

Buzz Wire Game Instructions

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Abstract. During this workshop, attendees build a buzz wire game system. The aim of which is to guide a loop through a wire maze without touching the wire. Each participant receives a pack containing all the components required to build the game. No prior soldering experience is required, training will be provided on the day. The only requirement the will to learn, and a packed lunch!

Keywords: analogue electronics, prototyping, buzz wire

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Buzz Wire Game Instructions

Step 1 Wiring (Positive and Negative)

It is good practice to use two different coloured wires when you are wiring your ground and power rails in particular. The reason for this is that some components are polarised in that they have positive and negative sides. If you connect them the wrong way they will not work and could become damaged. To help avoid confusion later fill in the colours for each wire in the following section:

For my positive (+) connections I am using _____ colour wire.

For my negative (-) connections I am using _____ colour wire.

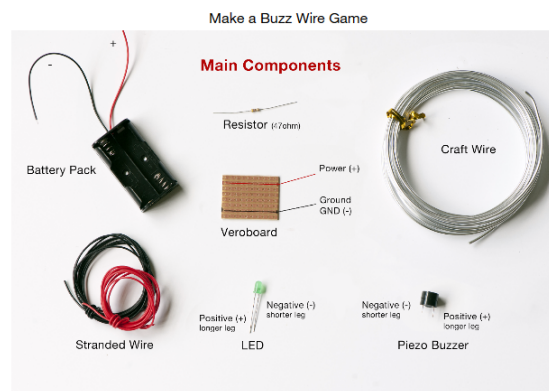


Fig. 1: Buzz Wire Components List

Step 2 Prepare some wires

1. Cut two lengths of positive wire about 15cm and strip both ends with wire strippers.
2. Cut 2 lengths of negative wire about 15cm and strip both ends with wire strippers.

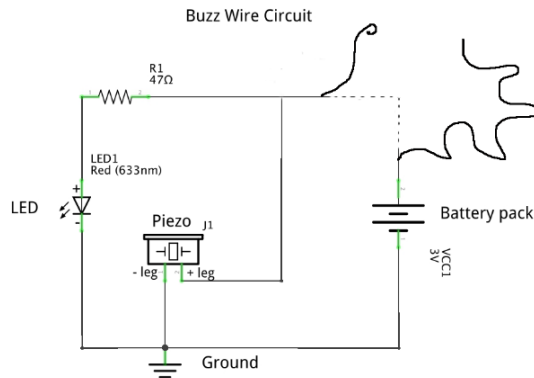


Fig. 2: Buzz Wire Circuit Diagram

Step 3 The Piezo Buzzer

Some components we are using have polarity. This means that they can only be connected to a circuit in one direction. Both the Piezo buzzer and the LED have positive and negative legs. The positive leg of the piezo buzzer is slightly longer than the negative leg, and additionally the positive side of the buzzer is also marked with a + symbol for easy identification.

1. Solder one end of a stripped positive wire to the positive leg of the piezo buzzer. Then solder one of the stripped negative wires to the negative leg of the piezo.
2. Thread both soldered wires through the wooden baseboard. Then flip the baseboard open.
3. Solder the positive wire from the piezo to the power rail on your veroboard. To help you along we have marked one rail on the veroboard with tiny red dots on either end to mark the positive rail. You can use entire rail on the veroboard as all the holes in each row are connected.
4. Similarly we have marked the negative rail with black dots. We recommend using this rail as your ground or negative rail. Solder the negative wire from the piezo to the ground rail on your veroboard.

Congratulations your first component is in!!

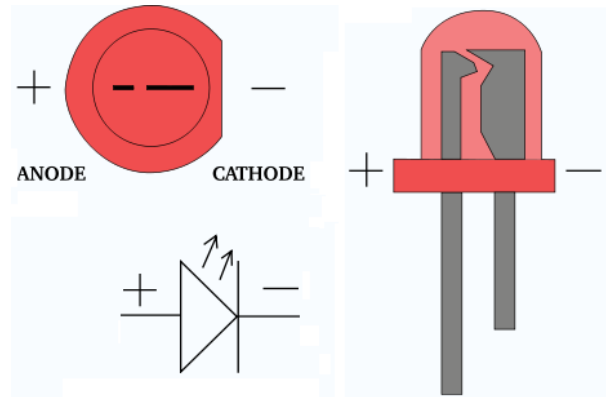


Fig. 3: Buzz Wire Circuit Diagram

Step 4 The LED

The longer leg of the LED is the positive leg. It is called the anode (+). And the shorter leg is the negative leg. It is called the cathode (-). Examine the Figure: 3 for more information about which is which.

1. Thread the LED through the small hole nearest the piezo buzzer on the wooden base board.
2. Solder one end of a stripped positive wire to the positive leg of the LED and solder one end of a stripped negative wire to the negative leg of the LED.
3. Set aside for the moment.

Step 5 The LED & Resistor

The resistor component is non polarised which means that it does not have any positive or negative legs.

1. Place the resistor in the veroboard with one leg in the power rail and another leg to some central rail in the centre of the veroboard.
2. Solder the positive wire from the LED to any point along the same middle rail you just soldered the resistor to.
3. Solder the negative wire from the LED to the ground rail on the veroboard.

Congratulations you have two more components complete!

Step 6 The Battery Pack

The 3V AA battery pack comes pre-wired. The black wire is ground (-) and the red wire is the positive (+).

1. Solder the black wire from the battery pack to the ground rail on the veroboard.
2. Velcro your battery pack to the underside of your wooden base.



Fig. 4: Buzz wire wand

Step 7 Make the Wand

1. To get a good sounding 'buzz' from your craft wire you will need to sand it. Use some sandpaper and lightly sand all around your craft wire. This helps remove the thin coating on the outside and provide a better connection.
2. Cut one piece of craft wire (about pencil length) for your wand. Make a hook at the top of your wand, leaving a small gap to easily slide on and off over the buzz wire. Set aside for the moment.
3. To make the coiled wire for the wand you will need to cut a length of wire about 80cm long. One end of this wire can be stripped as normal. The other end will need to have a long length of stranded wire exposed.



Fig. 5: Buzz wire wand cable

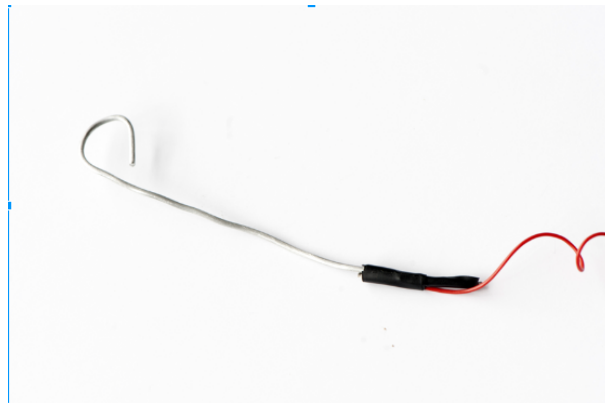


Fig. 6: Buzz wire wand and cable connected

4. Wrap the middle section of this wire around a pencil. Hold with tape and heat with a hair dryer. This will coil the wire nicely and help prevent it from tangling like a telephone cord.
5. Remove the pencil and solder the shorter stripped end of this coiled wire to the positive led on the battery pack.
6. Wrap the longer stripped end around the base of the wand and securely fix with a little solder and some electrical tape for good measure.

Step 8 Making the Bendy Buzz Wire

1. Push each end of the longer piece of craft wire through the remaining two holes on either end of the wooden base board. Bend into place at the back of the board.
2. Like before, wrap one end of a piece of positive wire to one end of the buzz wire and securely fix with solder and some electrical tape.
3. Solder the other end of this wire to the positive rail on the veroboard.
4. Now the buzz wire is in a position where you can bend it into an interesting shape.

Step 9 Insert the Batteries

The circuit is now complete! You can now insert the two AA batteries into the battery holder. Be sure to pay attention to the polarity of the batteries and insert them in the correct way!

Test to see if your circuit is working, touch the wand off the buzz wire, the LED should light and the piezo buzzer should sound off!

Have fun!

Thanks for taking part!

We are delighted to have you at this workshop and hope you enjoyed your time spent here! The South East Makerspace has developed several workshops in the IoT space and hope to continue creating more in the future. Be sure to sign up to the mailing list, and follow us on social media to keep informed about our events and workshops! We would be delighted to welcome new members! For information on SEMS see:

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