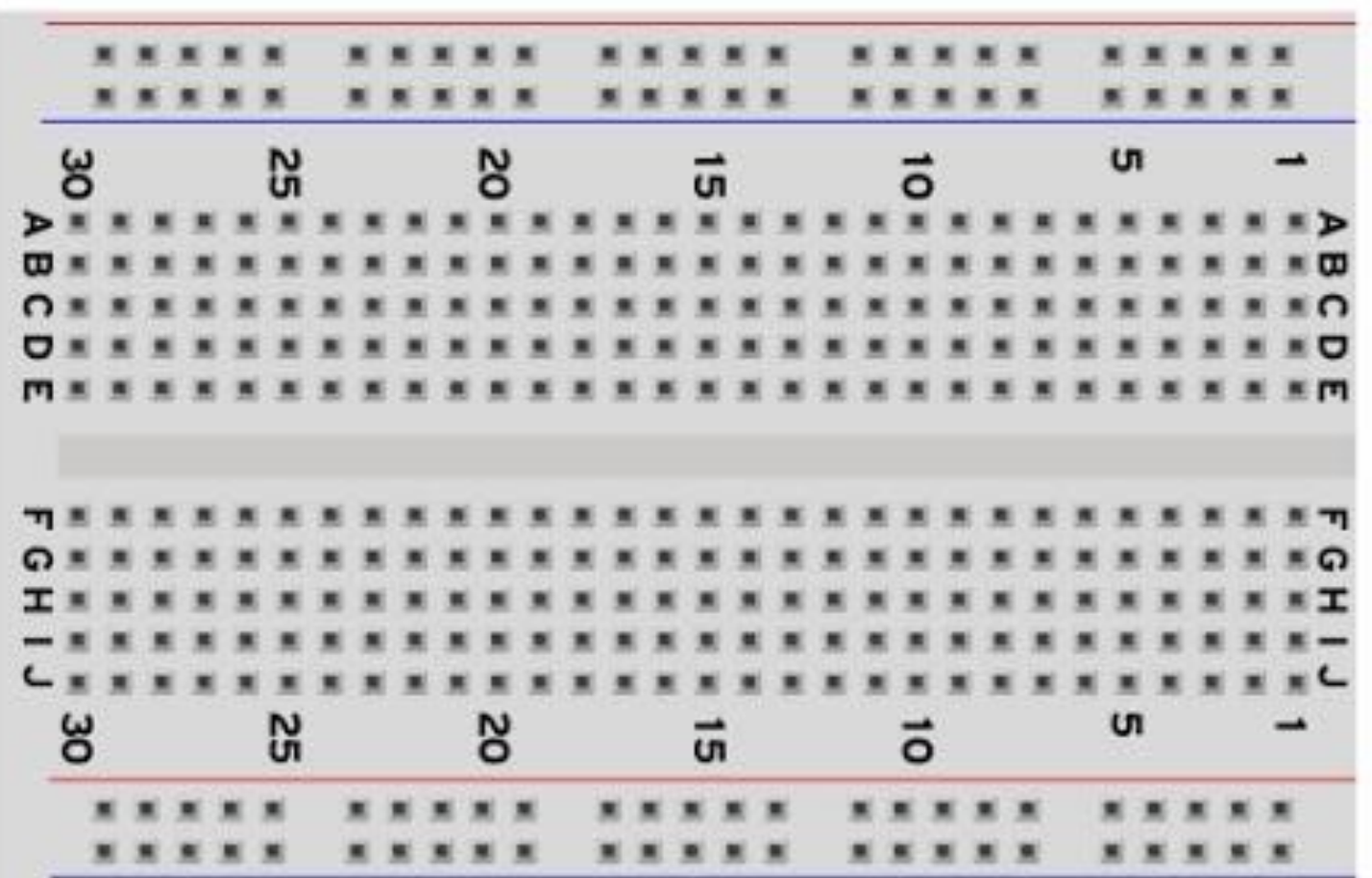


# Project 1: Digital Electronics using Breadboard

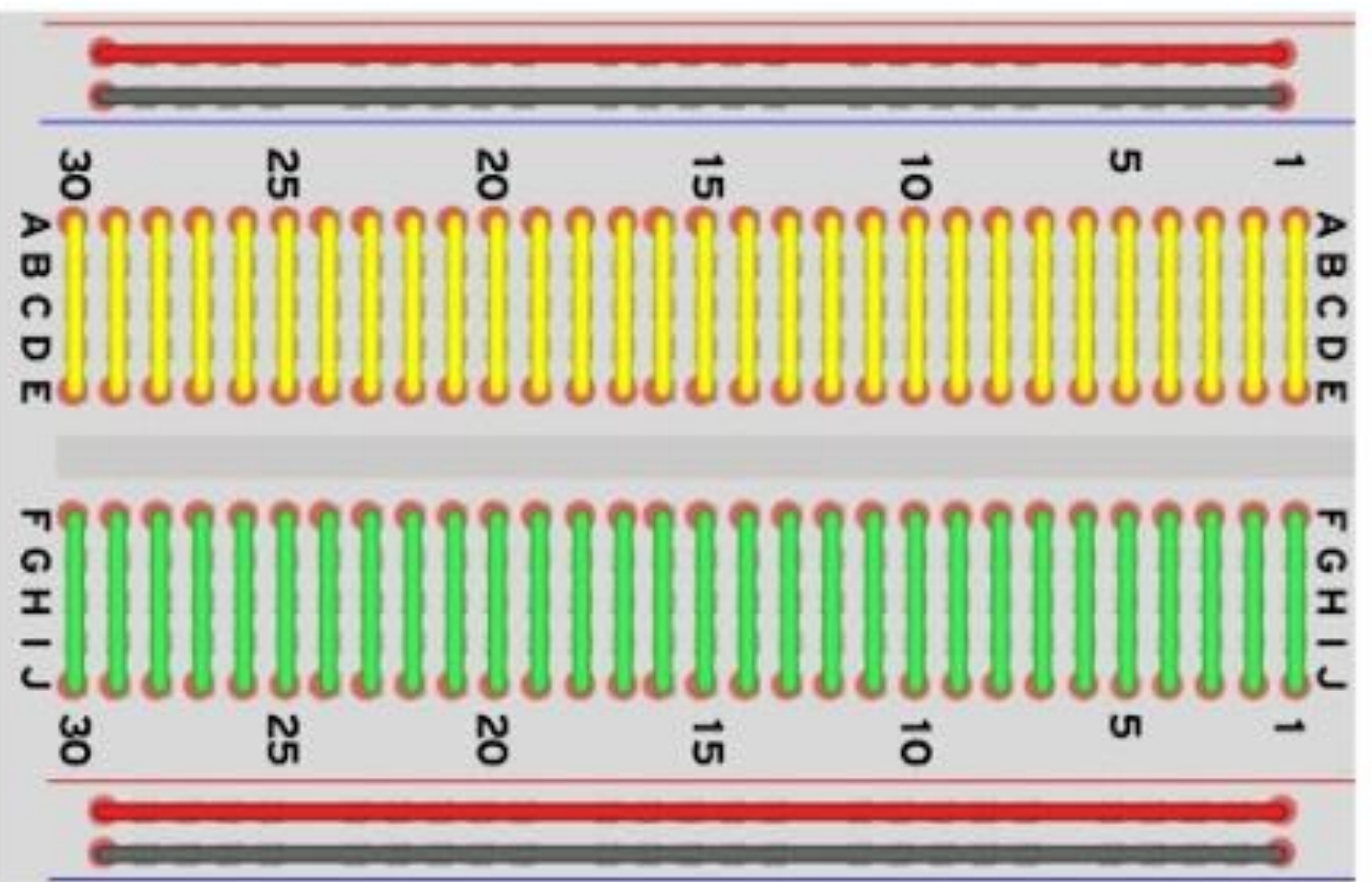
Nahin Ul Sadad  
Lecturer  
CSE, RUET

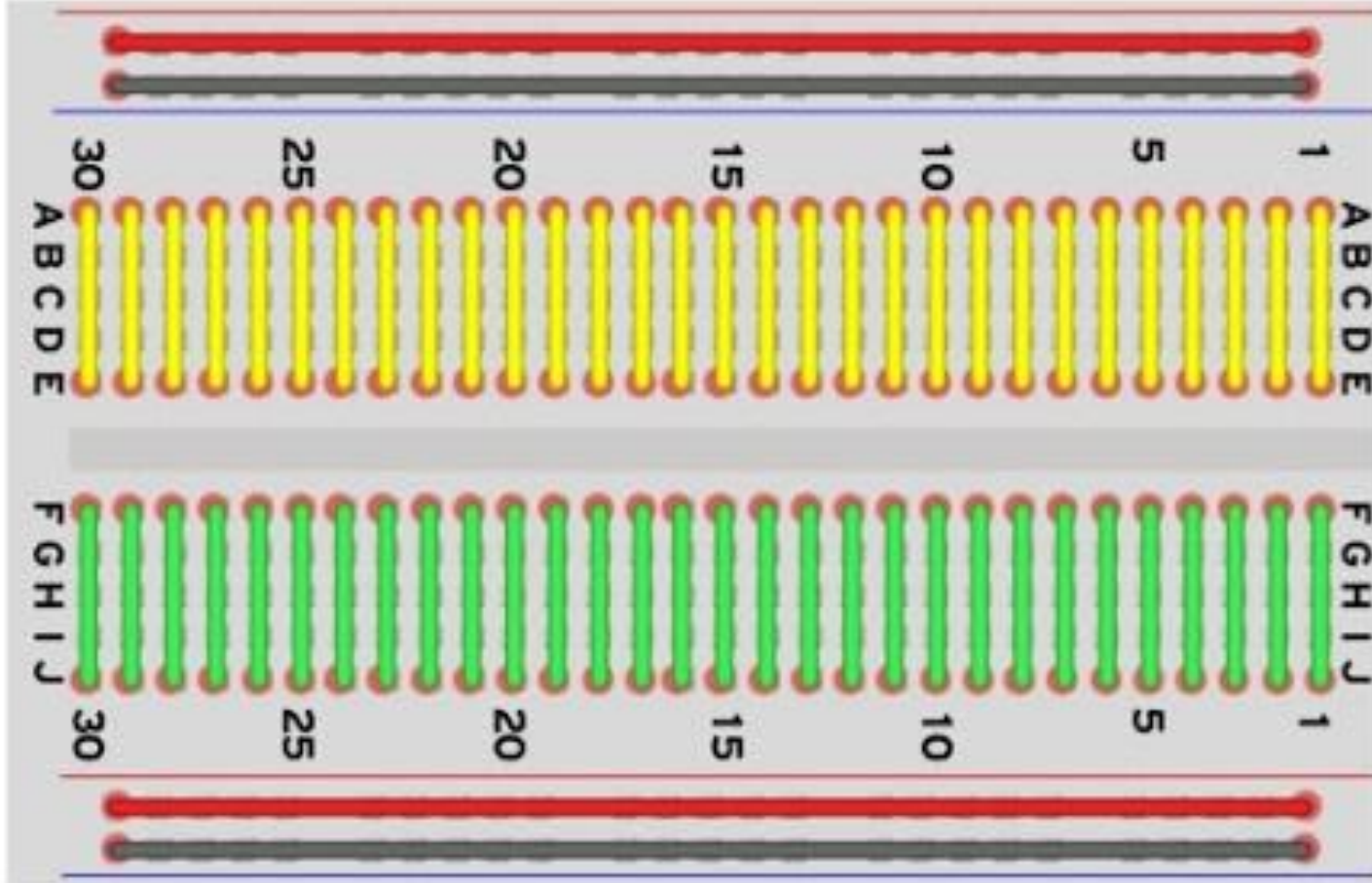
প্রশ্ন: Breadboard এর কাজ কি?

**উত্তরঃ** A breadboard is a construction base for prototyping of electronics.



প্রশ্ন: Breadboard কিভাবে Use করে?





Used for prototyping

Used for power supply.

প্রশ্ন: Breadboard এ Power Supply কিভাবে দিবো?





**9V Battery**

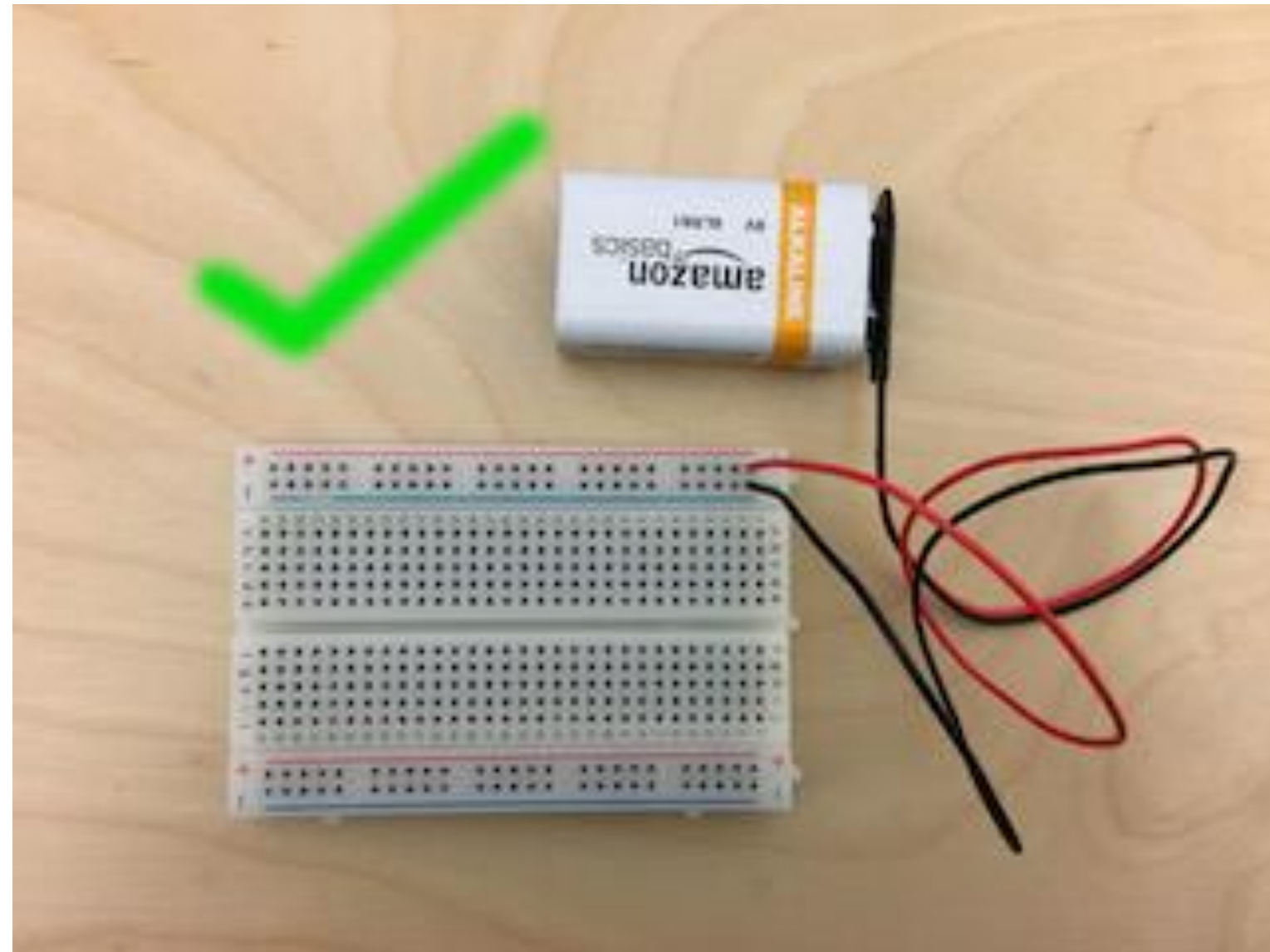


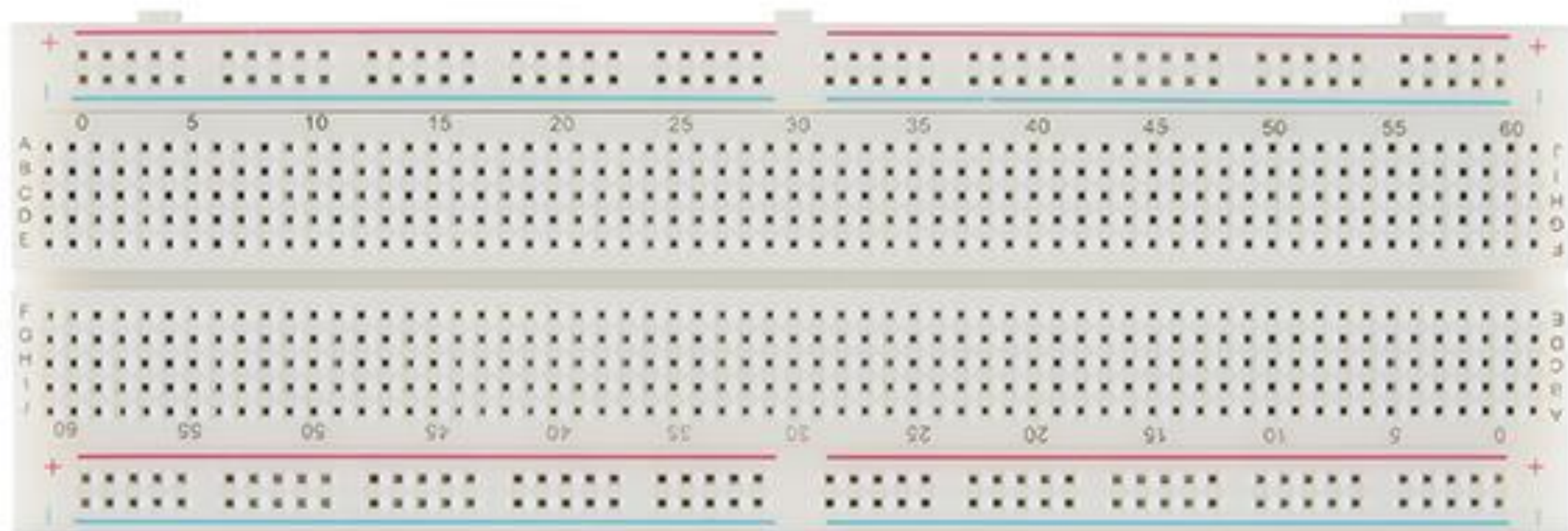
**9V Battery**

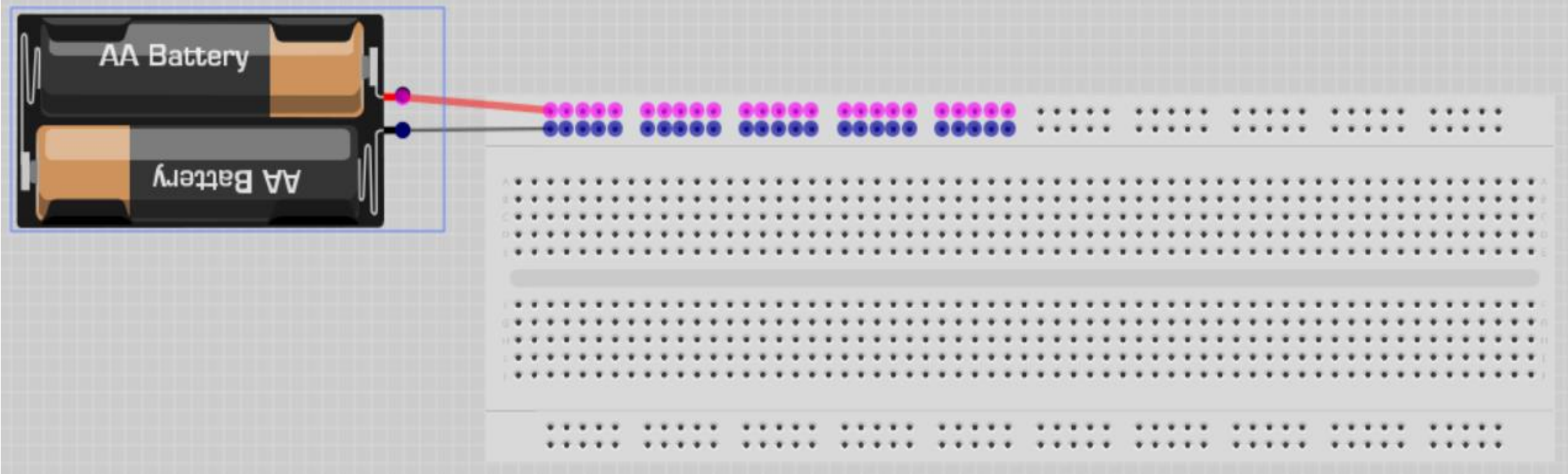
+

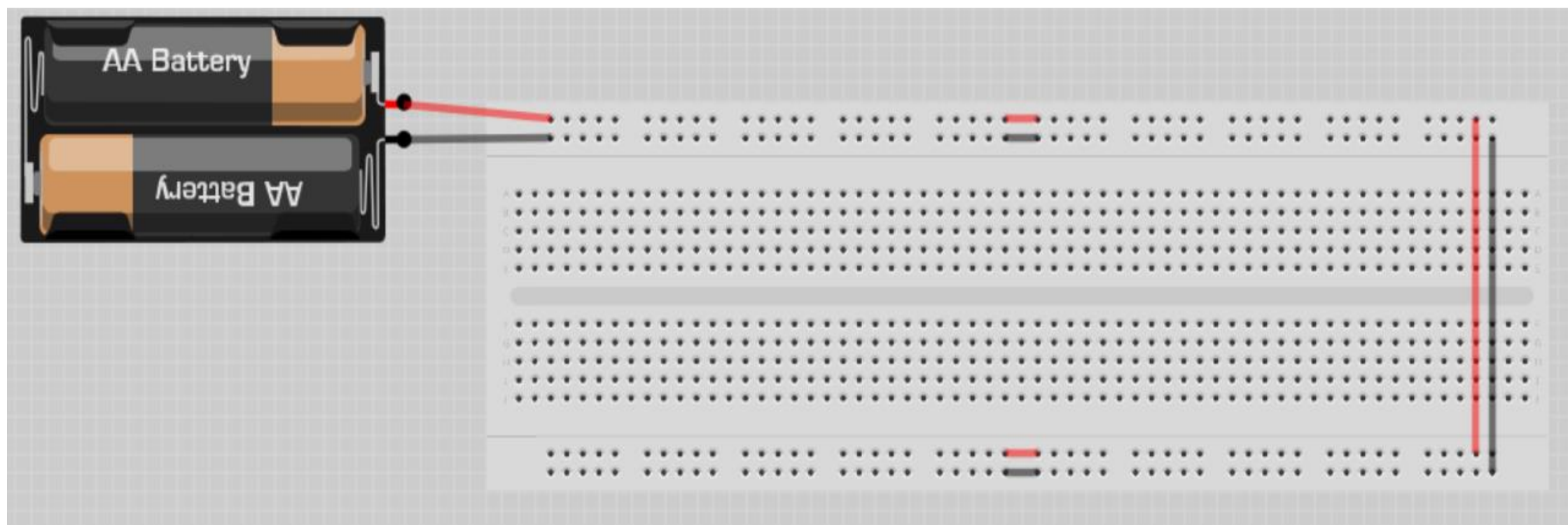


**Connector**



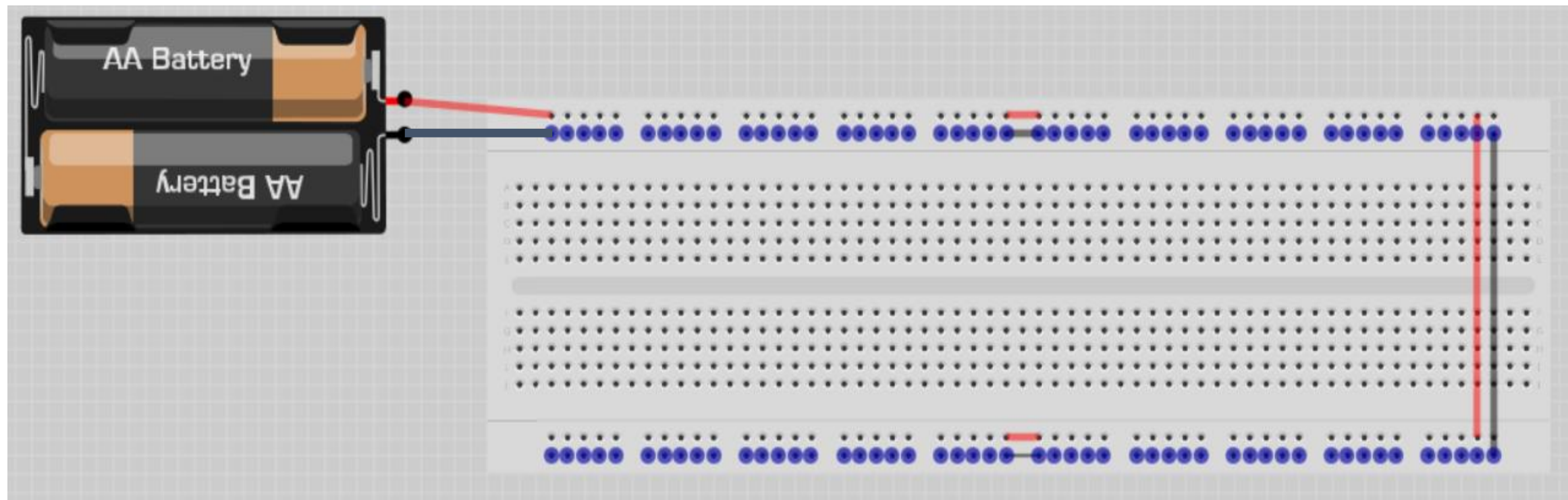






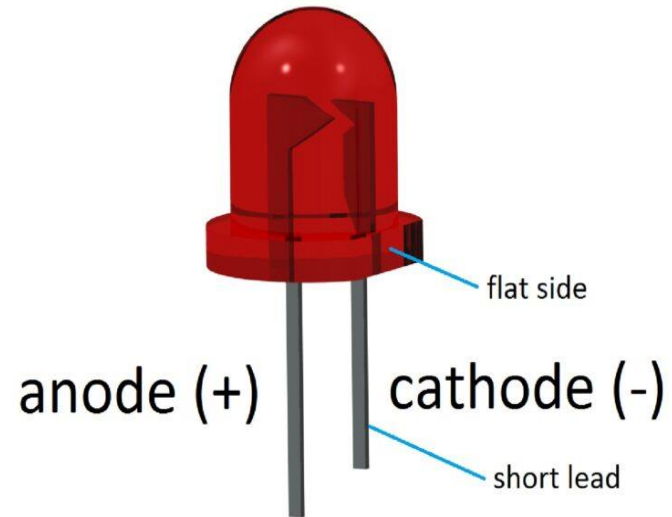
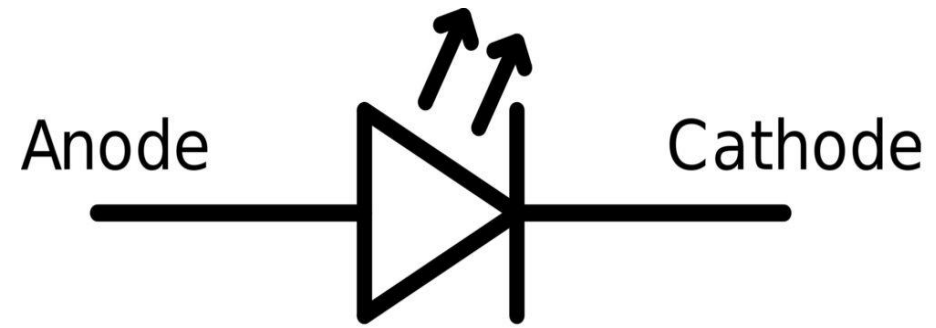




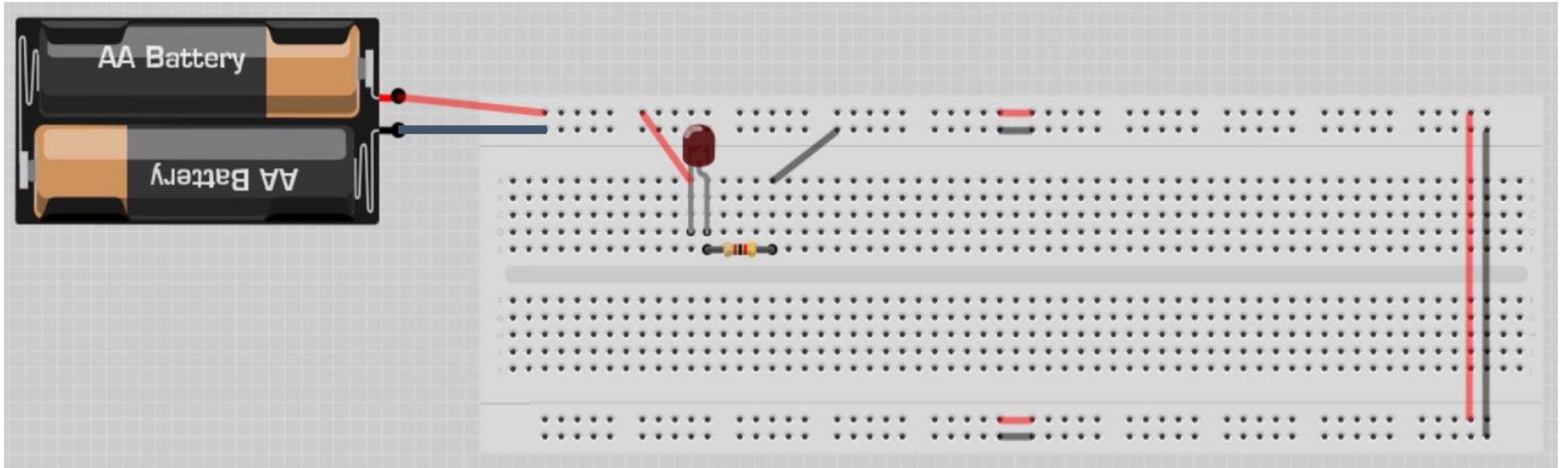




প্রশ্ন: Breadboard এ কিভাবে LED জালাব?



উত্তরঃ



প্রশ্নঃ Digital Electronics Project এর জন্য  
কি IC ব্যবহার করব?

# উত্তরঃ



**7404 IC**  
It has 6 NOT gates.

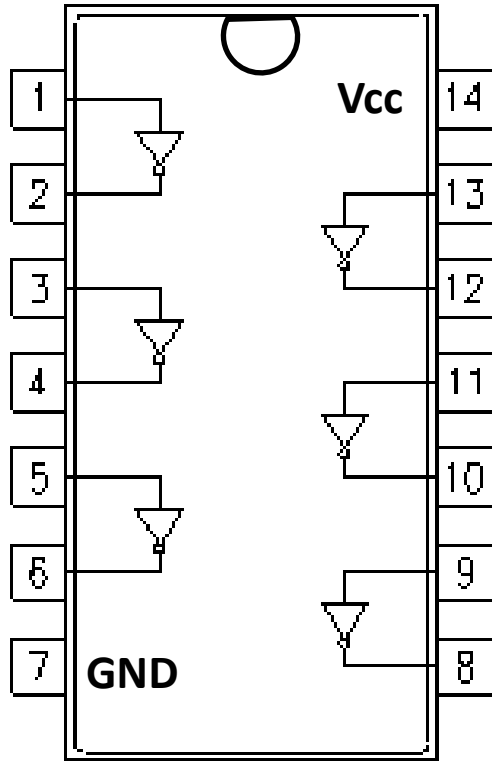


**7408 IC**  
It has 4 2-input AND gates.

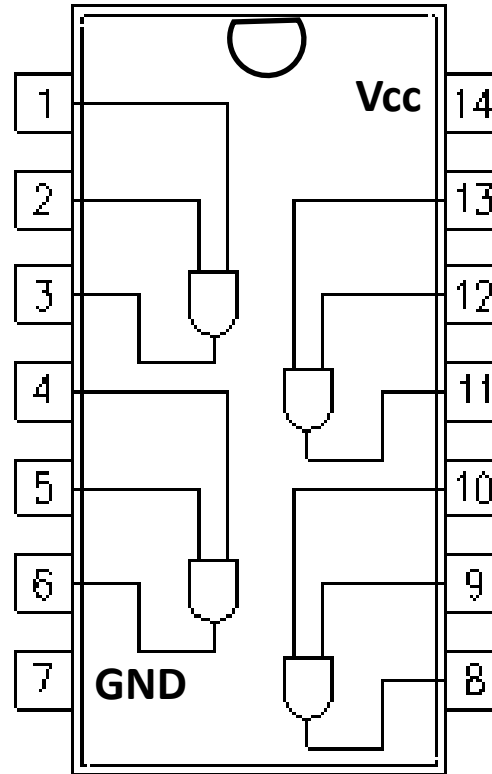


**7432 IC**  
It has 4 2-input OR gates.

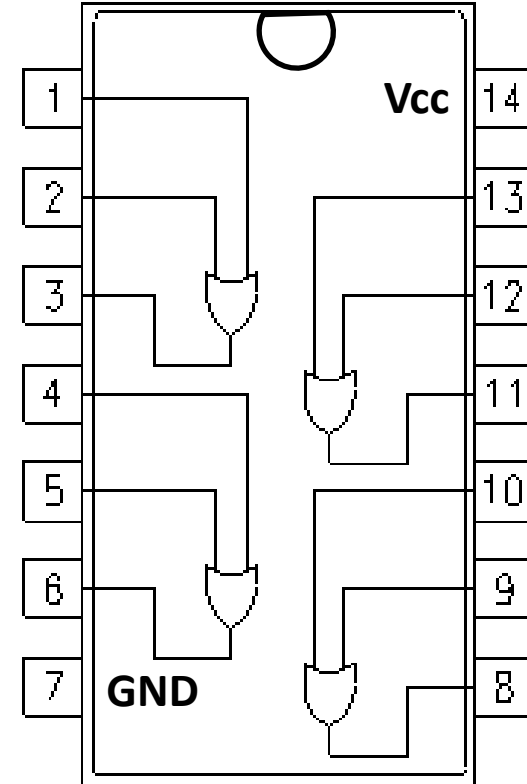
# উত্তরঃ



**7404 IC**  
It has 6 NOT gates.



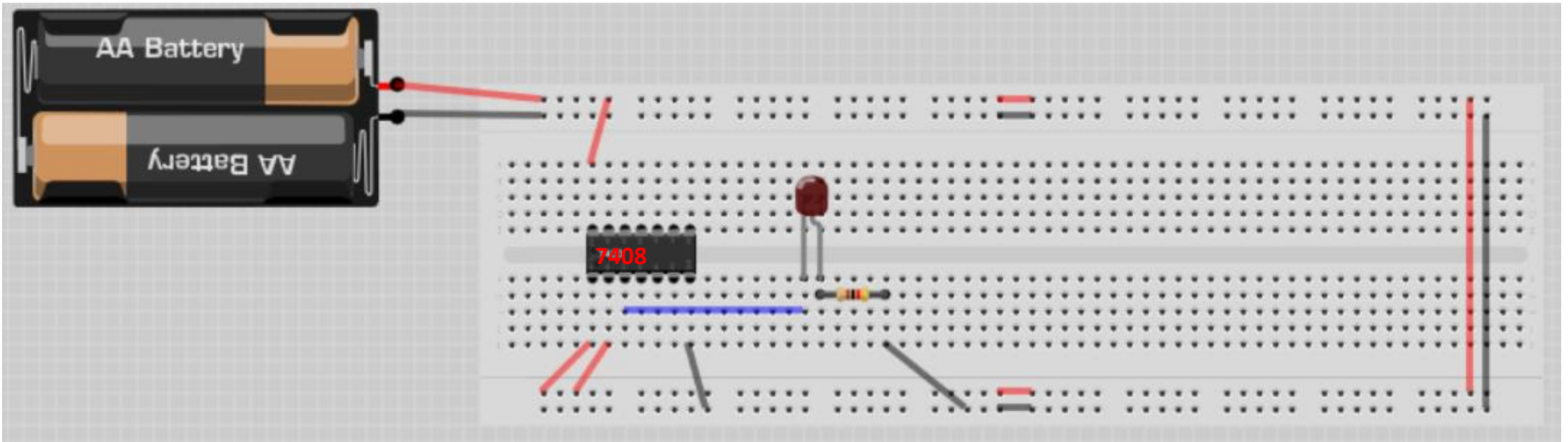
**7408 IC**  
It has 4 2-input AND gates.



**7432 IC**  
It has 4 2-input OR gates.

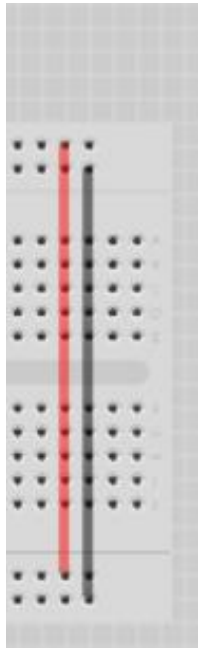
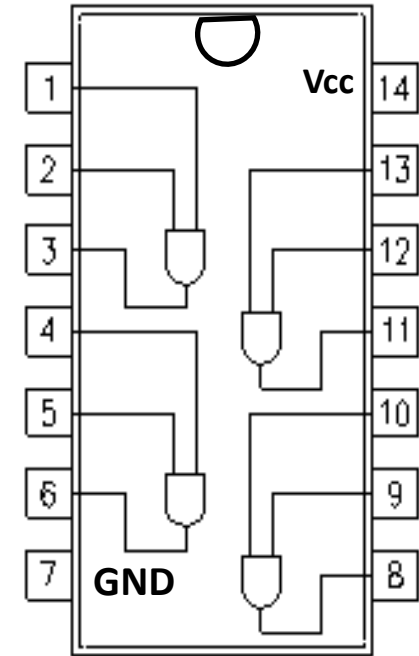
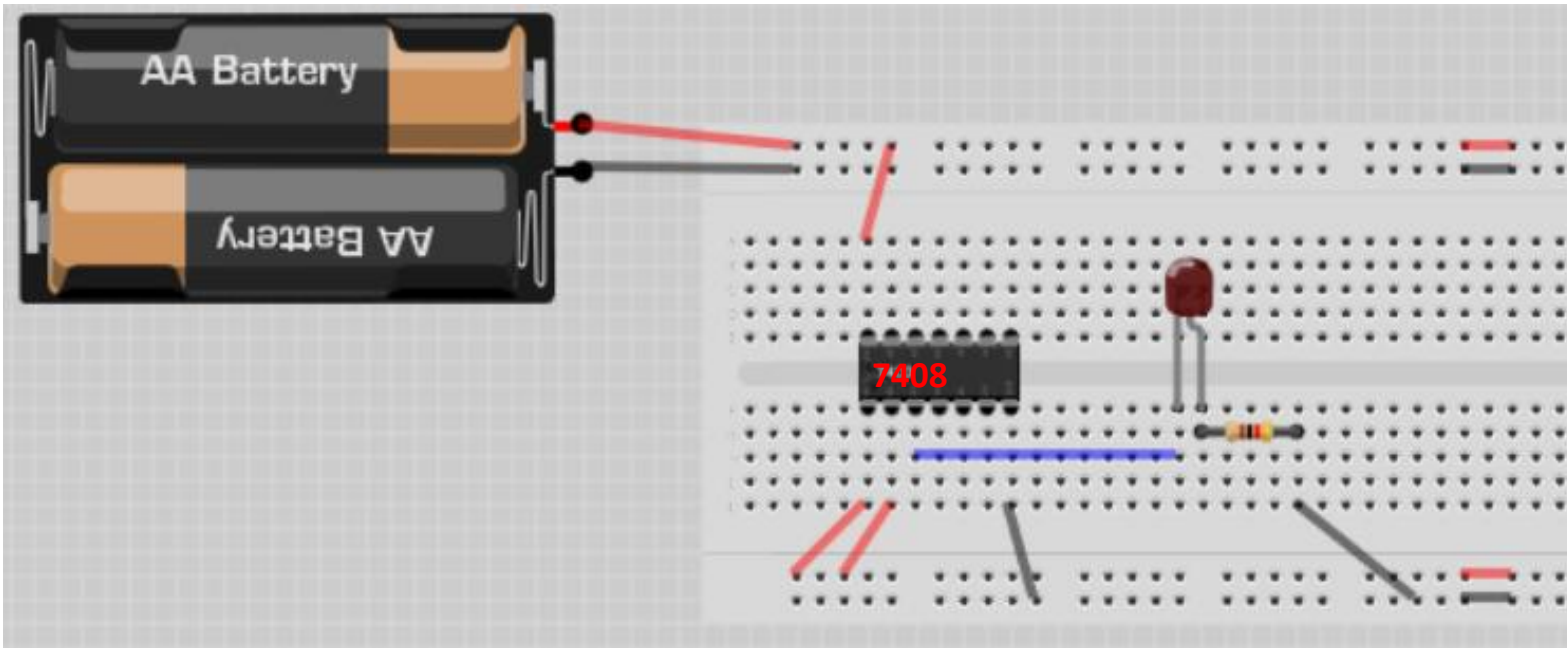
প্রশ্ন: Show use of 2 input AND gate in breadboard.

## 2 input AND Gate



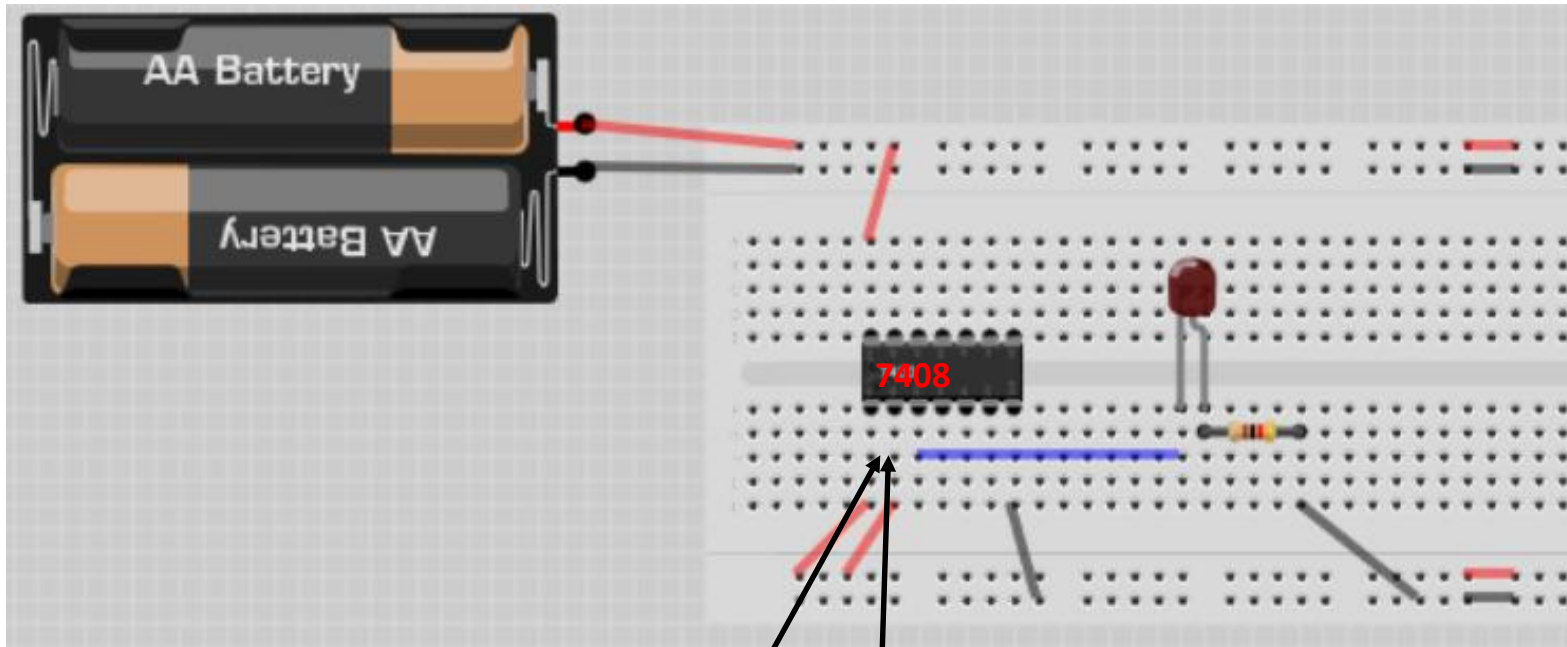


# 2 input AND Gate



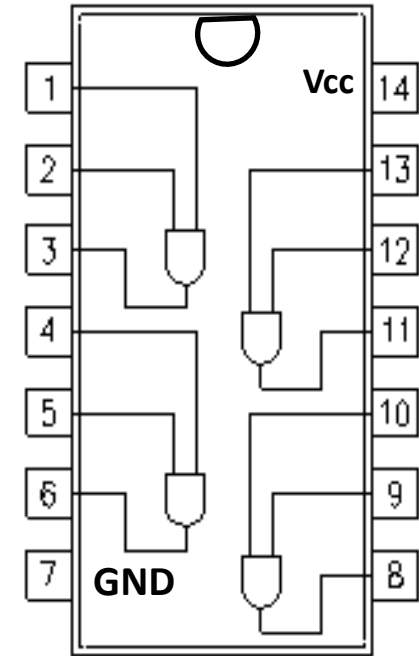
**7408 IC**  
It has 4 2-input AND gates.

# 2 input AND Gate



A=9V

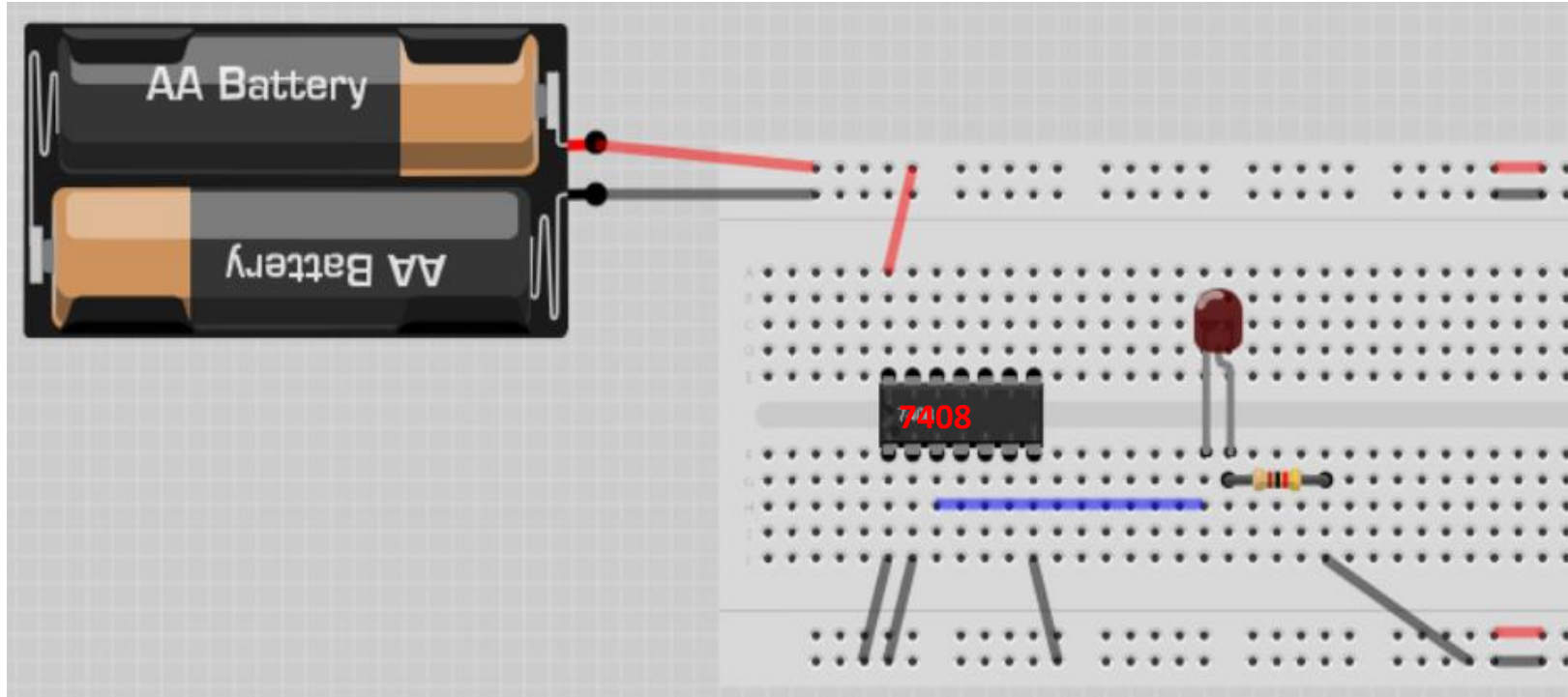
B=9V



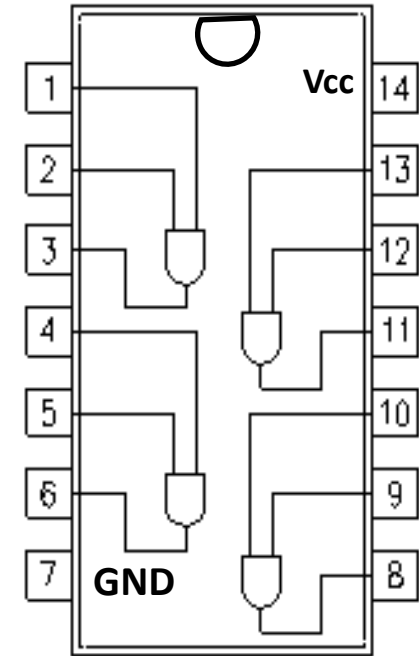
7408 IC

It has 4 2-input AND gates.

# 2 input AND Gate

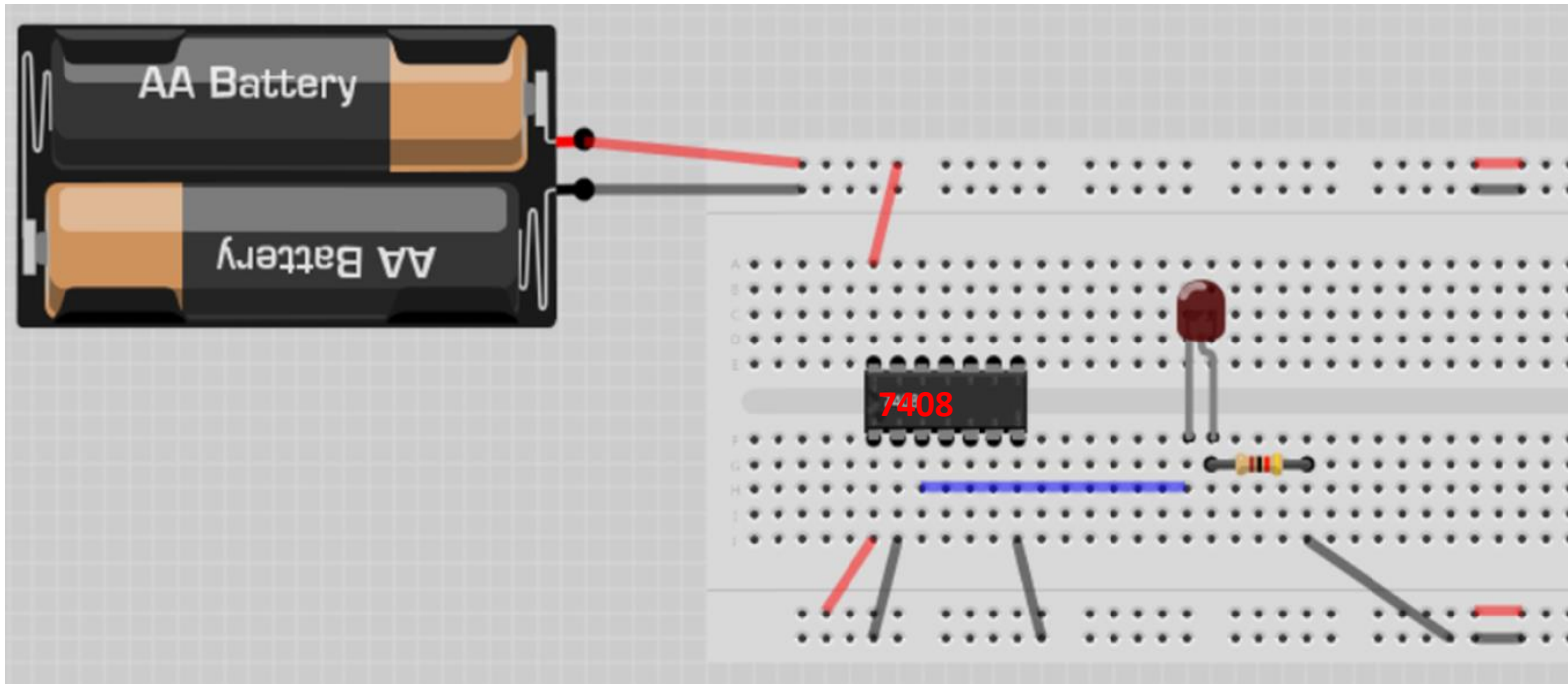


A=0V B=0V

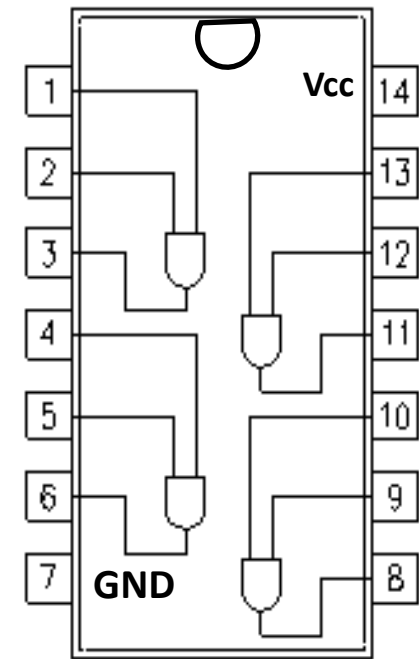


7408 IC  
It has 4 2-input AND gates.

# 2 input AND Gate



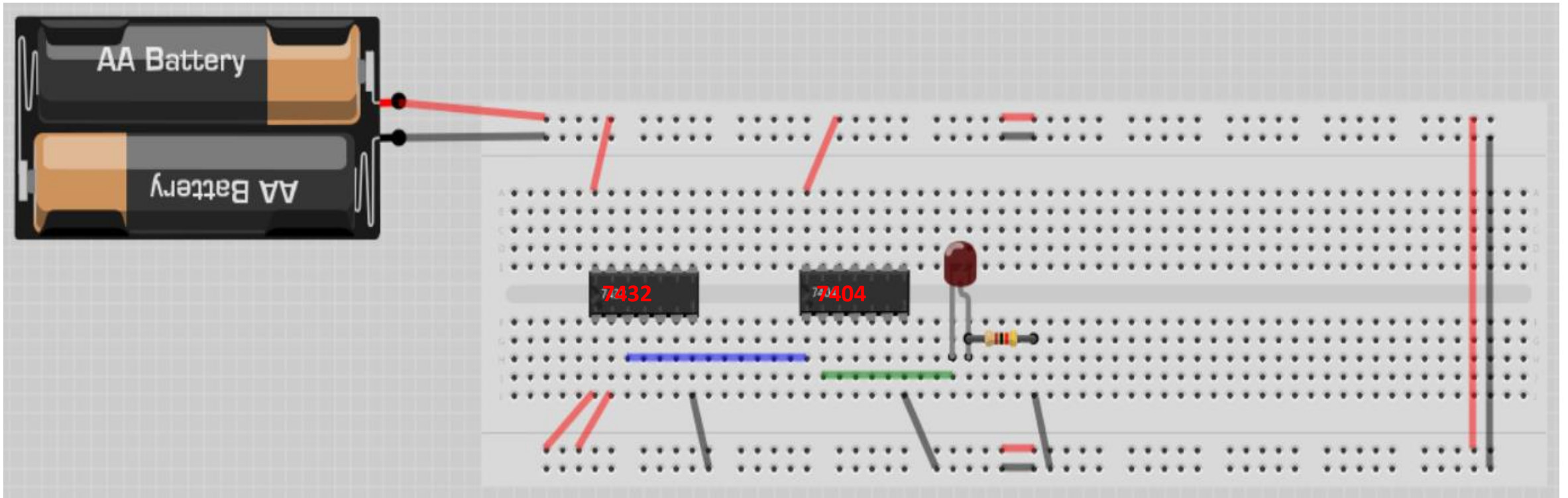
A=9V B=0V



**7408 IC**  
It has 4 2-input AND gates.

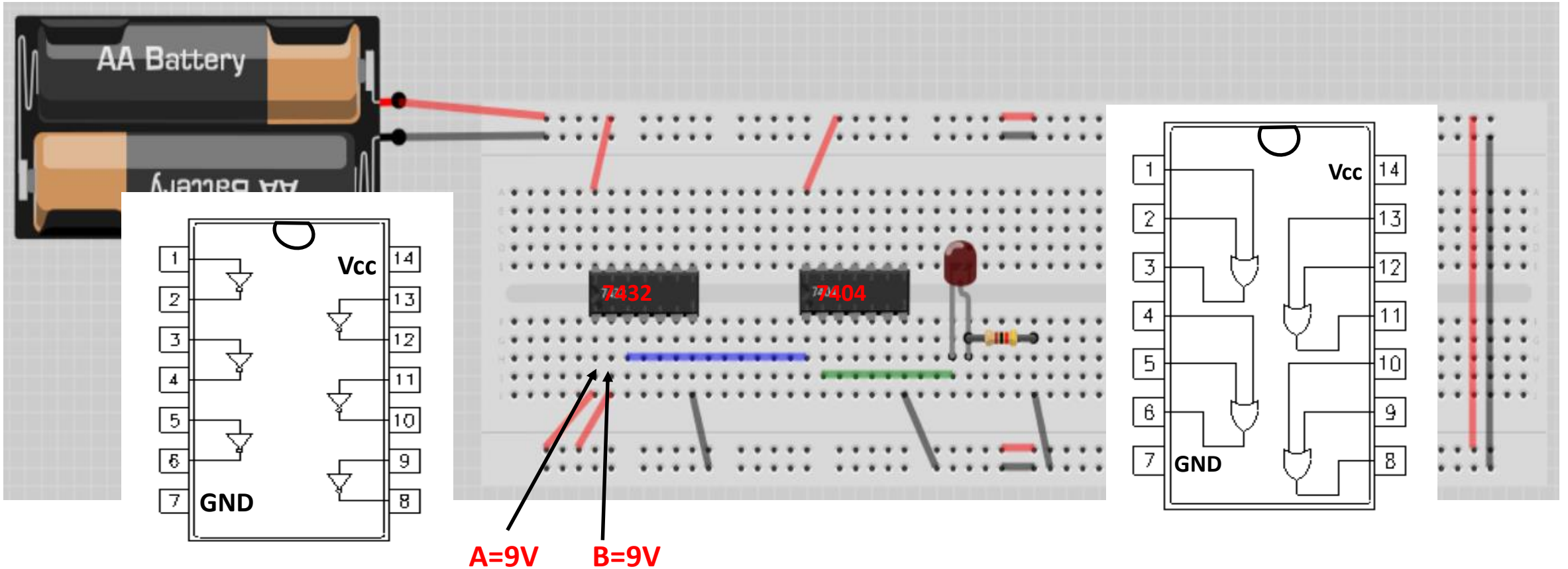
প্রশ্ন: Implement  $\overline{A+B}$  logic function using breadboard.

# 2 input NOR Gate





# 2 input NOR Gate



# Home work:

Implement:

1. Half adder
2. Half subtractor
3. 2 to 4 Decoder
4. 4 to 2 Encoder
5. 4 to 1 Multiplexer
6. 1 to 4 Demultiplexer



# Equipment List:

1. Breadboard – 1 pc
2. LED – 10 pcs
3. Male to male wire – 40 pcs
4. 9V Battery – 2 pcs
5. Resistor (33ohm/47ohm/1Kohm) – 6pcs
6. 7404 NOT gate/ inverter IC – 2 pcs
7. 7408 AND gate IC – 2 pcs
8. 7432 OR gate IC– 2 pcs

# Project Details:

1. Form 6 member group
2. Group members will share equipment cost.
3. Project 1 & 2 will be counted as 1<sup>st</sup> CT.

Next Day:  
Project 2: Digital Electronics  
using HDL

## Summary:

1. Breadboard এ যেকোনো electronics এর কাজ করা হয়।
2. Breadboard এর দুইপাশের Horizontal লাইনগুলো short এবং use করা হয় power supply এর জন্য। এর Vertical লাইনগুলো short এবং use করা হয় electronics prototyping এর জন্য।
3. Breadboard এ Digital Electronics Project এর জন্য তিনটা IC use করা হবে। 7404 (NOT Gate), 7432 (OR Gate) & 7408 (AND Gate)। এদের পিন সংখ্যা 14।
4. Breadboard এ Digital Electronics Project এর জন্য তিনটা IC use করা হবে। 7404 (NOT Gate), 7432 (OR Gate) & 7408 (AND Gate)। এদের পিন সংখ্যা 14।
5. পৃথিবীর যেকোনো IC তে VCC এবং GND পিন থাকবেই। কারণ Voltage Difference হলেই Current Flow হবে।
6. যেকোন Output পিনে logic value বুঝার জন্য একটা LED এবং একটা Resistor লাগাতে হবে।

Thank You 😊