boolean Expression $Q = \text{not } A$ or \bar{A}	Read as inverse of A gives Q	

Logic Gates

Applications in real life



Applications in real life

■ Security Purposes

ON/OFF

Person Sensor

Alarm Switch

ON/OFF



Burglar Alarm

ON/OFF

If both the Person Sensor AND the Alarm Switch are on then the Burglar Alarm is activated.



Applications in real life

■ Safety Purposes

Input		Output
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

Machine On=1

Machine Off=0

Door Shut=1

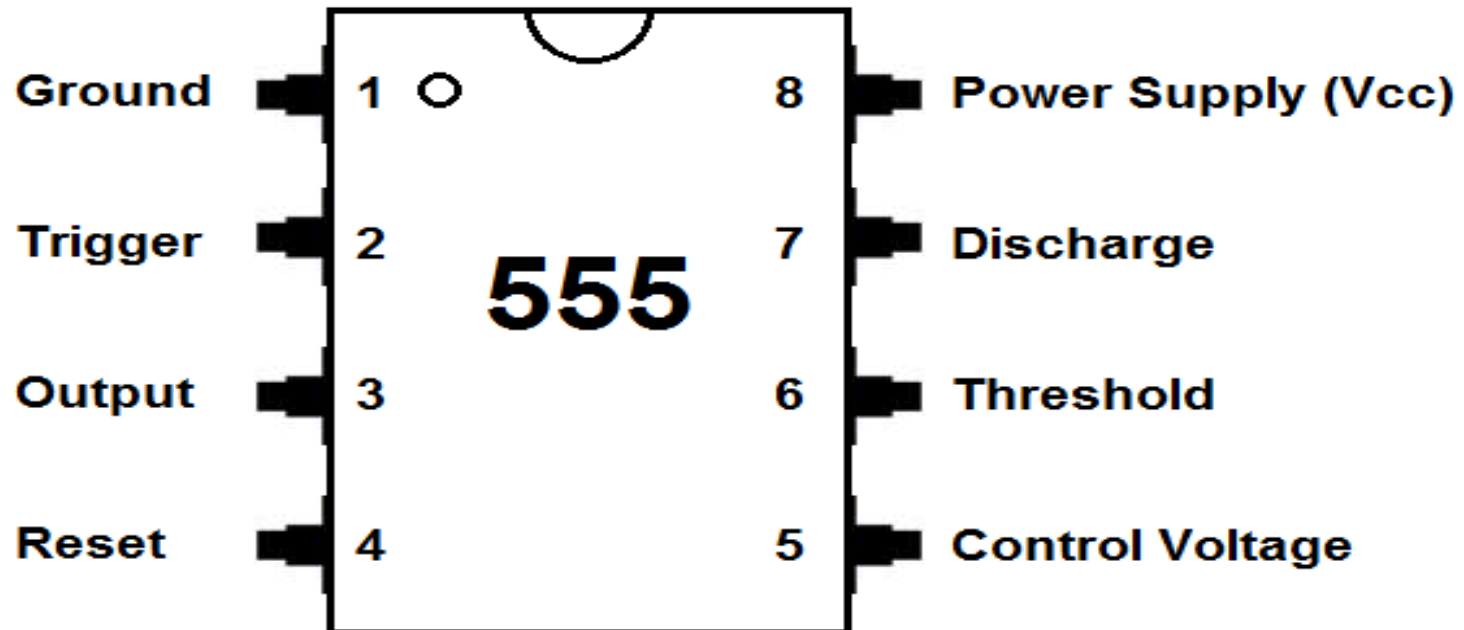
Door Open=0



Output=1 Only if
Machine On
AND Door Shut

555 Timer IC

- The 555 Timer IC got its name from the three 5K Ω resistors that are used in its voltage divider network. This IC is useful for generating accurate time delays and oscillations.

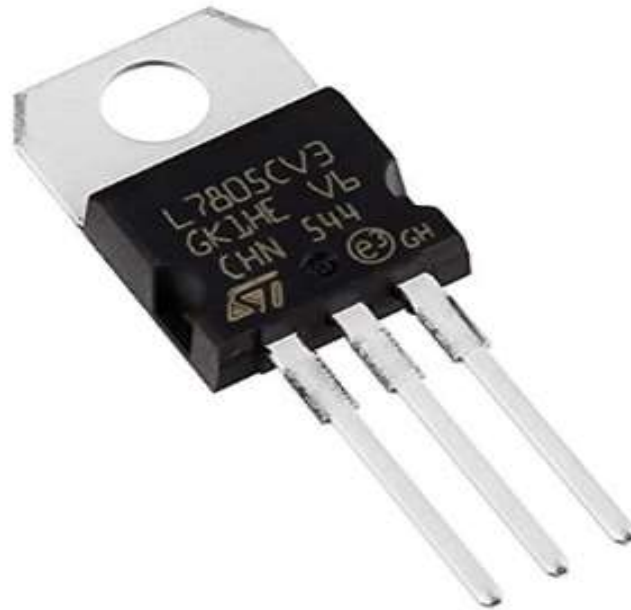


Applications of 555 Timer IC :

- **For automatically turning Off mobile chargers to prevent overcharging the battery.**
- **To turn Off reading lights automatically after the set duration.**

Voltage Regulator

- ❖ A voltage regulator is an integrated circuit (IC) that provides a constant fixed output voltage regardless of load or input voltage change





THANK YOU