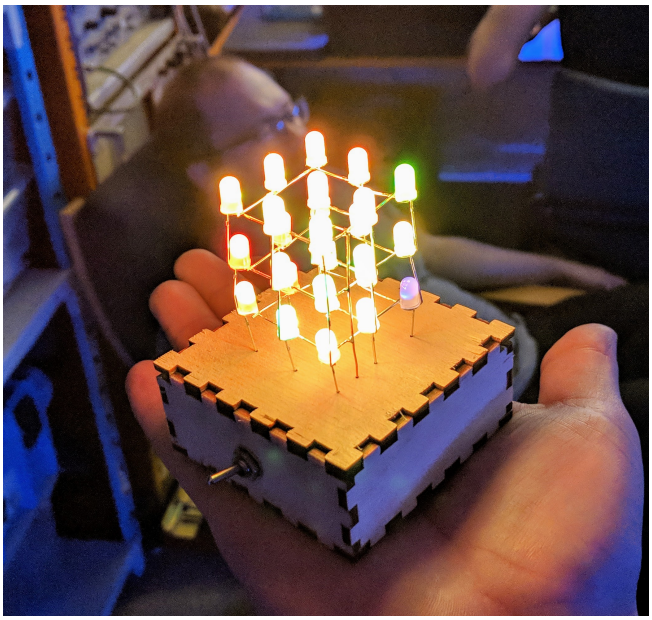
LED Cube



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)

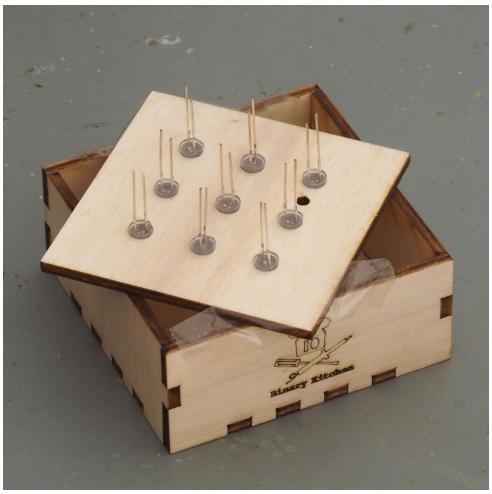
Difficulty: ●●●○○ Build-Time: 2–4 Hours

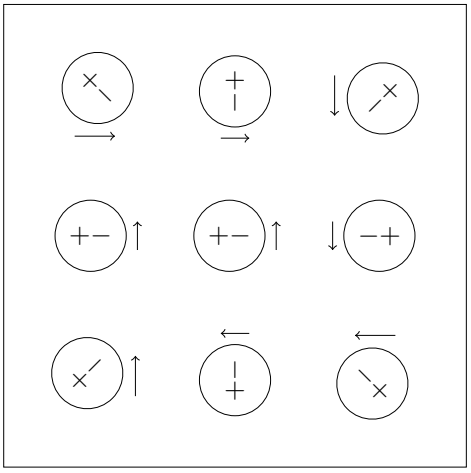
Step 1

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

Step 2

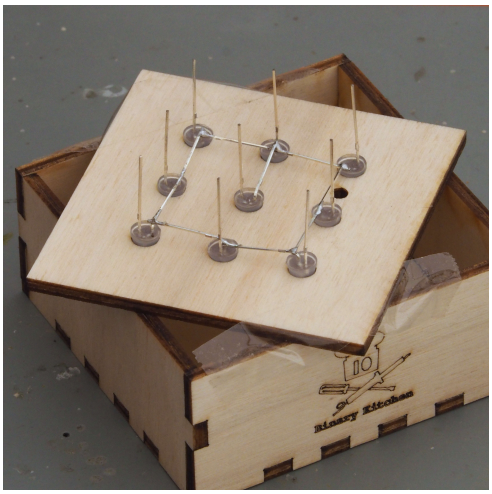
a) The LED cube consist of 27 RGB LEDs in three 3x3 LED levels
b) The long leg of the LED is the positive side
c) Push the LEDs into the plate, as shown in the diagram
d) The '+' and '-' indicates the positive and negative pole of the LED
e) The arrow is used in the next step





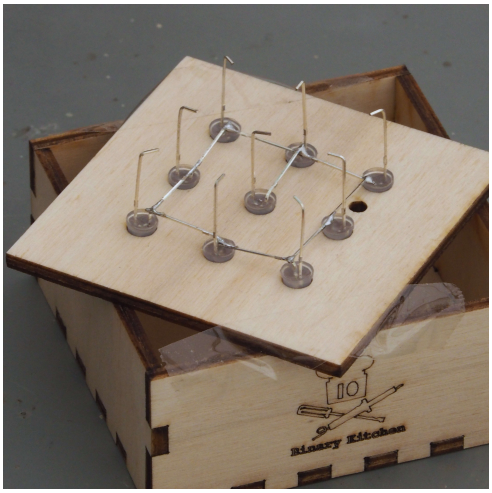
Step 3

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



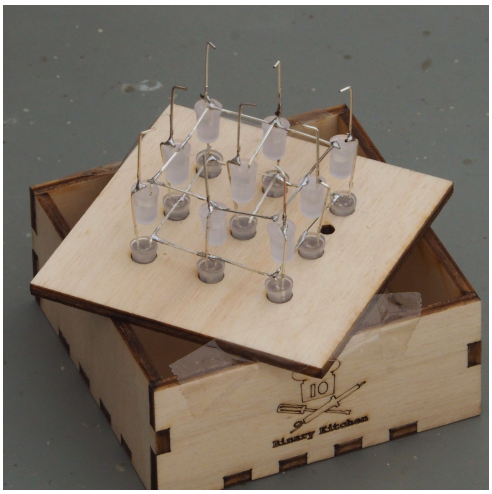
Step 4

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.



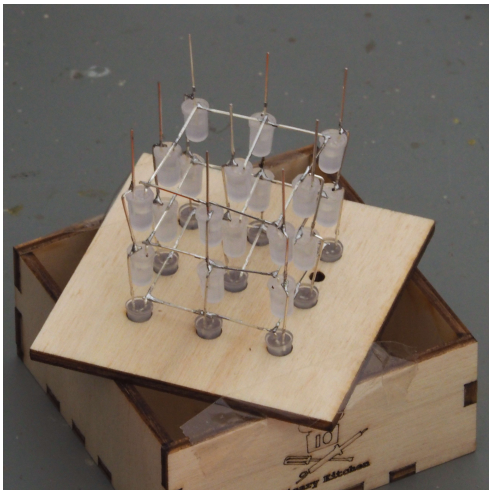
Step 5

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



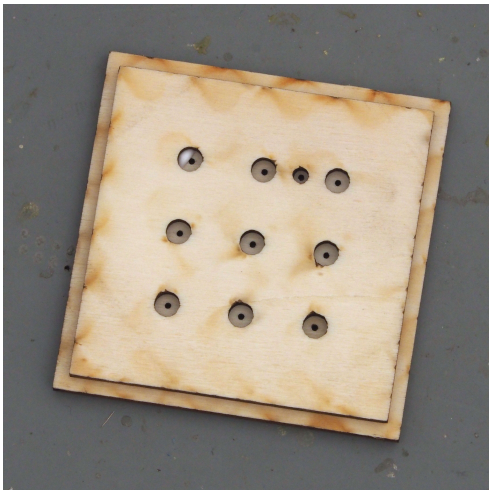
Step 6

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



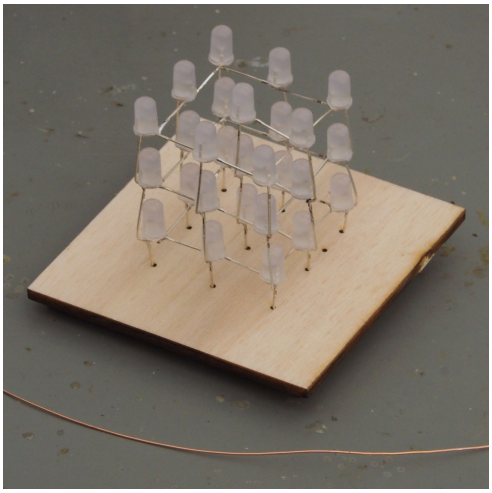
Step 7

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



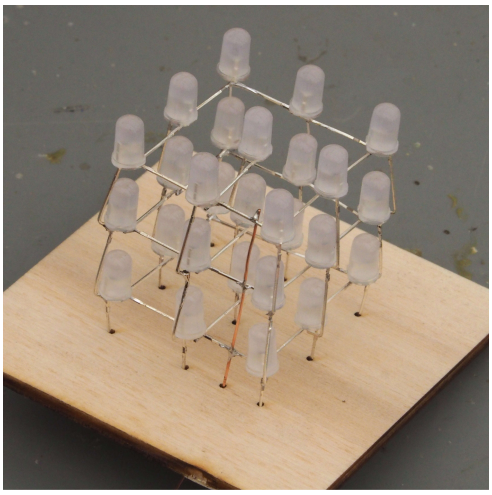
Step 8

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



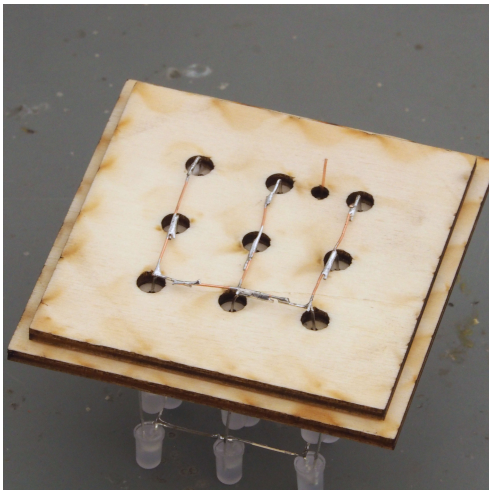
Step 9

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

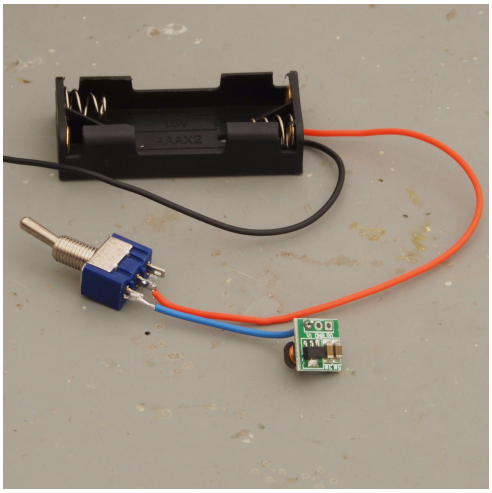
a) Solder the inner side of the positive pins as shown in the picture



Step 11

a) Solder the red wire of the battery holder to the midde pin of the switch

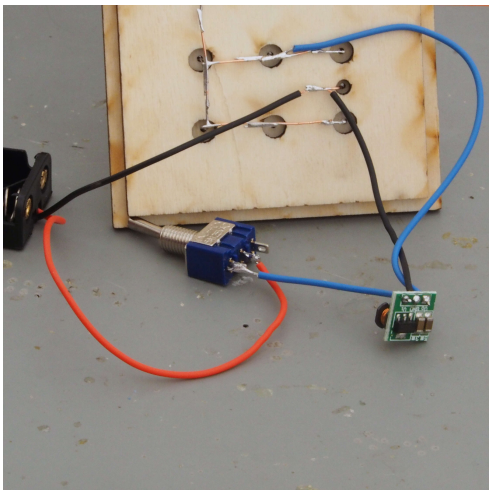
b) Solder a wire to one of the other pins and to the voltage-in (Vi) pin of the step-up



Step 12

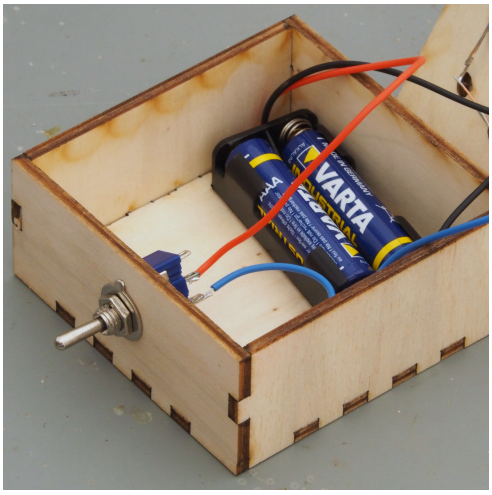
a) Solder the voltage-out (Vo) to the postive pin of the LEDs

b) 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



Step 14

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