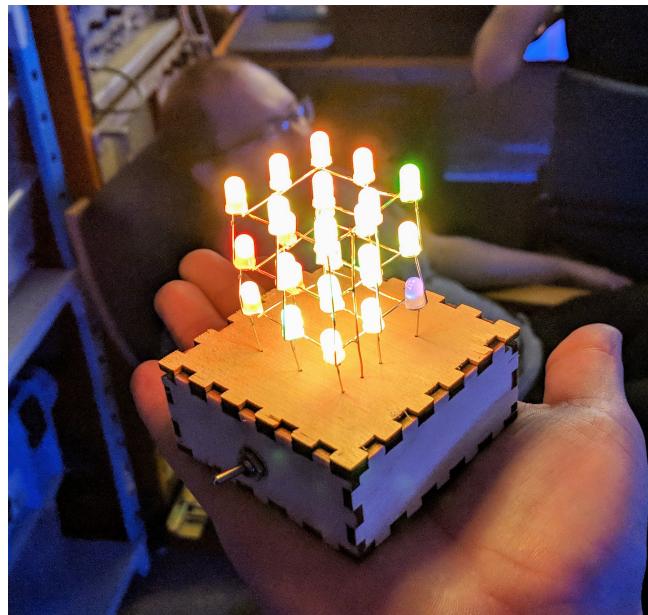


# LED Cube



Quantity	Name
6	Wooden box element
27	5 mm RGB LED
1	Switch
1	Battery holder for Mignon (AA)
1	Wire, stiff
1	Cable, flexible
1	0.9 V – 3.3 V to 3.3 V step-up
2	Mignon Batteries (AA, not included)

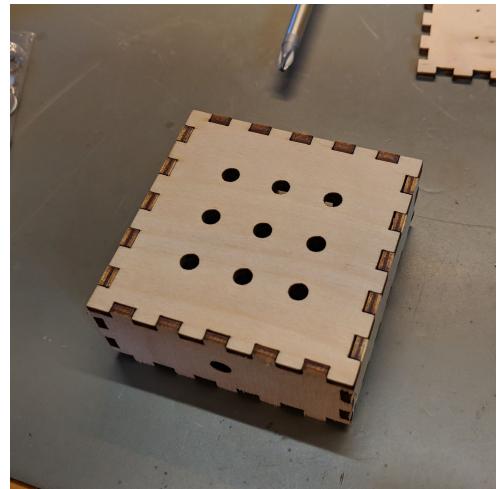
Difficulty: ●●●○○

Manual v1.0 CC BY-SA 4.0 Binary Kitchen e.V.  
Layout v1.0 CC BY-SA 4.0 Binary Kitchen e.V.

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### Step 1

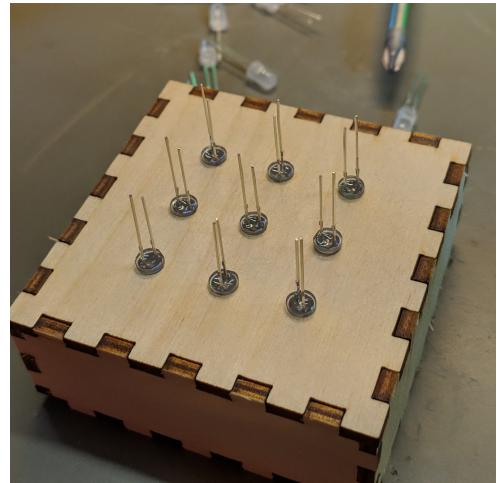
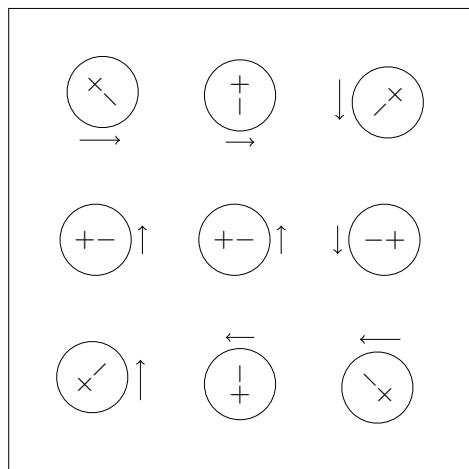
- a) Mount the side-elements of the box to the bigger plate with the 5 mm hole matrix
- b) Hint: The 5 mm hole matrix will be on the bottom in the end
- c) The side elements with logo and hole should be opposite each other.



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### Step 2

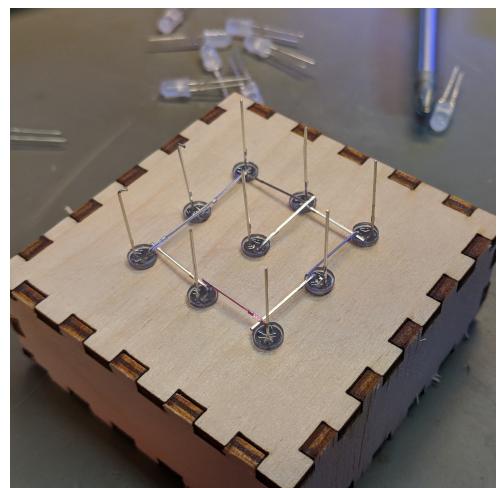
- a) The LED cube consist of 27 RGB LEDs in three 3x3 LED levels
- b) The long leg of the LED is the positive side
- c) Push the LEDs into the plate, as shown in the diagram
- d) The '+' and '-' indicates the positive and negative pole of the LED
- e) The arrow is used in the next step



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### Step 3

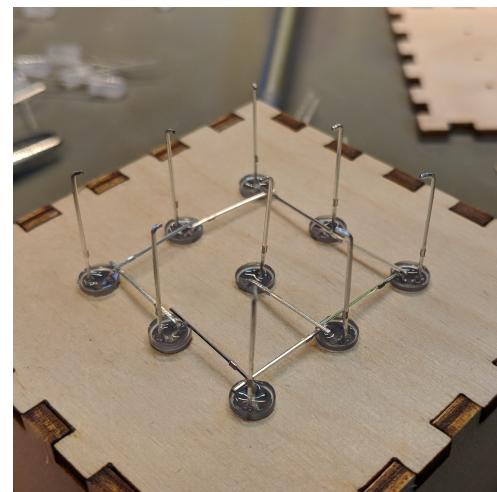
- a) Bend all negative pins in the direction of the arrows shown in the diagram
- b) The positive and negativ pins should not touch each other
- c) All negativ pins should touch another negative pin on another LED
- d) Solder all negative pins



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**Step 4**

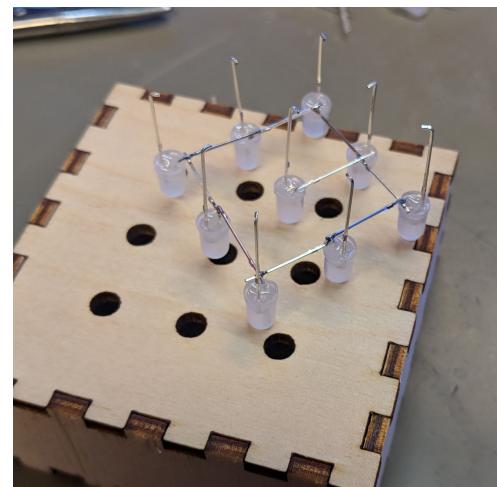
- a) Bend 2 mm of the tip of all positive pins with an  $90^\circ$  angle towards the negative pin



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**Step 5**

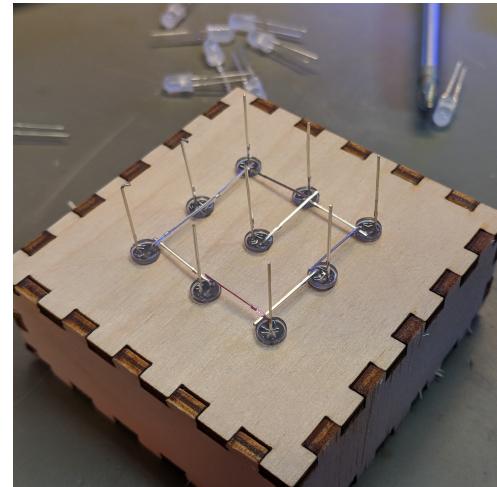
- a) Carefully push out the first layer of the LED cube



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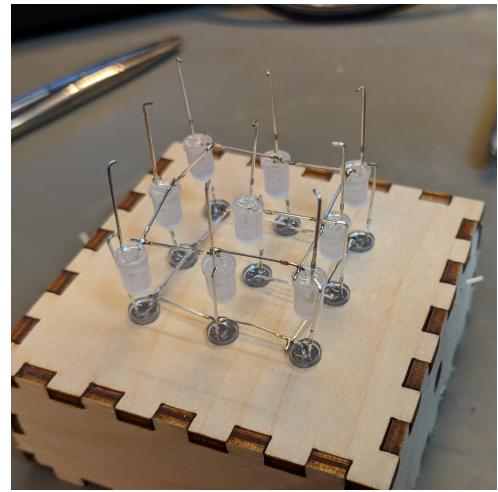
**Step 6**

- a) Repeat the steps for the second layer



### Step 7

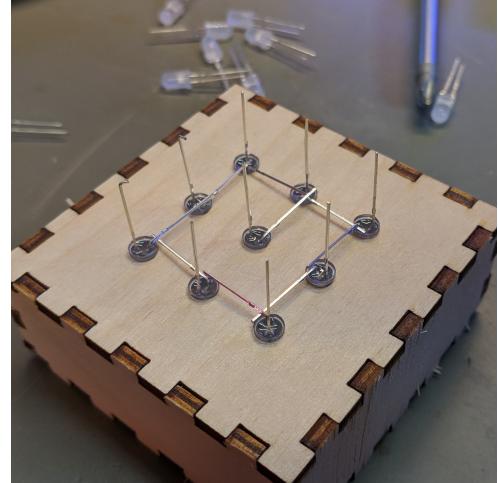
- a) Keep the second layer in the hole matrix
- b) Put the first layer of LEDs onto the second layer so that all lines match each other
- c) The bended tips of the positive pins should now touch the positive pins of the second layer
- d) Solder all positive pins of both layers
- e) Carefully push out the soldered layers



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### Step 8

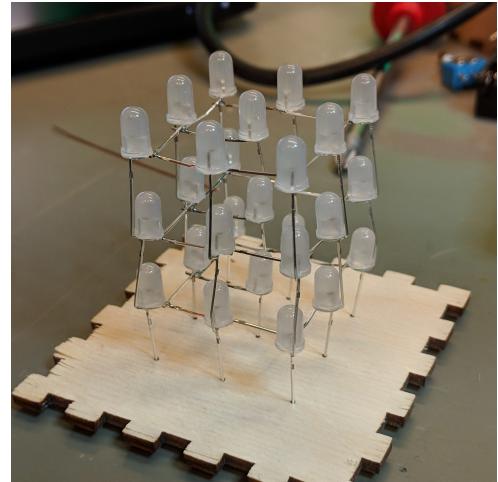
- a) Repeat the steps for soldering the third layer, except do not bend the tips of the positive pins in the third Layer!
- b) Push out the third layer



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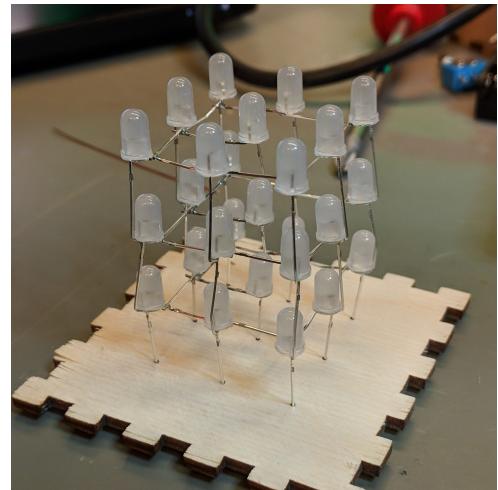
### Step 9

- a) Put back the already soldered two layers from before in the hole matrix
- b) Match now the third layer onto the other two
- c) Solder the third layer
- d) Push out the finished cube



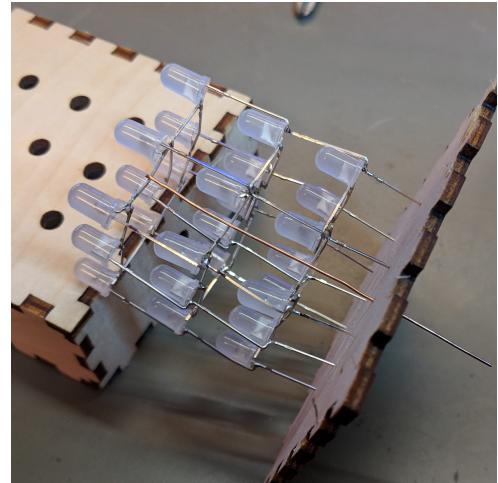
### Step 10

- You are finished with all three layers
- Push the positive Pins through the small holes in the other plate



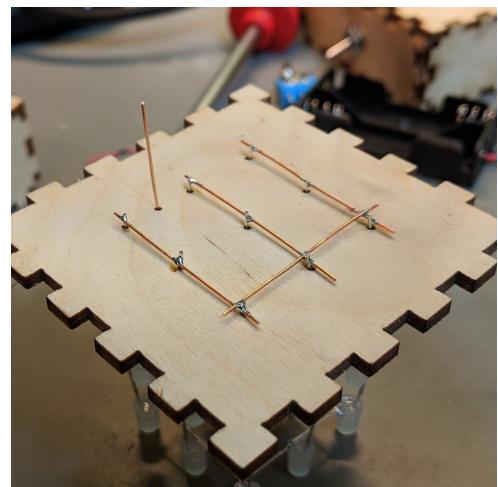
### Step 11

- Remove the insulation of the stiff wire completely
- Push it through the last hole and connect alle negativ pins of the three layers
- Cut the rest of wire and leave a rest of 5 mm on the other side of the plate



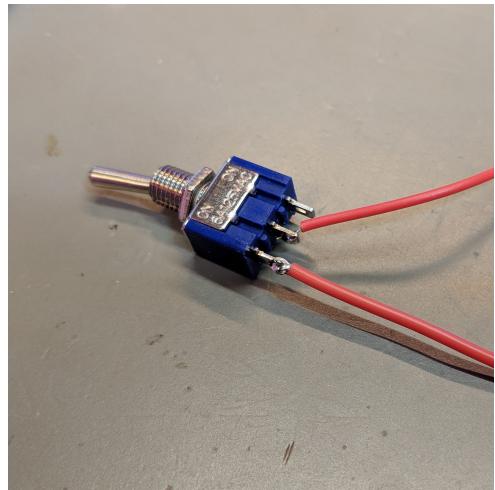
### Step 12

- Solder the inner side of the positive pins as shown in the picture



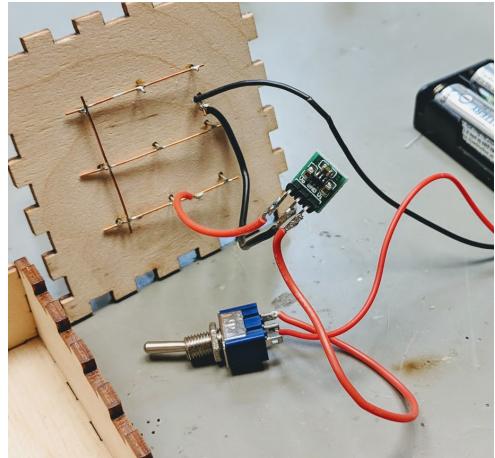
### Step 13

- Solder the red wire of the battery holder to the middle pin of the switch
- Solder a wire to one of the other pins and to the voltage-in (Vi) pin of the step-up



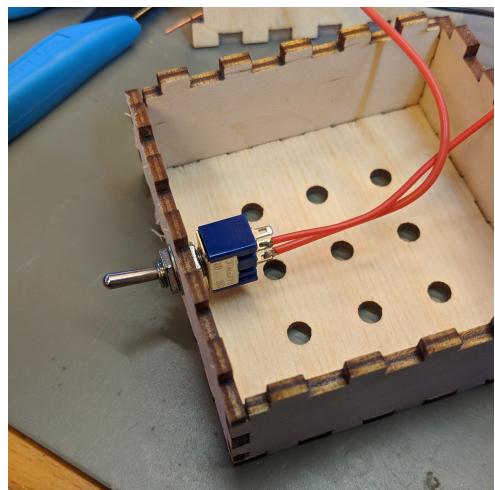
### Step 14

- Solder the voltage-out (Vo) to the positive pin of the LEDs
- Connect the black wire of the battery holder to the ground (G) pin of the step-up and the negative pin of the LEDs



### Step 15

- Screw the switch into the hole in one of the side-elements
- Put batteries in
- Put the battery holder into the box



Step 16

- a) Close the box
- b) You are finished!
- c) To change the batteries, open the box on the side or on the top

