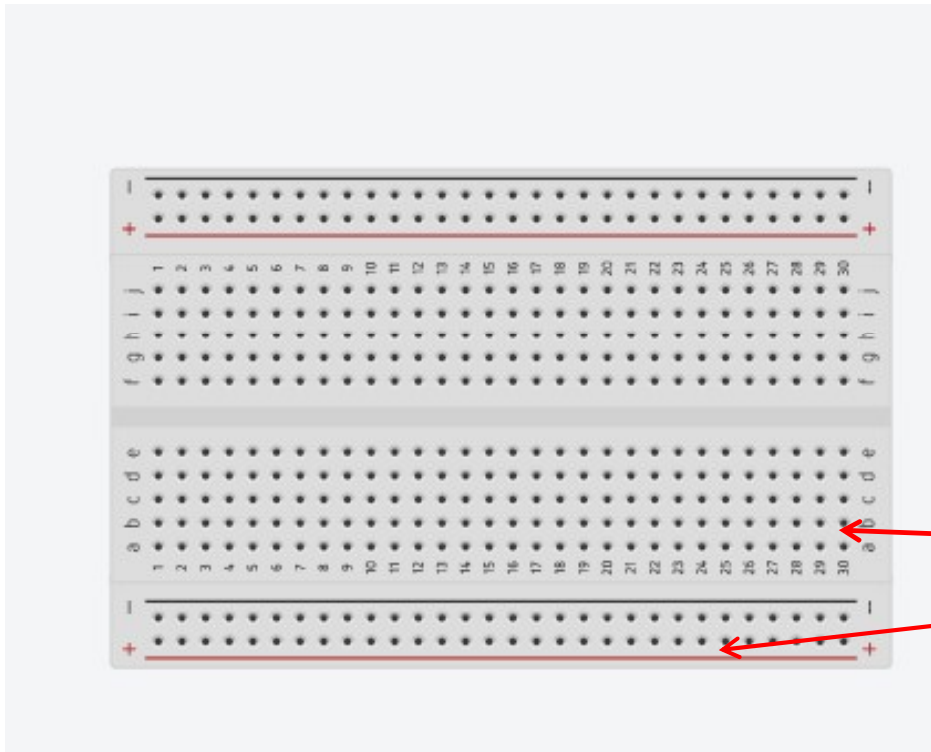


Breadboard, Arduino, resistor e  
led

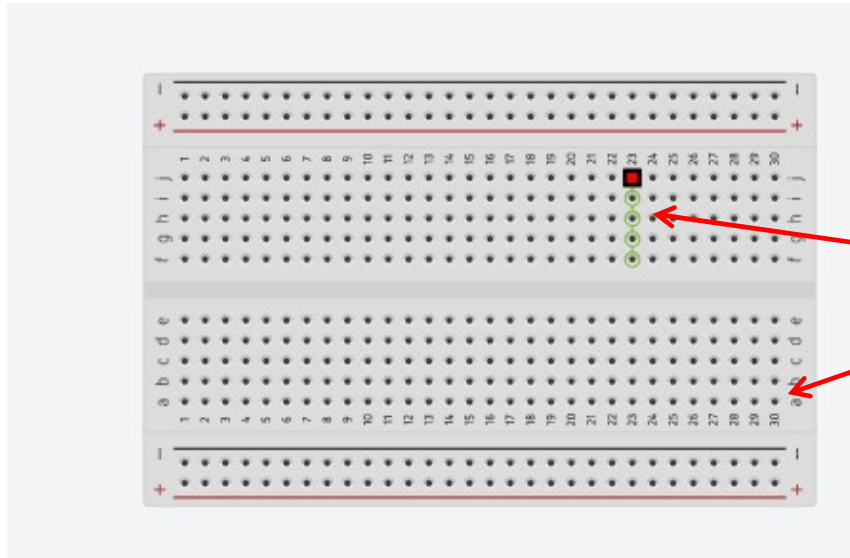
# Breadboard



In inglese significa tavola pane  
È detta anche basetta sperimentale  
perché permette di provare i circuiti  
senza saldarli

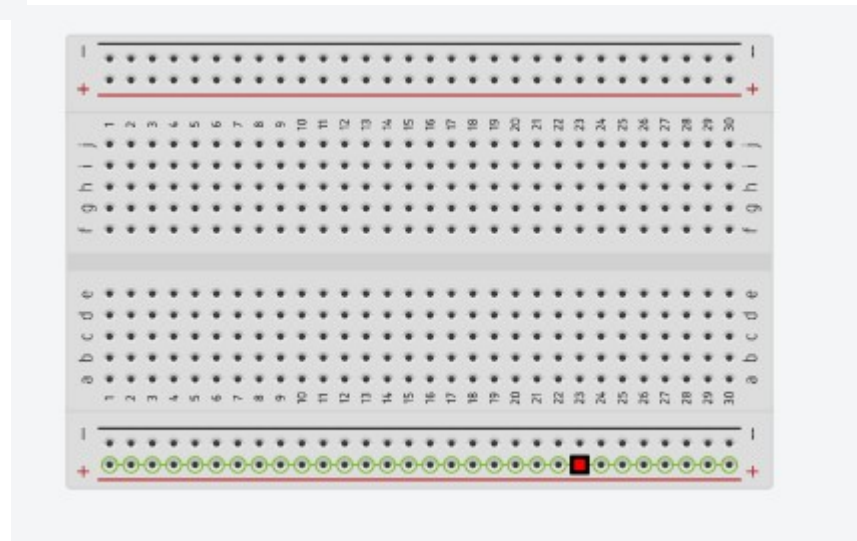
È formata da tanti fori disposti in  
righe centrali e colonne laterali

# Breadboard

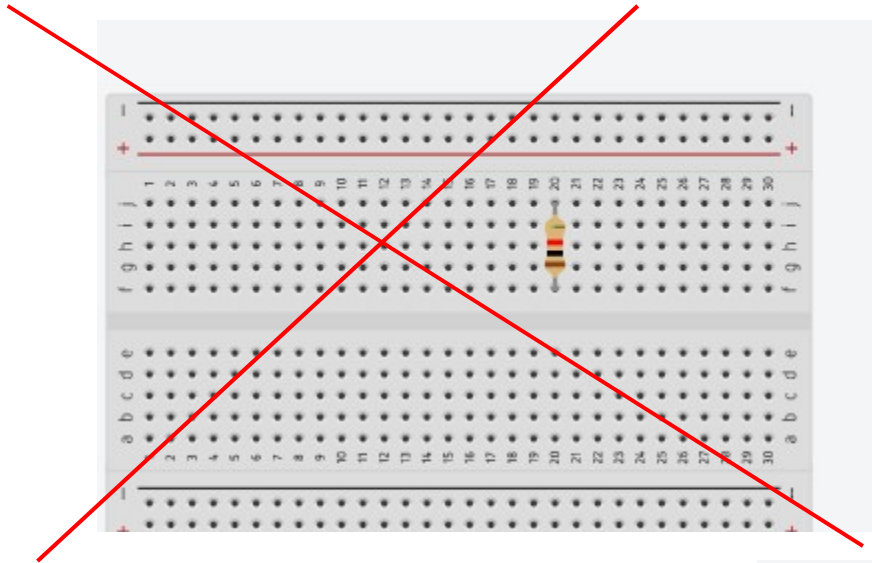


I fori appartenenti tutti ad una delle righe sono tra loro collegati. La breadboard è divisa in due parti che sono tra loro separate

I fori appartenenti tutti ad una delle colonne laterali sono tra loro collegati

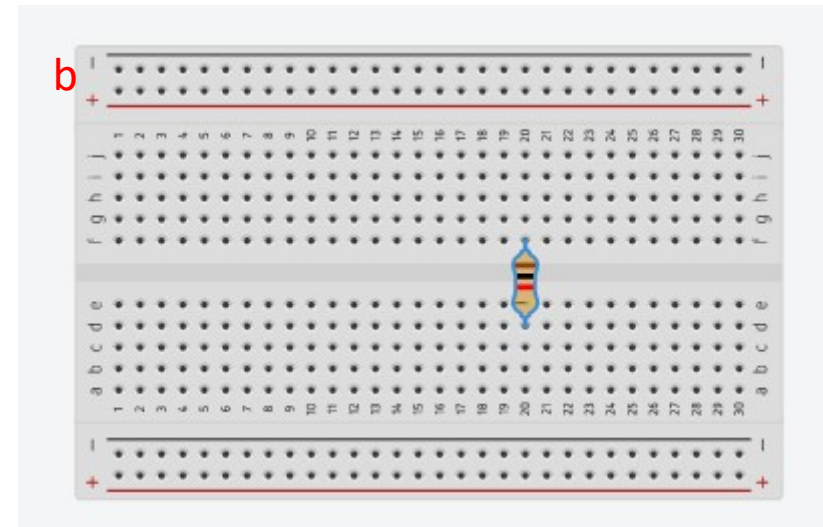
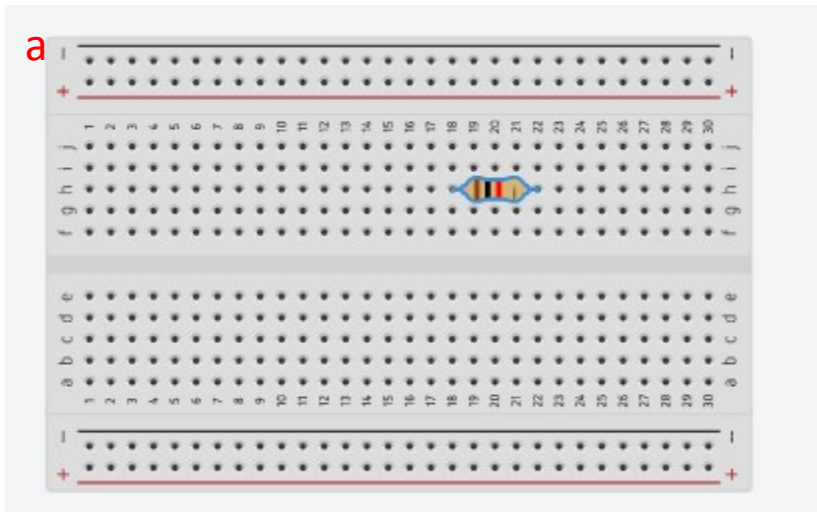


# Collegare un resistore

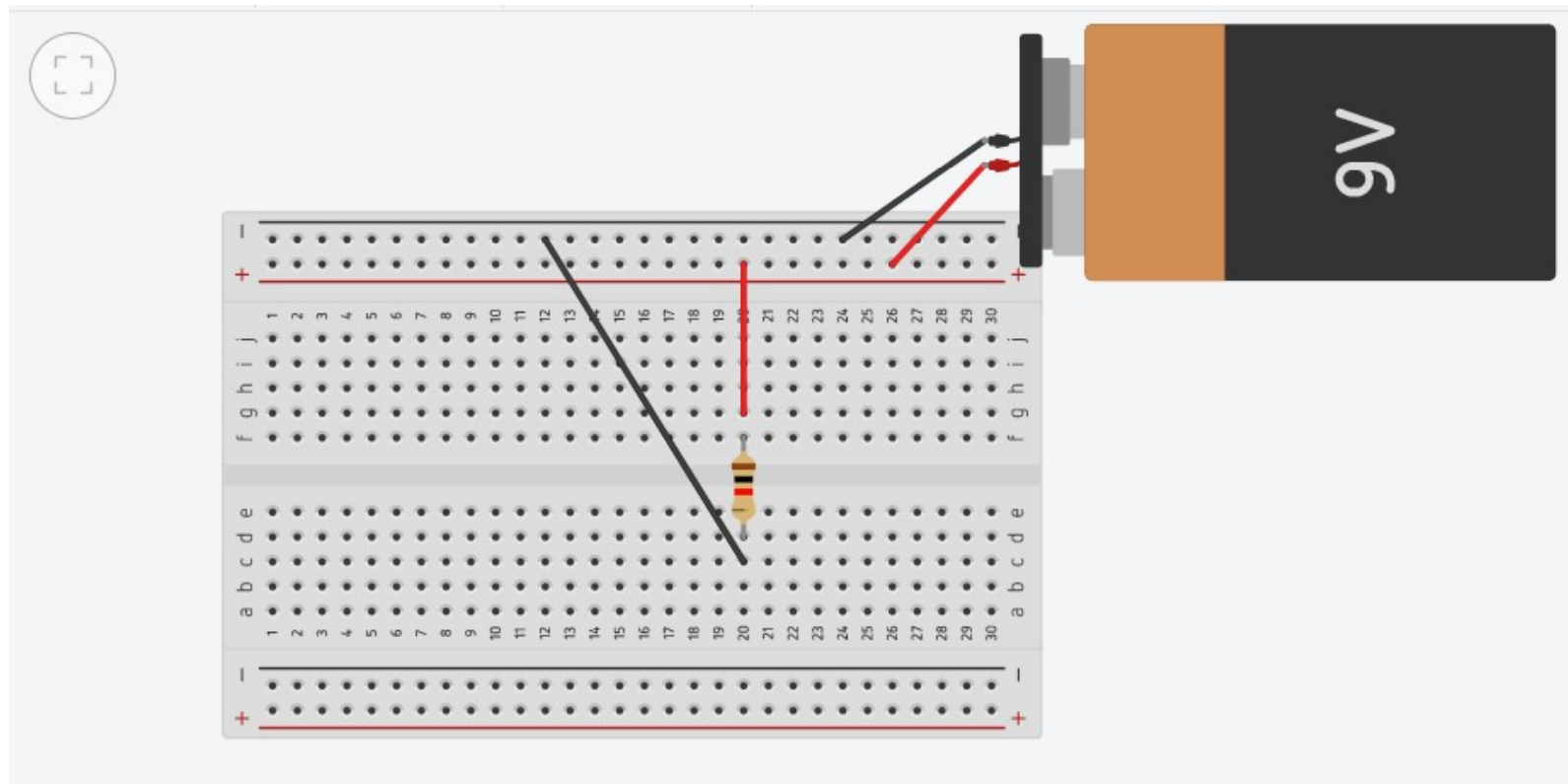


Questa disposizione è errata perché i pin del resistore sono in corto

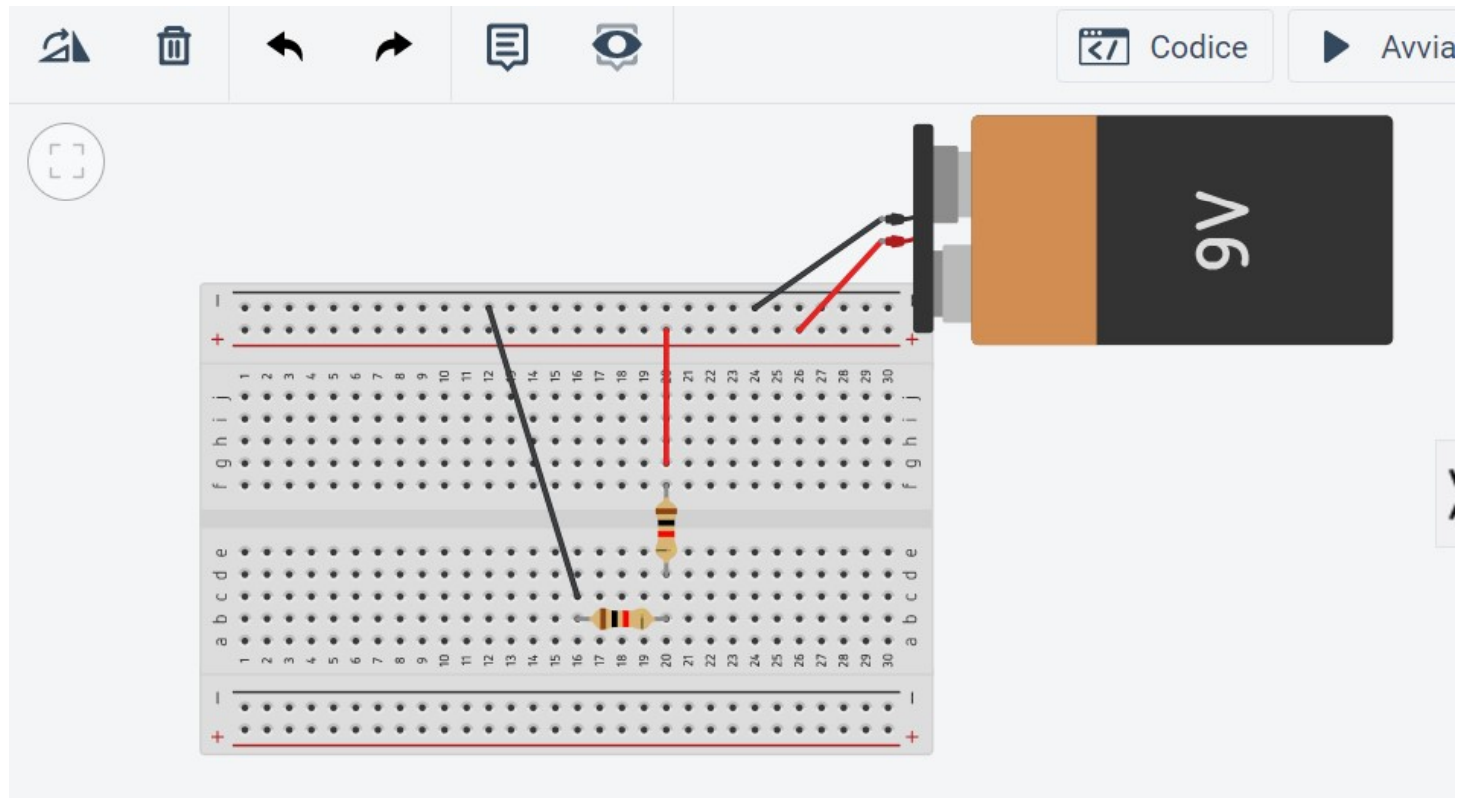
Le disposizioni **a** e **b** sono corrette



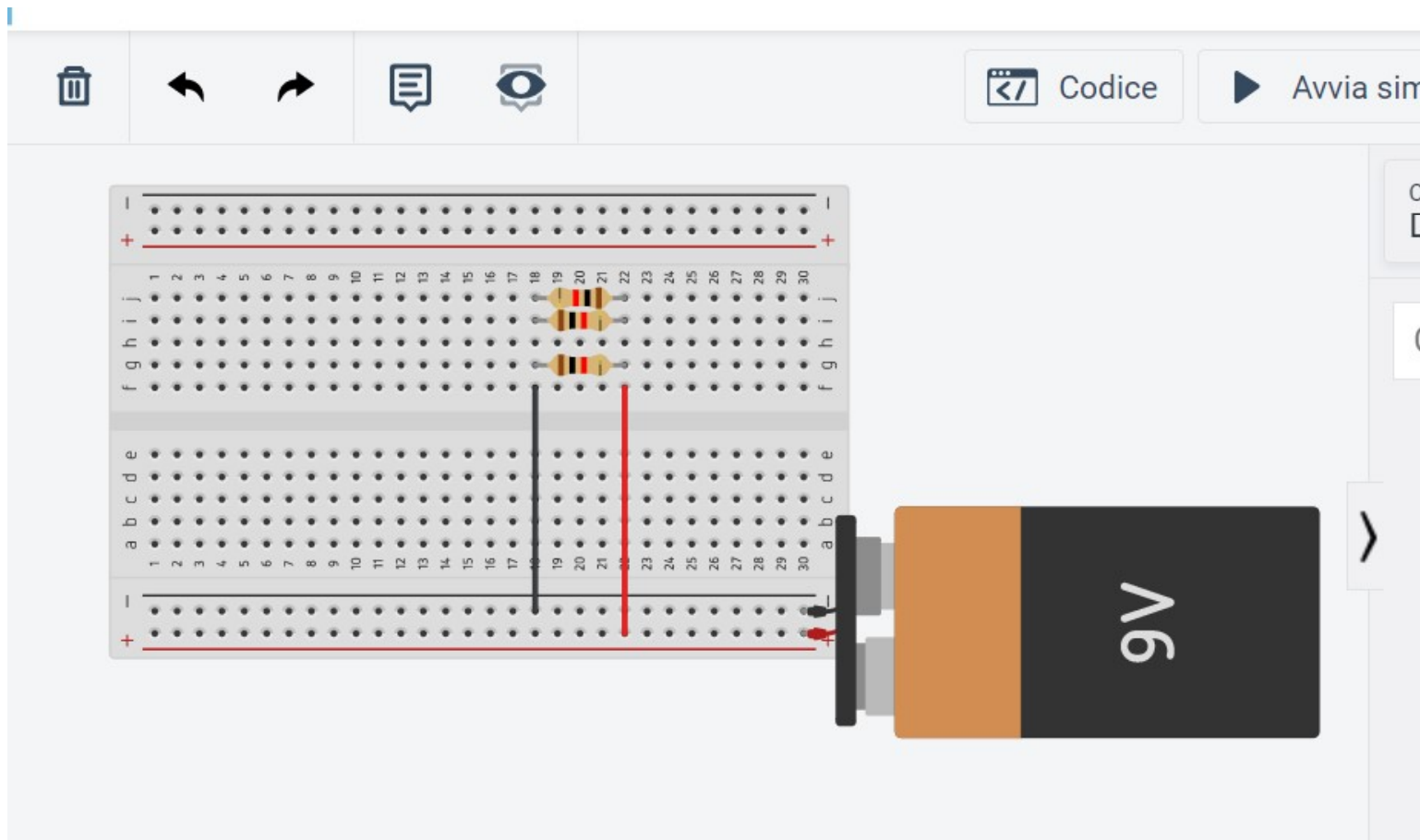
# Collegare un resistore alla batteria



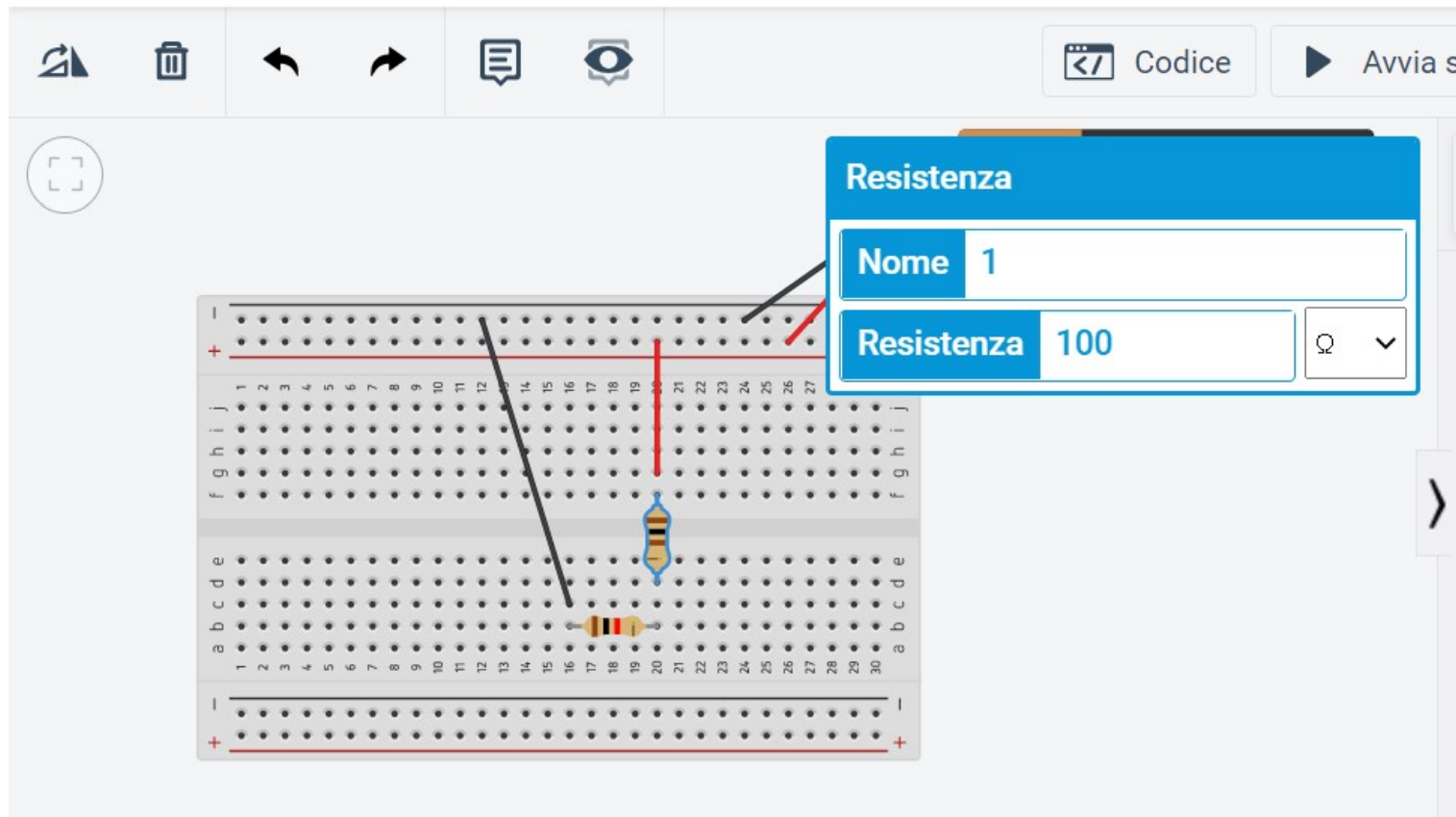
# Collegare due resistori in serie ed una batteria



# Collegare più resistenze in parallelo ad una batteria



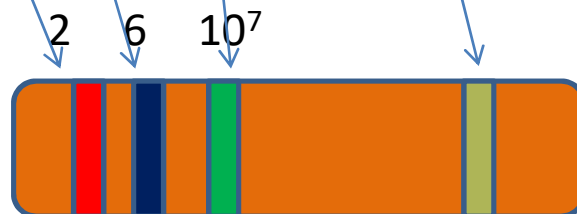
# Cambiare valore di una resistenza





# Codice colori dei resistori

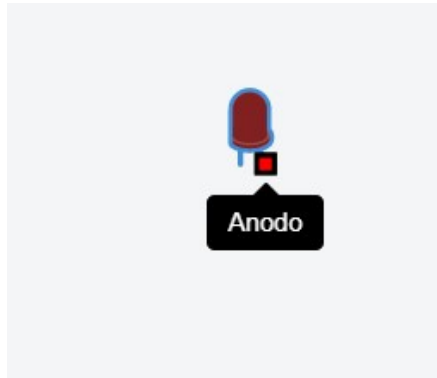
- In base ai tre colori stampati sui resistori, si può conoscere il valore della relativa resistenza in Ohm.
- I primi due colori indicano rispettivamente la prima e la seconda cifra significativa;
- il terzo colore il numero di zeri da aggiungere o la potenza di 10 moltiplicativa
- Il quarto colore è la tolleranza



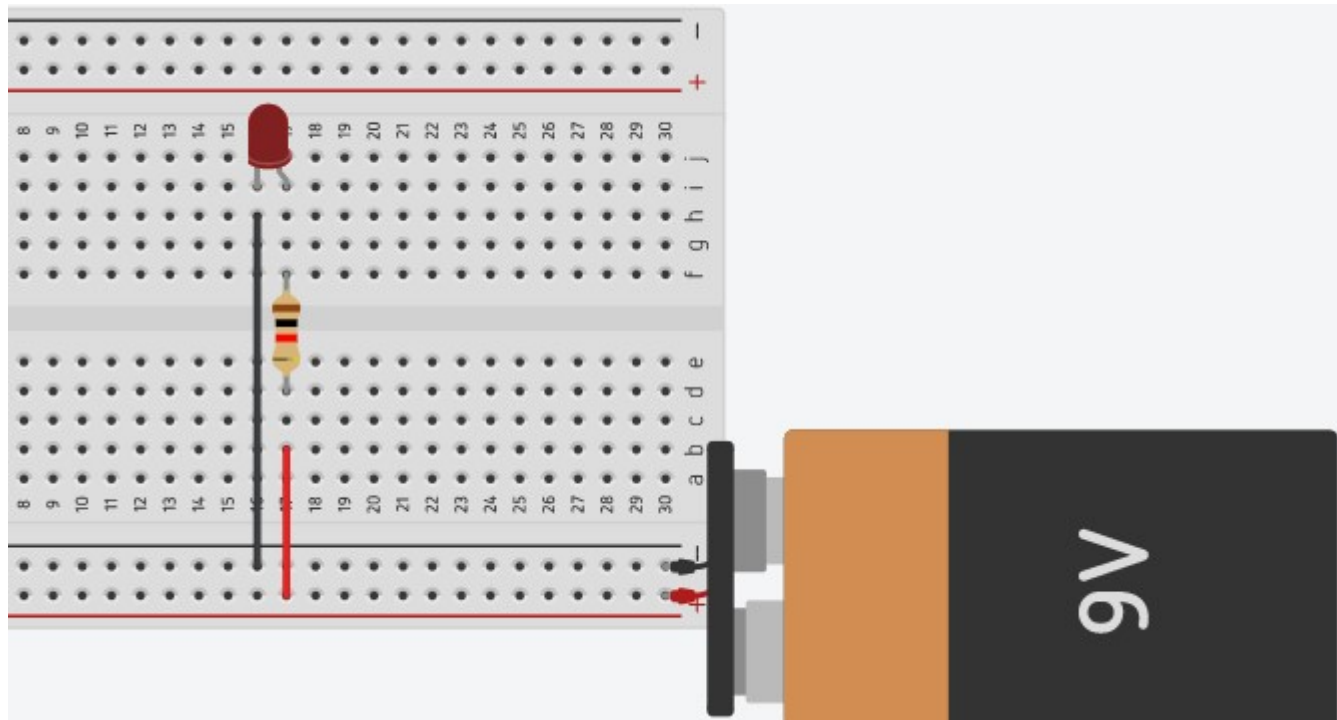
# Tabella di colori resistori

|         | Cifra 1 | Cifra 2 | Moltiplicatore | Tolleranza |
|---------|---------|---------|----------------|------------|
| -       | -       | -       | -              | ± 20%      |
| argento | -       | -       | $10^{-2}$      | ± 10%      |
| oro     | -       | -       | $10^{-1}$      | ± 5%       |
| nero    | 0       | 0       | $10^0$         | -          |
| marrone | 1       | 1       | $10^1$         | ± 1%       |
| rosso   | 2       | 2       | $10^2$         | ± 2%       |
| arancio | 3       | 3       | $10^3$         | -          |
| giallo  | 4       | 4       | $10^4$         | -          |
| verde   | 5       | 5       | $10^5$         | ± 0,5%     |
| blu     | 6       | 6       | $10^6$         | ± 0,25%    |
| viola   | 7       | 7       | $10^7$         | ± 0,1%     |
| grigio  | 8       | 8       | -              | -          |
| bianco  | 9       | 9       | -              | -          |

# Collegare un led ad una batteria



L'anodo va su Vcc e il  
catodo su GND



# Cambiare colore del led

The image displays three sequential screenshots of a circuit simulation software interface, illustrating the process of changing the color of an LED in a circuit.

**Top Left Screenshot:** Shows a breadboard circuit with a 9V battery, a resistor, and an LED. The LED's color is currently set to "Rosso" (Red). A dropdown menu is open, showing a list of color options: Verde, Giallo, Arancione, Blu, Rosso, and Bianco. The "Arancione" option is highlighted.

**Top Right Screenshot:** Shows the same circuit, but the LED's color has been changed to "Arancione" (Orange). The dropdown menu is now closed.

**Bottom Screenshot:** Shows the simulation interface with the LED color set to "Arancione". The interface includes a simulation control bar with "Tempo simulatore: 00:00", a "Codice" field, and an "Interrompi simulazione" button. On the right, there is a "Componenti Di base" panel with a search bar labeled "Cerca". Below the search bar, the "Condensatori" section is visible, and a "Batteria da 9V" component is shown in the component list.

# Arduino UNO

The image shows a screenshot of the Tinkercad web interface. At the top, the browser address bar displays the URL `tinkercad.com/things/dB7xmOmdrXs-magnificent-borwo/edite1`. The user's name, "Magnificent Borwo", is visible in the top left, and the status "Tutte le modifiche salvate" (All changes saved) is in the top right. The main workspace contains a blue Arduino Uno R3 board with a USB Type-C cable plugged into its port. A blue tooltip above the board displays "Arduino Uno R3" and a text input field containing "Nome 1". The top toolbar includes icons for undo, redo, delete, and view, along with buttons for "Codice", "Avvia simulazione", "Esporta", and "Condividi". On the right side, the "Componenti Di base" (Basic Components) library is open, showing a search bar and a list of components including "micro:bit", "Arduino Uno R3", a resistor, and a motor. The Windows taskbar at the bottom shows the search bar with the text "Scrivi qui per eseguire la ricerca" and the system tray with the time "10:40" and date "09/11/2020".

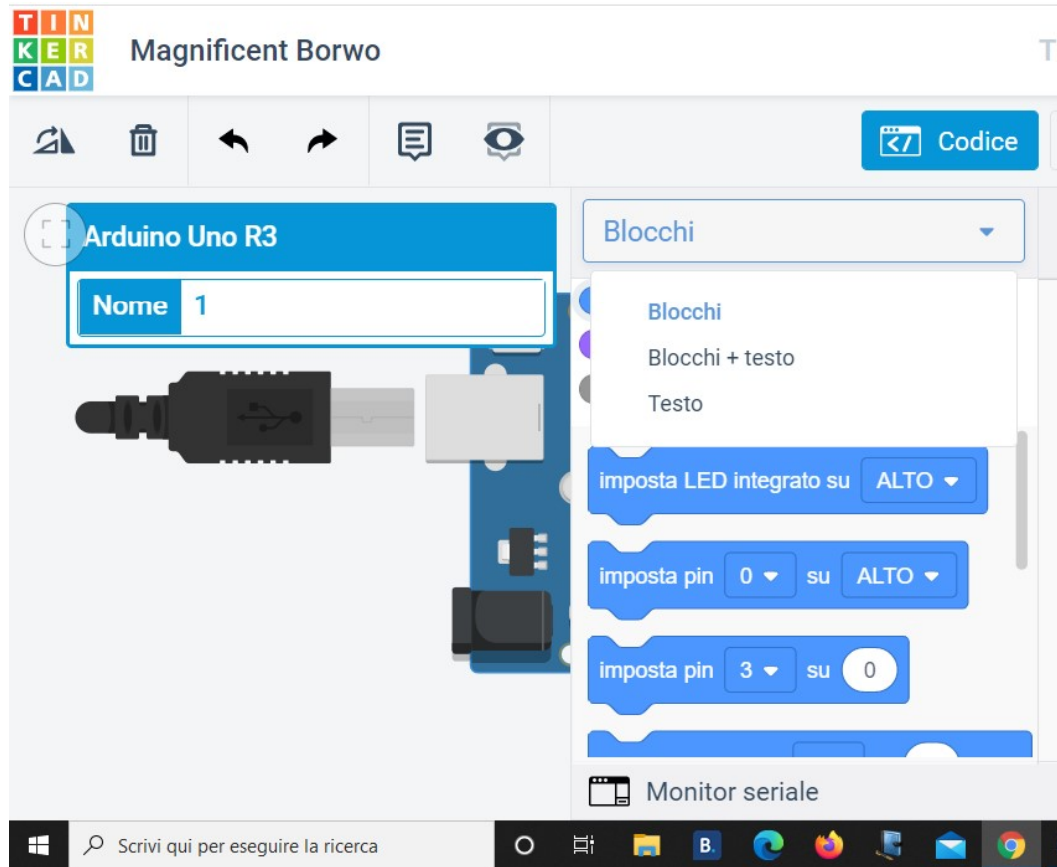
# Codice a blocchi

The screenshot displays the Tinkercad web interface for editing a project named "Magnificent Borwo". The browser address bar shows the URL `tinkercad.com/things/dB7xmOmdrXs-magnificent-borwo/edite1`. The interface features a top navigation bar with the Tinkercad logo, the project name, and a status message "Tutte le modifiche salvate". Below this is a toolbar with icons for undo, redo, and other actions, along with buttons for "Codice" (Code), "Avvia simulazione" (Start simulation), "Esporta" (Export), and "Condividi" (Share). The main workspace is divided into several sections:

- Component Palette:** Shows an "Arduino Uno R3" component with a "Nome 1" label.
- Block Palette:** Lists various block categories: Uscita (Output), Ingresso (Input), Annotazione (Annotation), Controlla (Control), Matematica (Math), and Variabili (Variables).
- Script Editor:** Contains a sequence of code blocks:
  - imposta LED integrato su ALTO
  - attendi 1 sec
  - imposta LED integrato su BASSO
  - attendi 1 sec
- Monitor seriale:** A section at the bottom for viewing serial output.

The Windows taskbar at the bottom shows the system tray with the time 10:46 and date 09/11/2020.

# Vari codici



È possibile selezionare un codice a blocchi oppure testo+blocchi oppure solo testo

# Codice testo



The screenshot shows the Tinkercad web interface. At the top, the browser address bar displays `tinkercad.com/things/DB7xmOmdrXs-magnificent-borwo/editel`. The user's name, "Magnificent Borwo", is visible in the top left. The interface includes a toolbar with icons for undo, redo, and other actions. A blue button labeled "Codice" is highlighted. Below the toolbar, a dropdown menu is set to "Testo". The code editor contains the following pre-installed code:

```
1 void setup()  
2 {  
3   pinMode(13, OUTPUT);  
4 }  
5  
6 void loop()  
7 {  
8   digitalWrite(13, HIGH);  
9   delay(1000); // Wait for 1000 millisecond(s)  
10  digitalWrite(13, LOW);  
11  delay(1000); // Wait for 1000 millisecond(s)  
12 }
```

At the bottom of the interface, a "Monitor seriale" window is visible.

C'è già un codice  
testo prestabilito  
per il  
lampeggio del  
led 13



# Avvio simulazione

