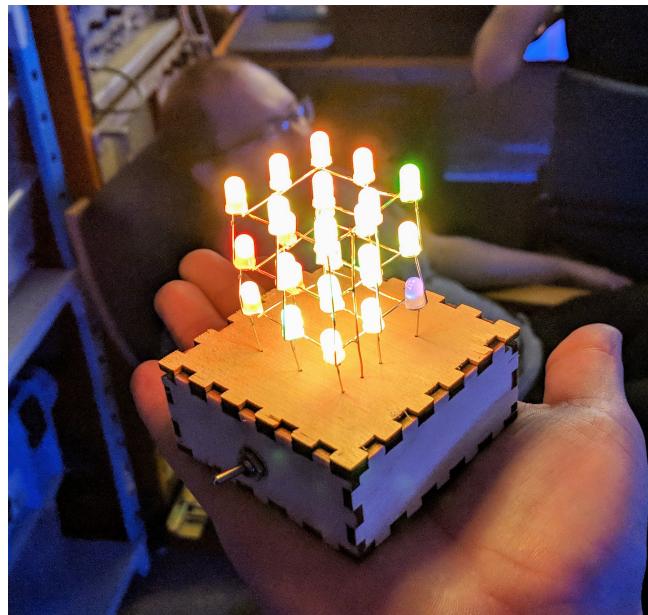


# LED Cube



Quantity	Name
7	Wooden box element
27	5 mm RGB LED
1	Switch
1	Battery holder for Mignon (AA)
1	Wire, stiff
1	Cable, flexible
1	0.8 V – 3.3 V to 3.3 V step-up module
2	Mignon Batteries (AA, not included)

Difficulty: ●●●○○ Build-Time: 2–4 Hours

Manual v1.1 CC BY-SA 4.0 Binary Kitchen e.V.  
Layout v1.1 CC BY-SA 4.0 Binary Kitchen e.V.

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### Step 1

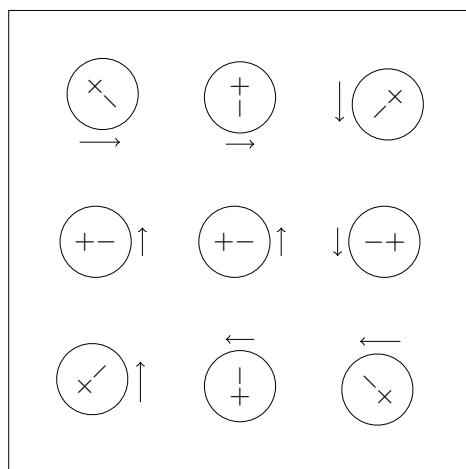
- a) Mount the side-elements of the box to the biggest plate without holes
- b) Put the wooden element with 5 mm hole matrix onto the box
- c) Hint: The 5 mm hole matrix will be our soldering help



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### Step 2

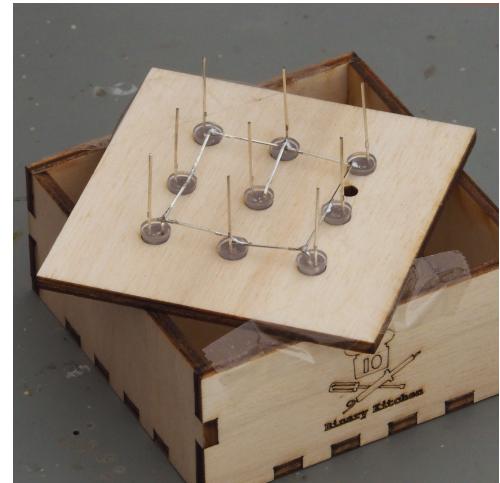
- a) The LED cube consist of 27 RGB LEDs in three 3x3 LED levels
- b) The long leg of the LED is the positive side
- c) Push the LEDs into the plate, as shown in the diagram
- d) The '+' and '-' indicates the positive and negative pole of the LED
- e) The arrow is used in the next step



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### Step 3

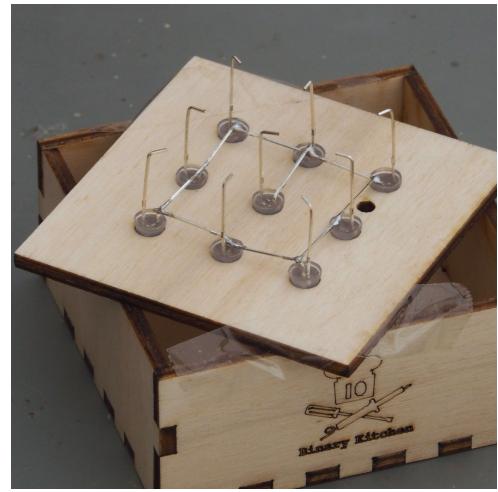
- a) Bend all negative pins in the direction of the arrows shown in the diagram
- b) The positive and negativ pins should not touch each other
- c) All negativ pins should touch another negative pin on another LED
- d) Solder all negative pins
- e) Carefully push out the layer of the LED cube



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#### Step 4

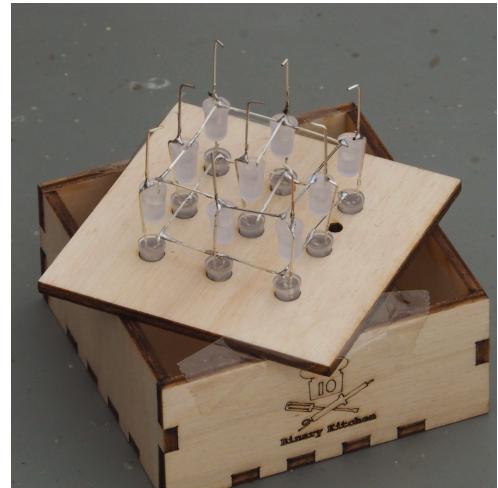
- a) Repeat step 2 and 3 two times
- b) You should now have three layers with 9 LEDs each
- c) For just layer two and three, bend 2 mm of the tip of all positive pins with an 90° angel towards the negative pin.



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#### Step 5

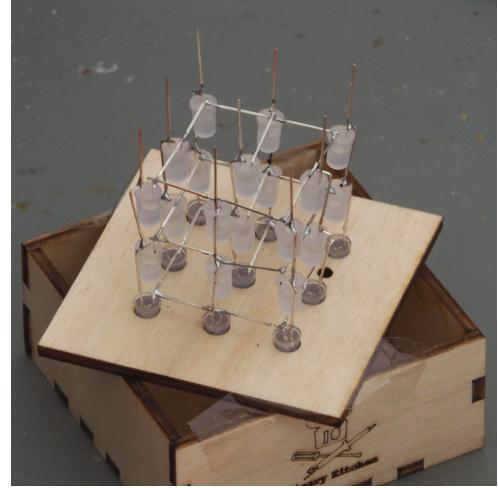
- a) Keep the third layer in the hole matrix
- b) Put the second layer of LEDs onto the third layer so that all lines match each other
- c) The bent tips of the positive pins should now touch the positive pins of the third layer
- d) Solder all positive pins of both layers
- e) Carefully push out the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



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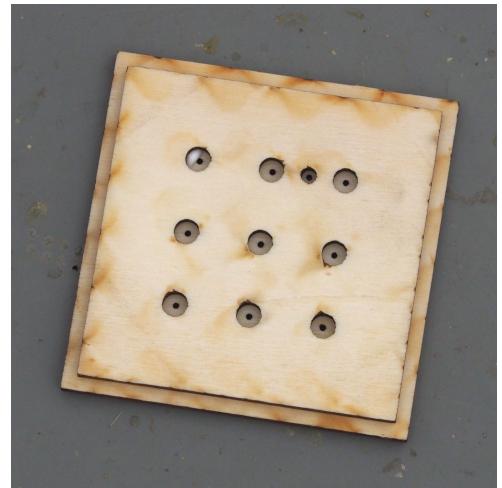
#### Step 6

- a) Repeat the steps for soldering the first layer with the straight positive pins
- b) Push out the completed cube



### Step 7

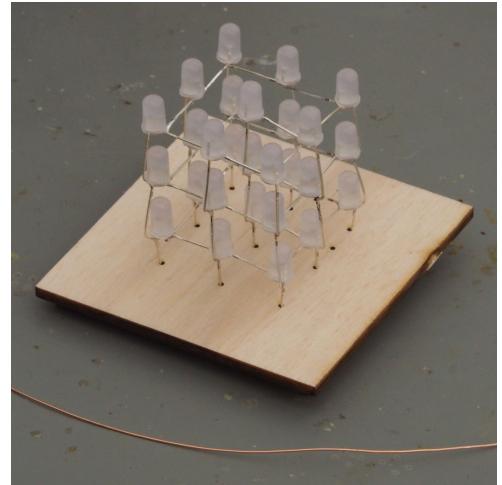
- a) Glue the two big wooden elements with holes over each other so that all 10 (!) holes are centered and visible
- b) This will be the box lid



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### Step 8

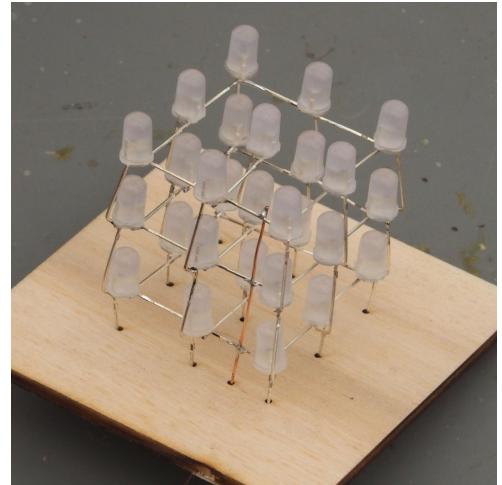
- a) Push the positive pins through the small holes in the plate



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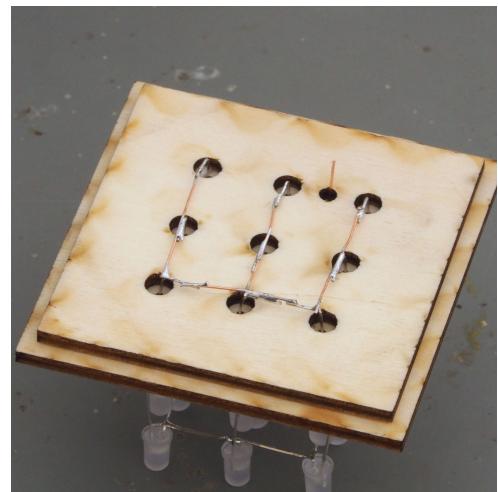
### Step 9

- a) Remove the insulation of the stiff wire completely
- b) Push it through the last hole and connect all negative pins of the three layers
- c) Cut the rest of the wire and down to 5 mm on the other side of the plate



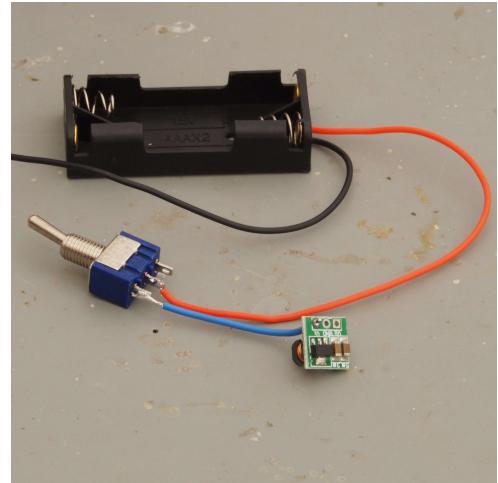
### Step 10

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



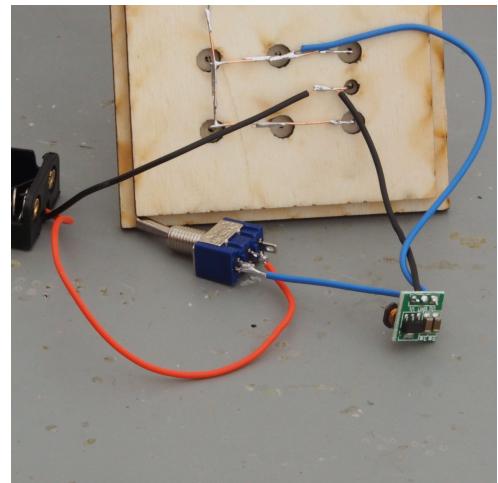
### Step 11

- 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



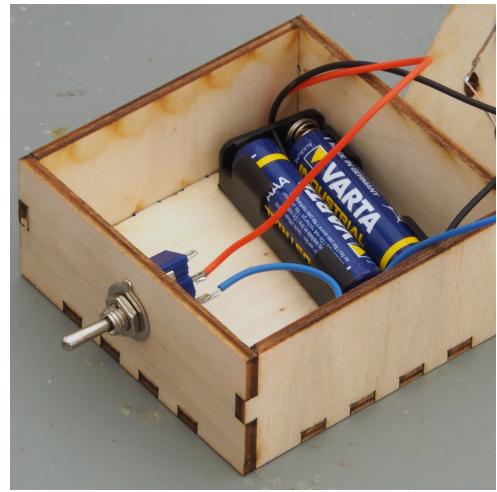
### Step 12

- 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 13

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



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### Step 14

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

