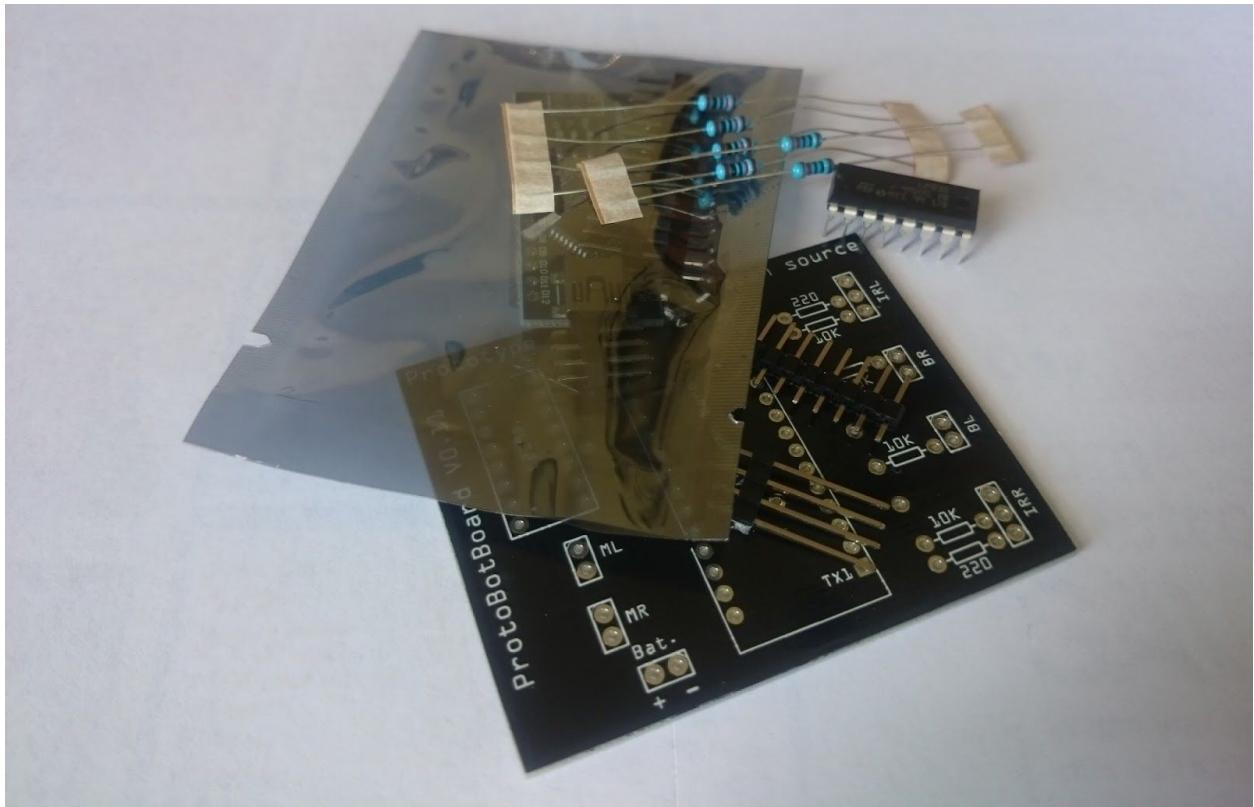


Materials and Tools

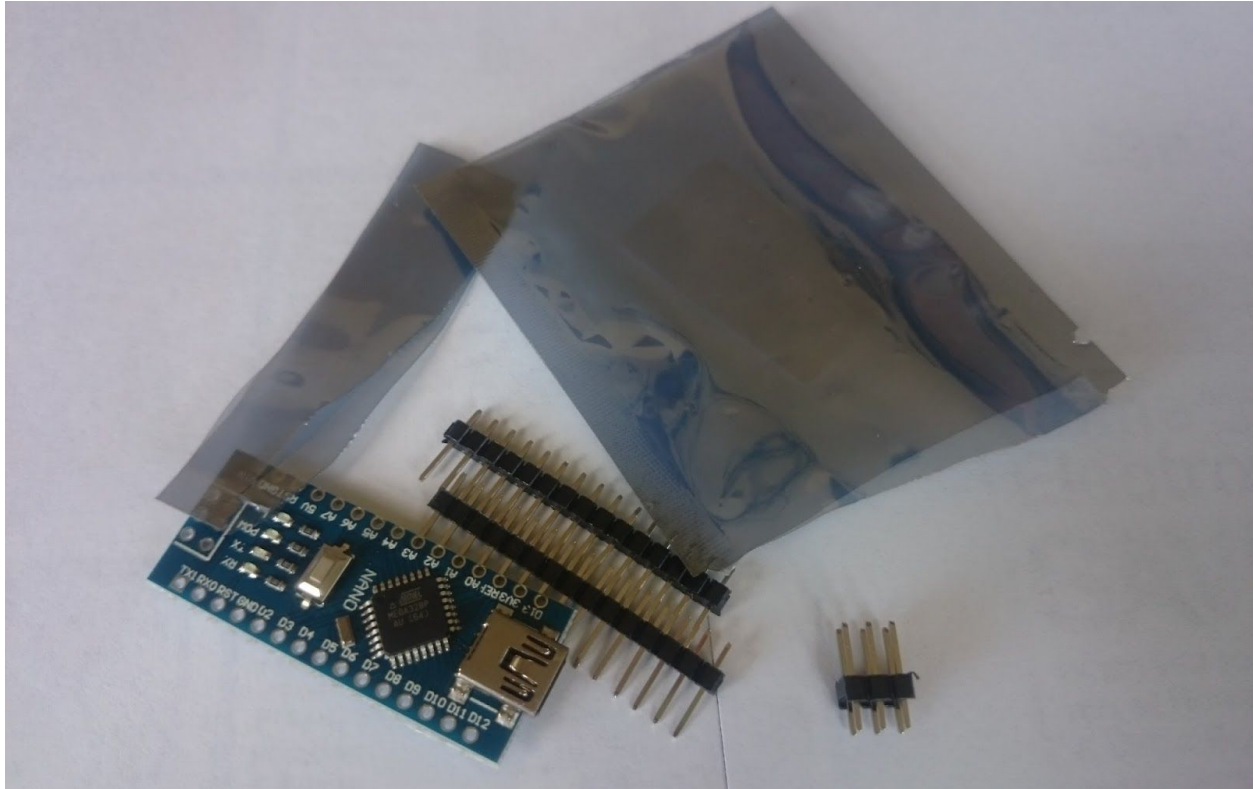


You will need:

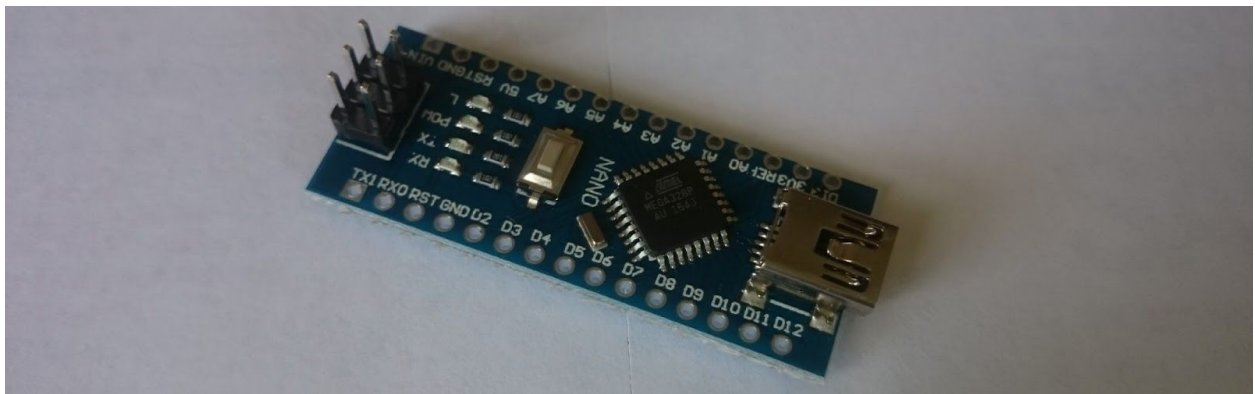
- ProtoBot circuit board
- Arduino Nano + Header pins (Should all be in a little baggy, unless your arduino is already assembled, or is soldered to the board)
- Motor Driver chip
- 2 x 220 Ohm resistors
- 4 x 10K Ohm resistors
- 4 x Long header pins
- 10 x short header pins
- 1 x Female header pins (Not pictured)
- Wire Cutters
- Masking tape
- Needle nose pliers

Step 1

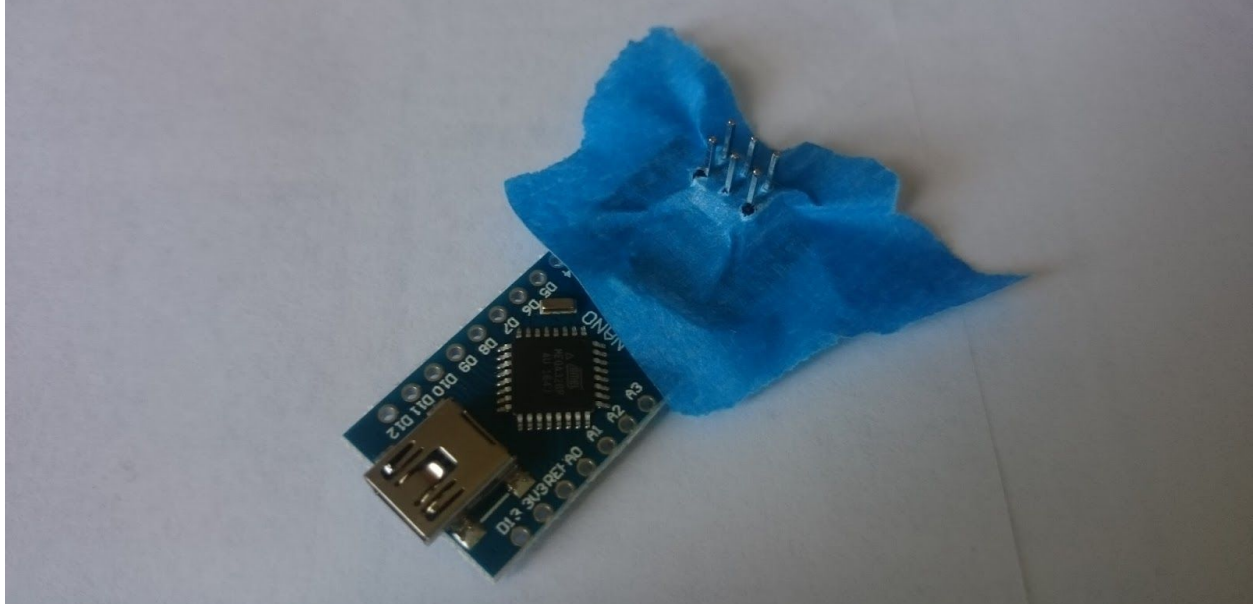
Note! If your Arduino Nano already has the pins soldered to it, skip to Step 5



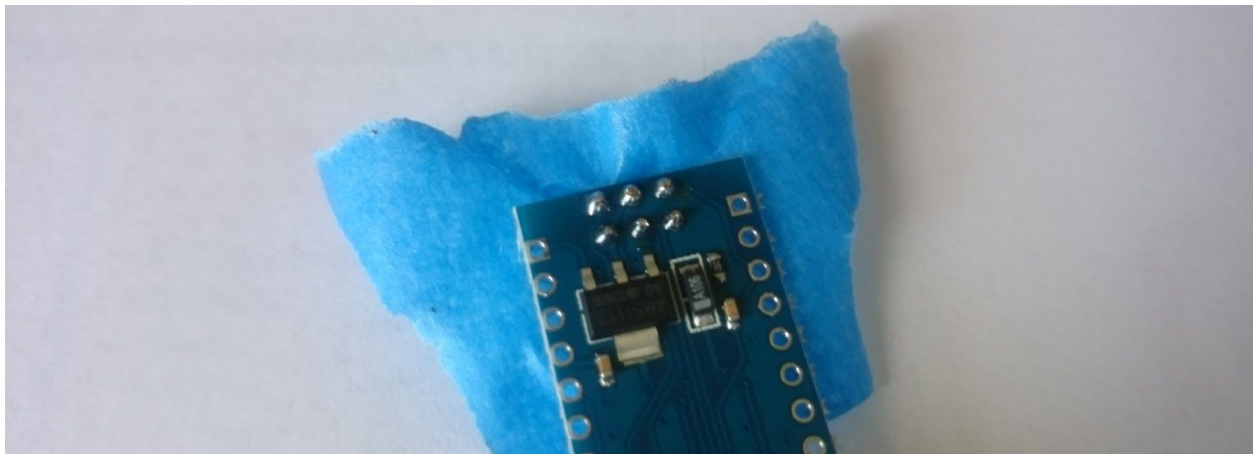
- Take the Arduino Nano out of its' bag



- Put the small group of 6 header pins in place, as shown by the picture

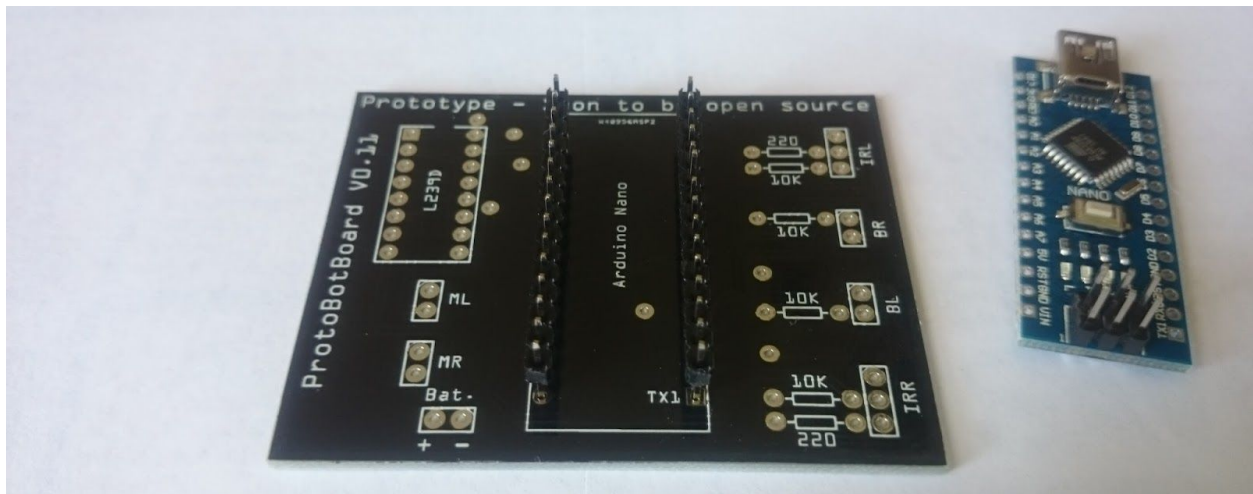


- Using a piece of masking tape, tape the headers to the Arduino Nano

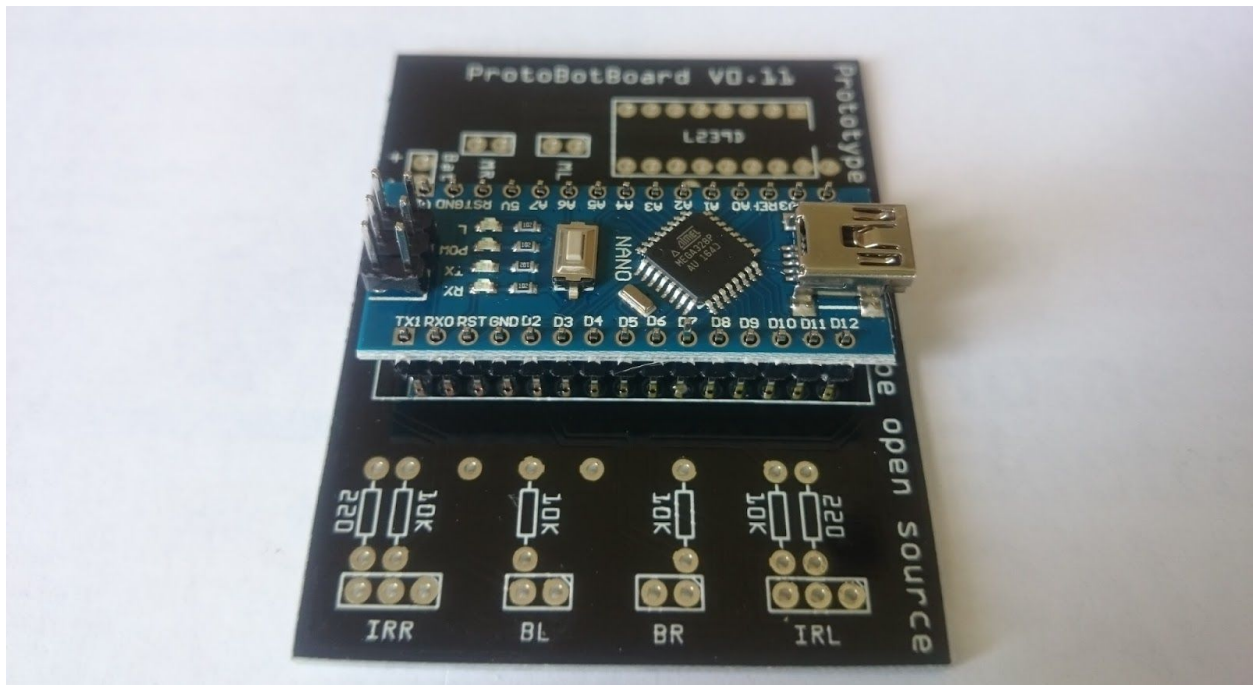


- Solder each pin in place on the underside of the board

Step 2

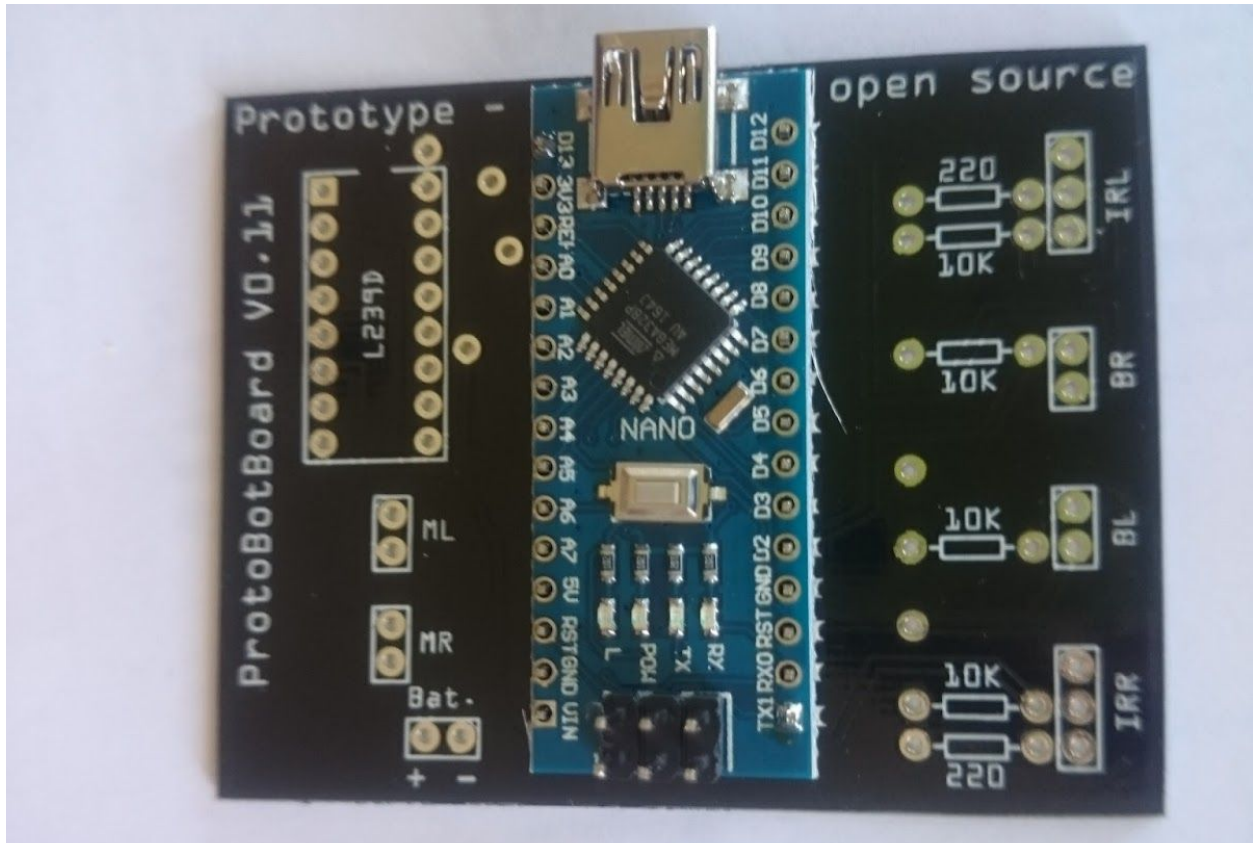


- Take the long rows of header pins, and place them into the holes on the circuit board as shown, with the long side of the pins going down into the board

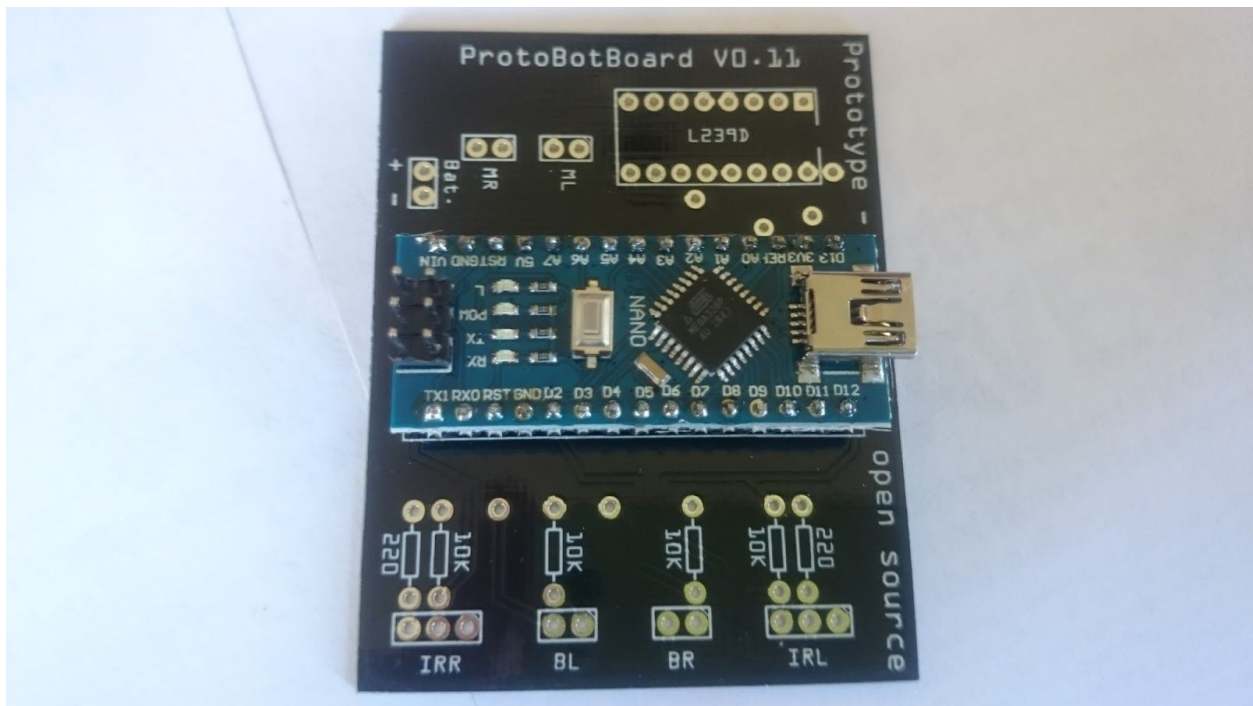


- Place the arduino onto the pins as shown, with the USB connector pointing towards the words on the board that say "Prototype - Soon the be open source"

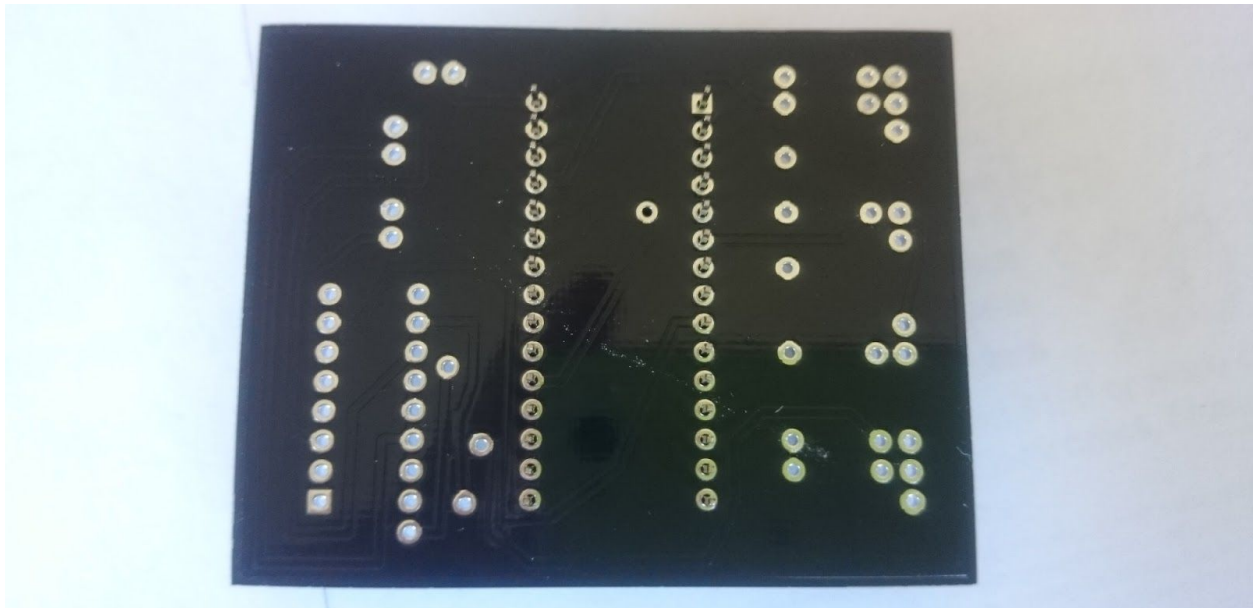
Warning! If you put the arduino on the wrong way, your robot won't work later



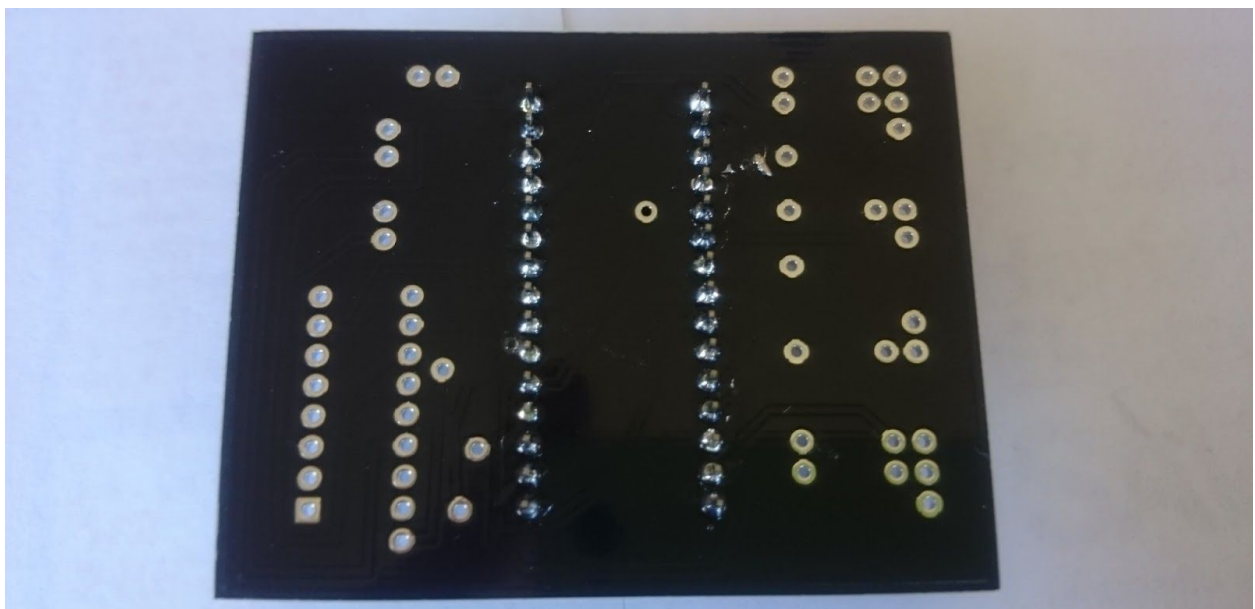
- Solder the pins in the corners of Arduino to hold it in place, then solder the rest



Step 3

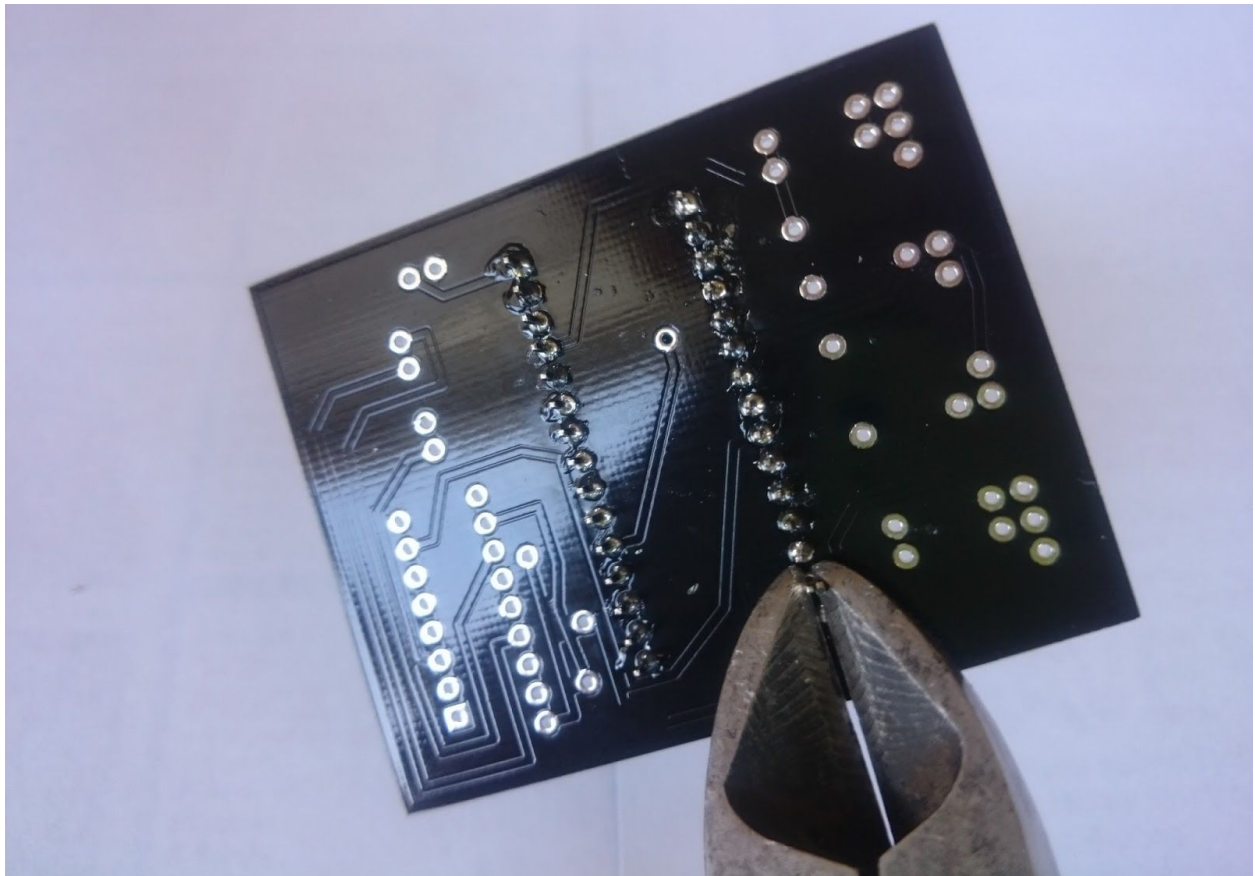


- Push the arduino down into the board, so that it's sitting firmly in place, and the pins are sticking out the other side as far as possible



- Solder each pin like you did with the top of the Arduino, starting with the corners and then doing the rest

Step 4



- Using a pair of wire cutters, clip off the extra pins sticking up.

Tip! Don't cut off the solder, just the extra parts of each pin that's sticking up.



- You need:

- 2 x 220 Ohm resistors
- 4 x 10K Ohm resistors
- 1 x L293D (Motor Driver Chip)
- 4 x Long header pins
- 10 x short header pins
- 1 x female header pins

Step 6



- Place the motor driver chip on the board, as shown. Make sure the notch in the top of the board is aligned as shown

Warning! Be careful not to bend or break the pins of the motor driver!



- Solder the chip in, starting with the corners of the chip, then soldering the rest



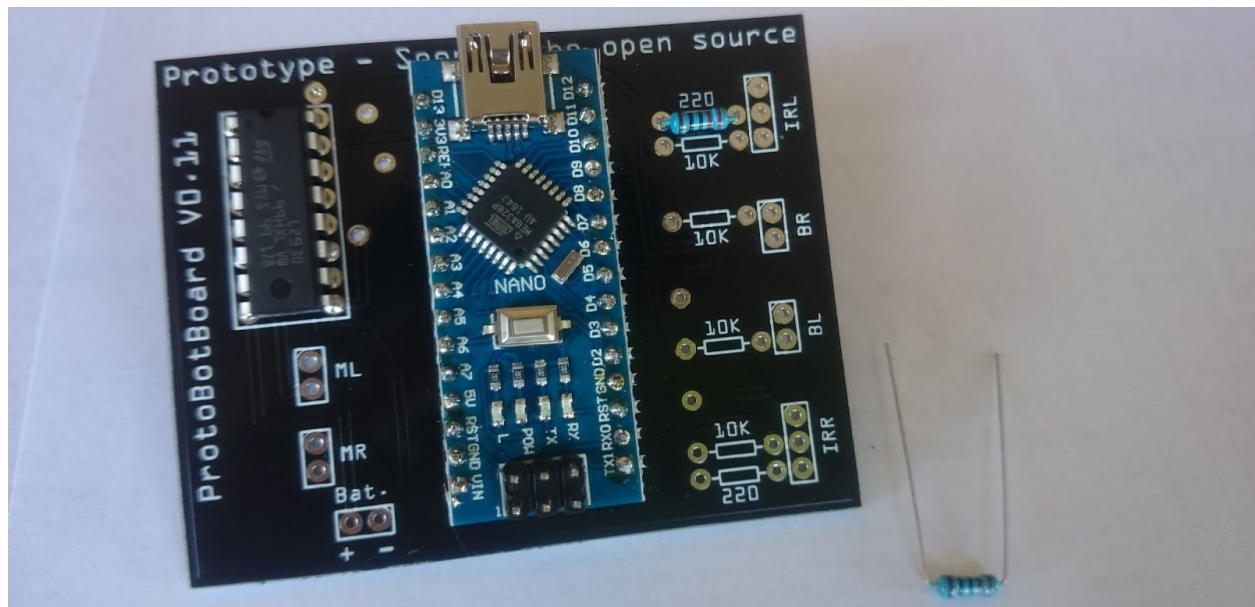
Step 7

220 Ohm Resistor - Tan color

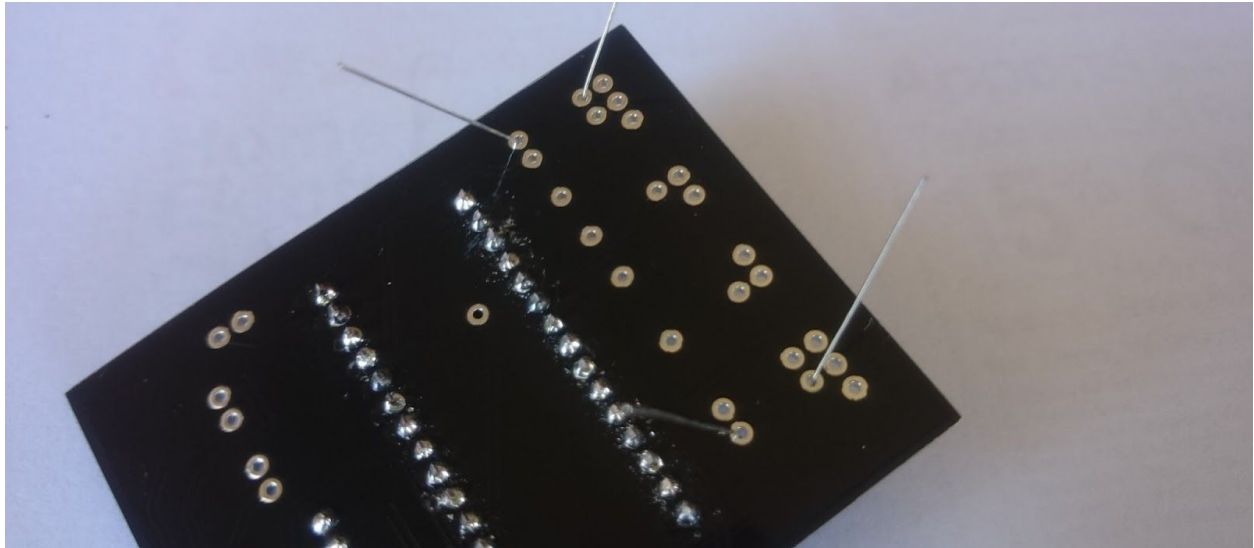


220 Ohm Resistor - Blue color

- Find the two 220 Ohm resistors. They should look like one of the two kinds above

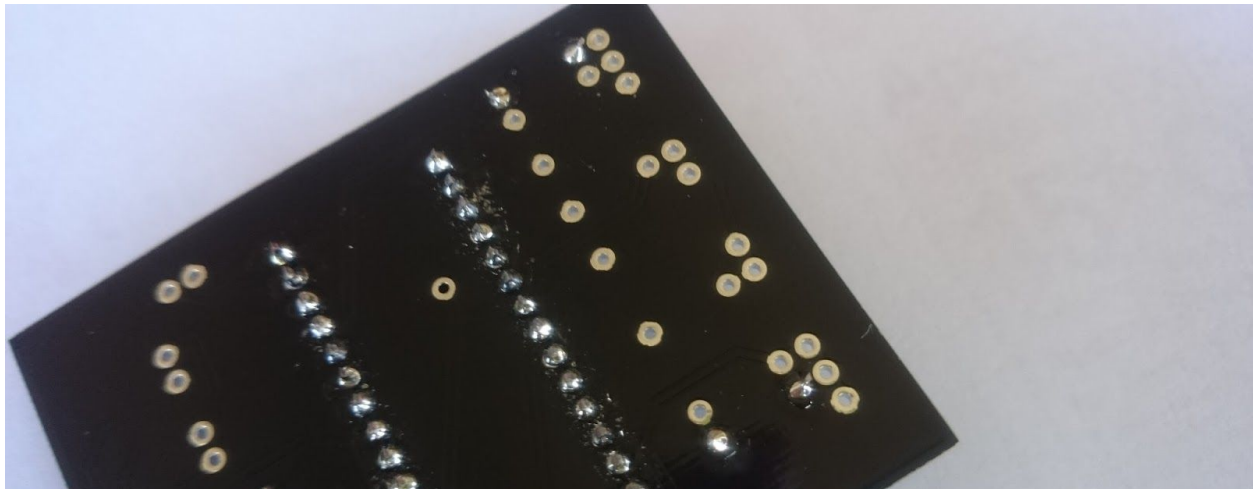


- Bend the leads at a 90 degree angle, and put them in the spots marked "220" on the board



- With the leads in the board, bend them at a slight angle to keep the resistors from falling out

Tip! Put a piece of masking tape over the resistors to help them stay in.



- Solder the leads, then clip the extra wire off with the wire cutters

Step 8

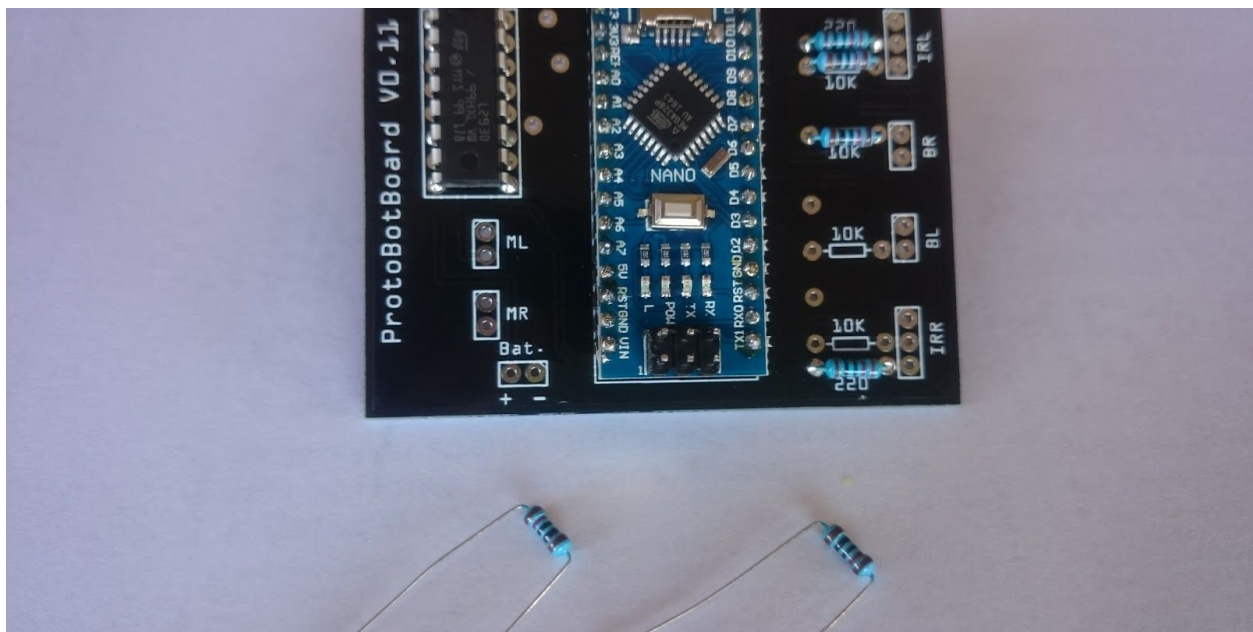
10K Ohm Resistor - Tan color



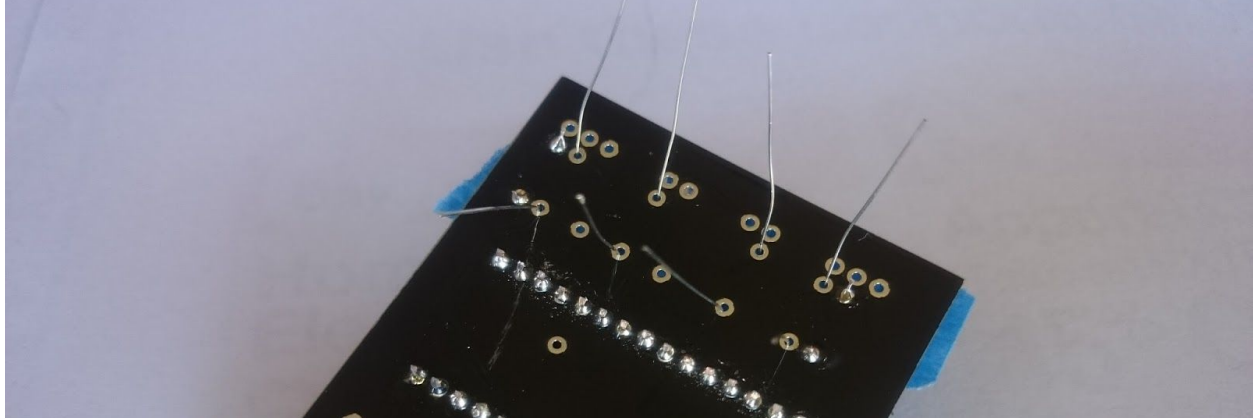
10K Ohm Resistor - Blue Color



- Find the four 10K Ohm resistors. They should look like one of the two kinds above

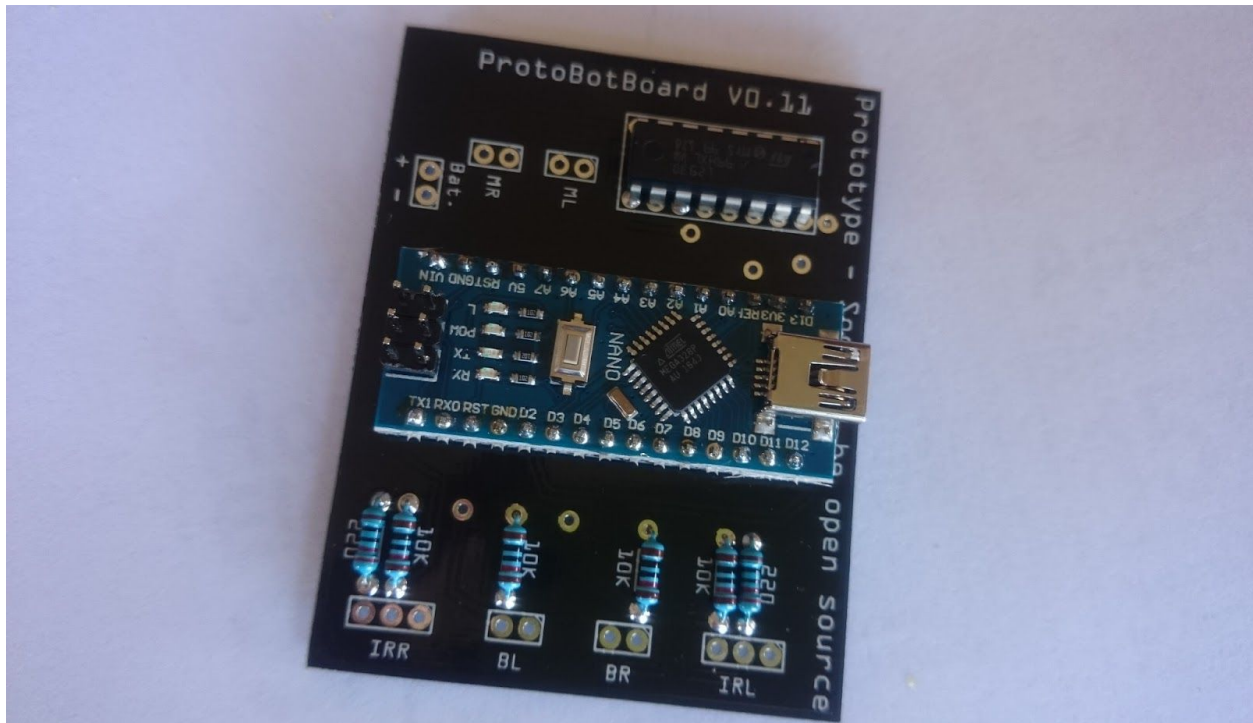


- As with the 220 Ohm resistors, bend the leads and insert them into the spots marked "10K"



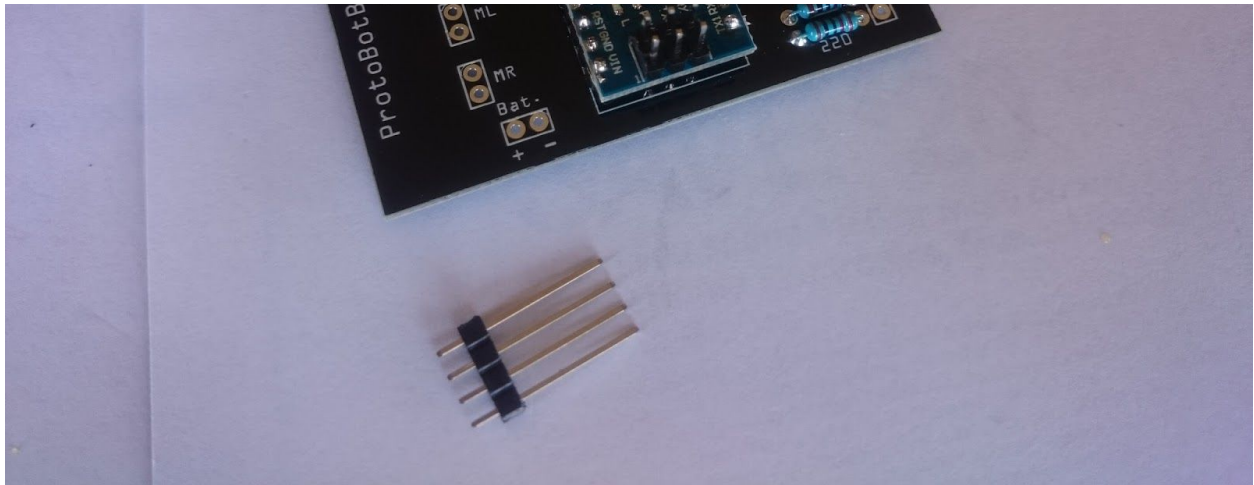
- Bend the leads slightly to keep them from falling out

Tip! You can use masking tape here too, to help keep the resistors in place.

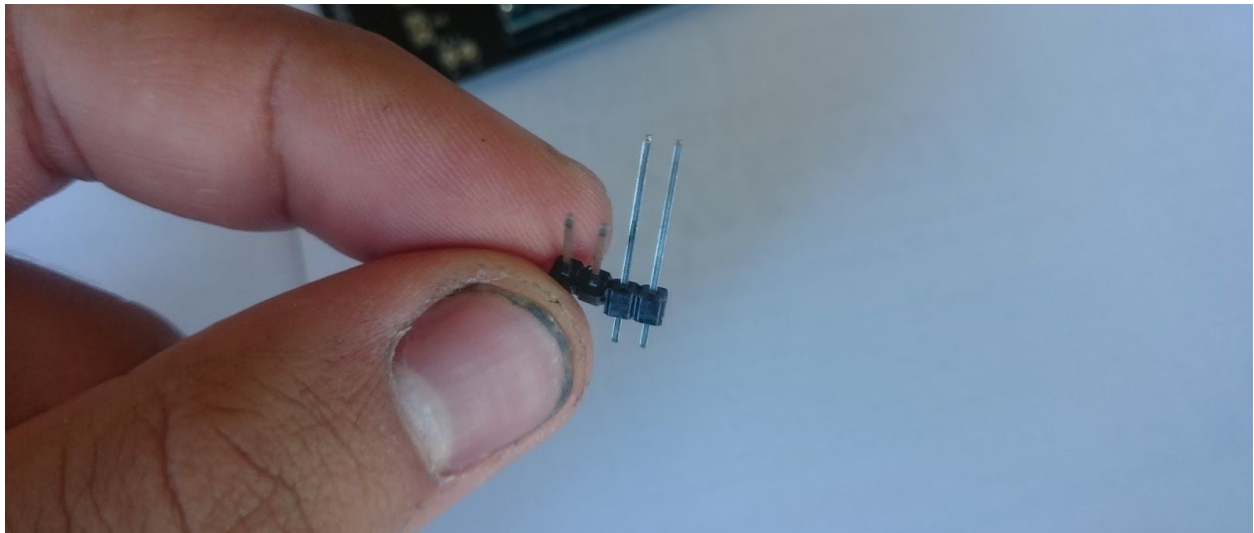


- Solder the leads, then clip off the extra wire

Step 9

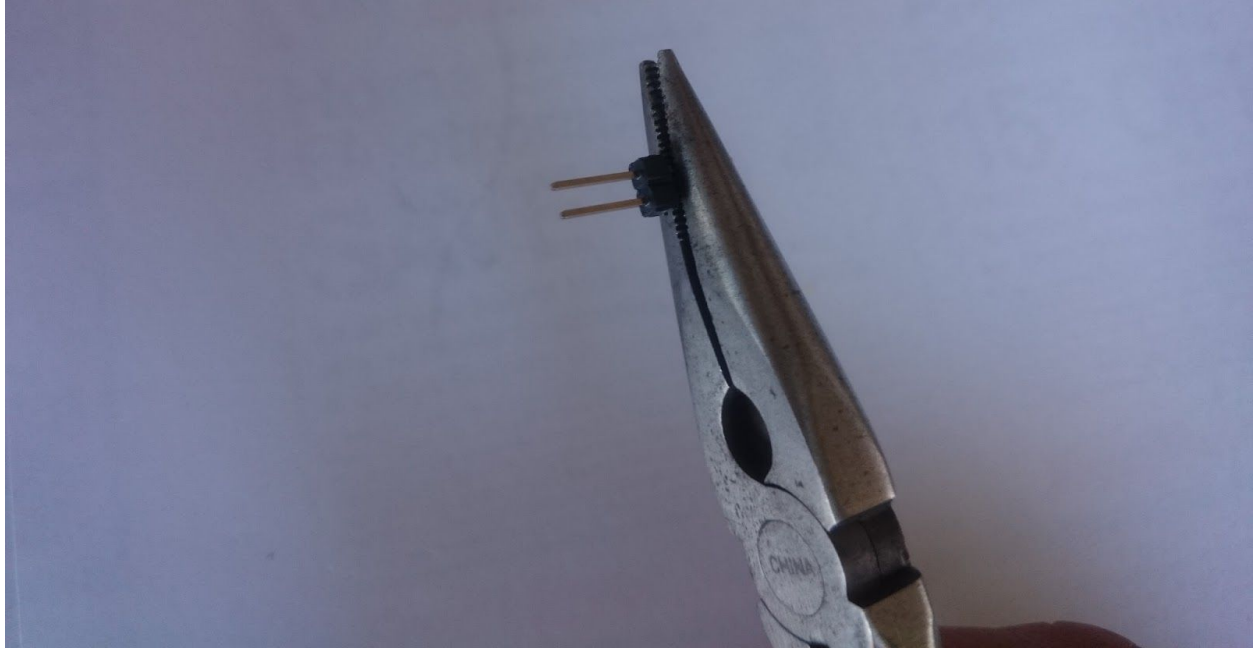


- Find the piece of long pin headers



- Break it in half by twisting each half in a different direction

Warning! Make sure you get 2 pins on each half.

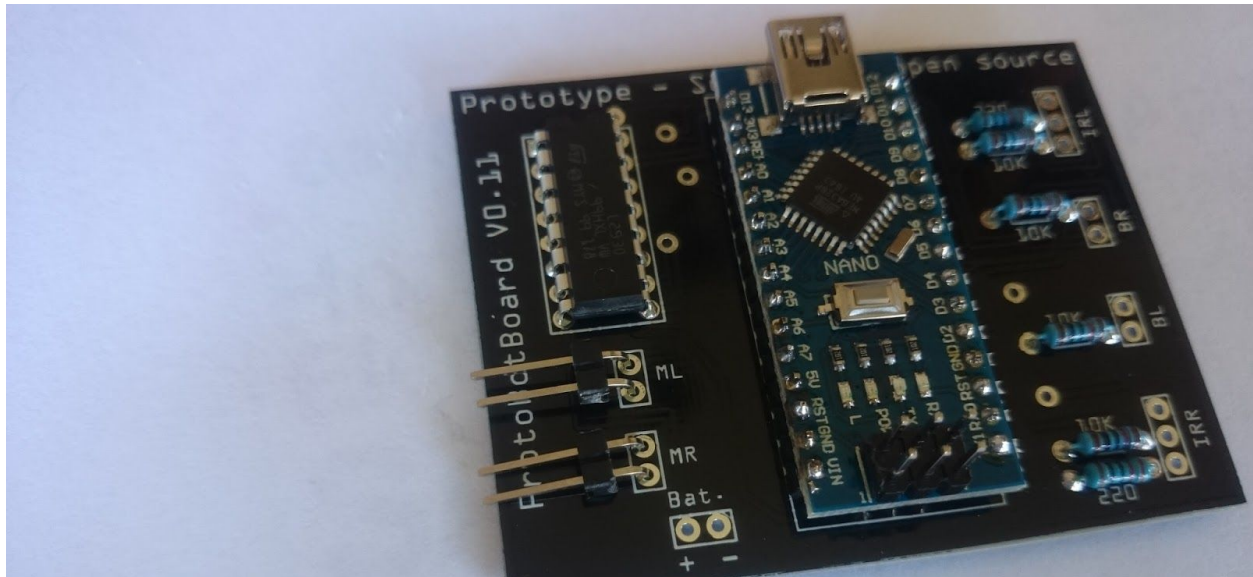


- Grab one end of the header with a pair of pliers, and bend it 90 degrees

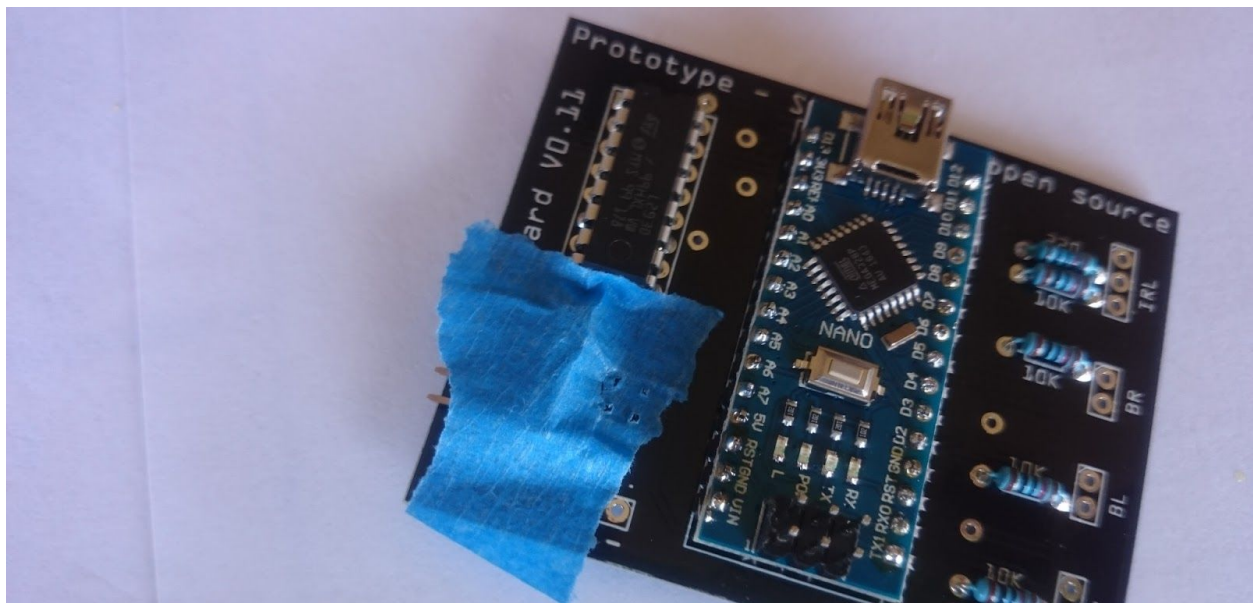


- Repeat with the other header pin



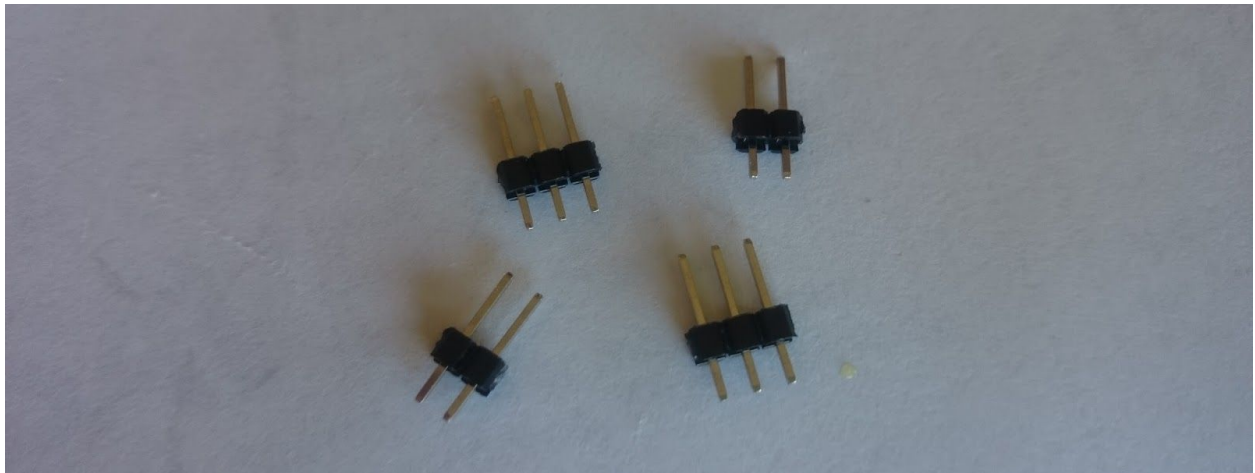


- Insert the headers into the holes labelled “MR” and “ML”, as shown

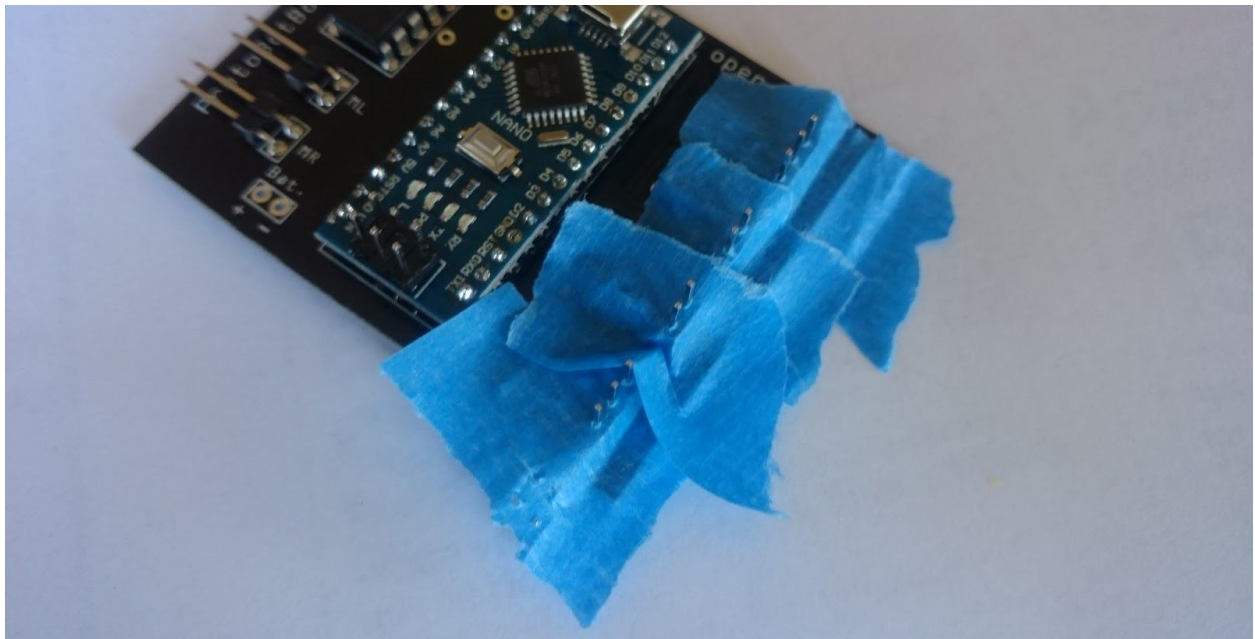


- Put a piece of masking tape over the headers, to keep them in place
- Solder them in place, then remove the masking tape

Step 10

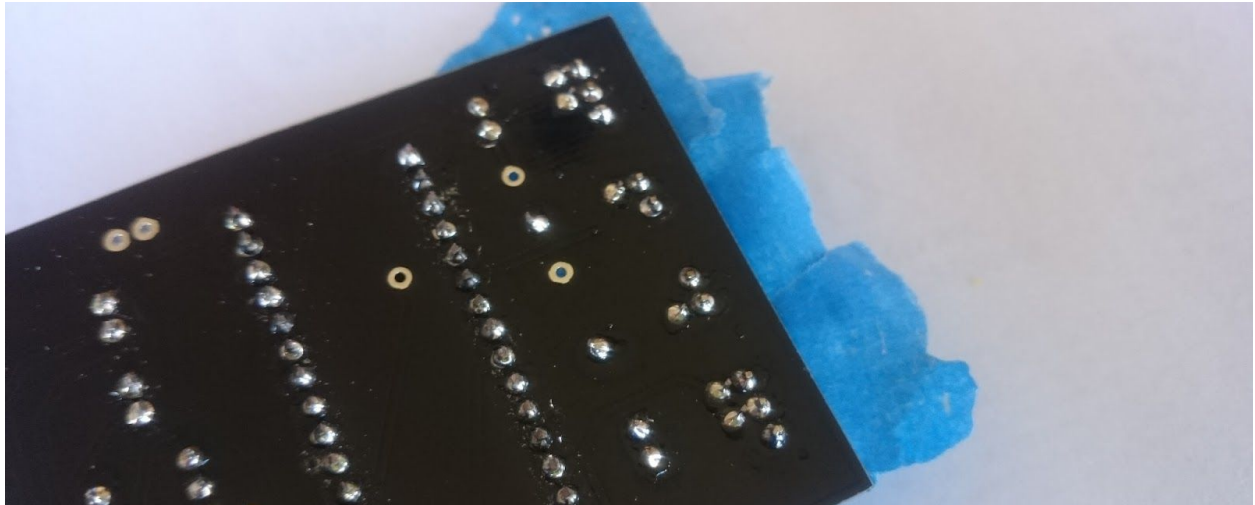


- Break the short header pins into 4 pieces as shown - two 2 pin pieces, and two 3 pin pieces

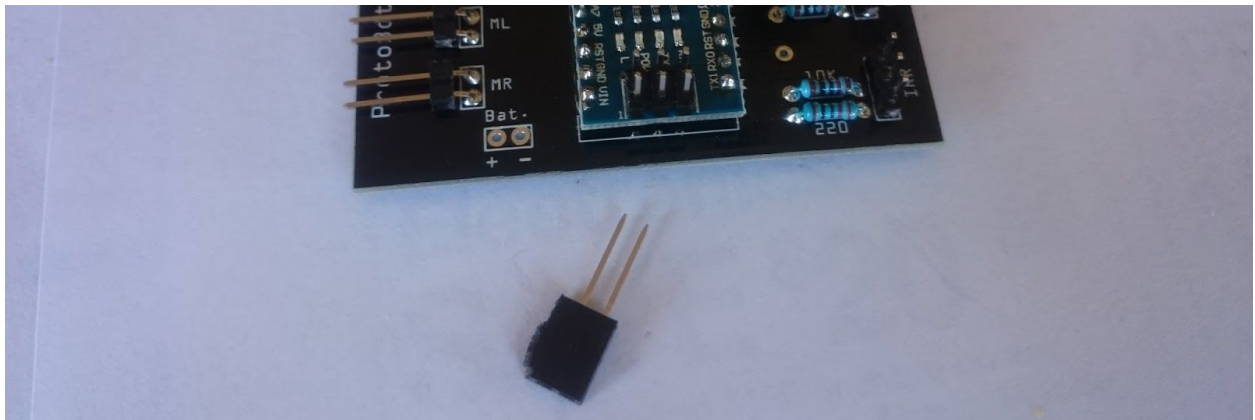


- Use a few pieces of masking tape to hold the header pins in place.

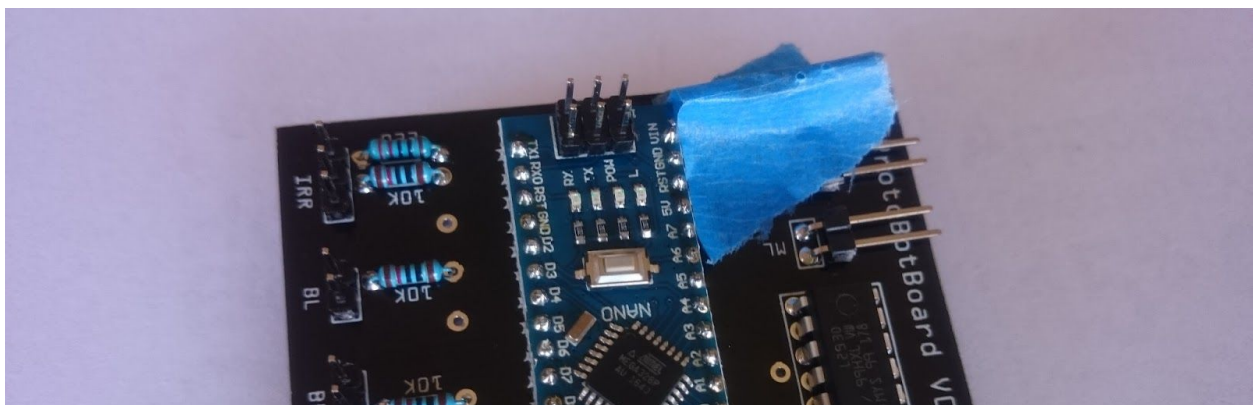
Tip! Your board will look nicer if the pins are straight up/down/side to side.



- Solder the header pins, and remove the masking tape



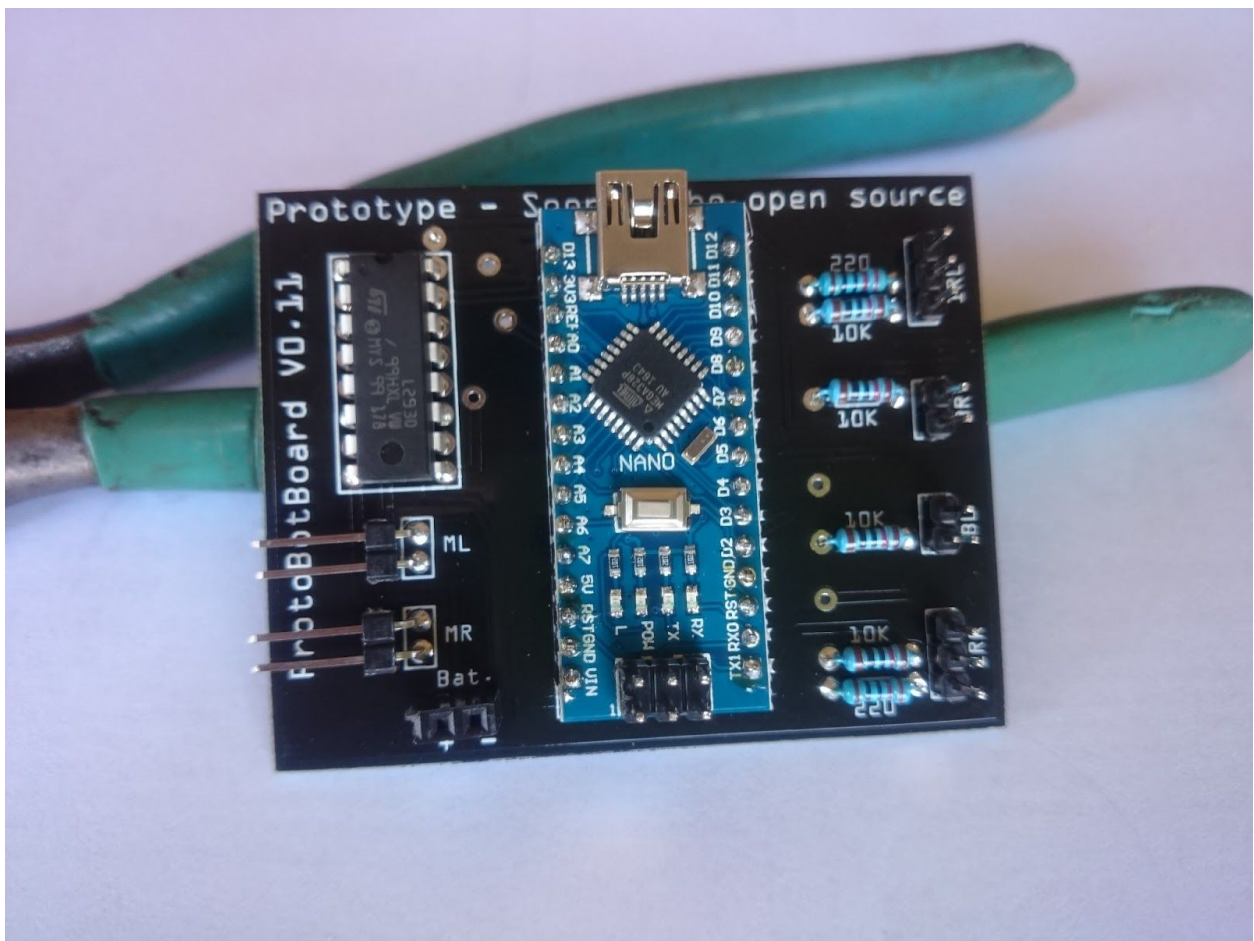
- Take the female header pins, and put it into the place marked "Bat."



- Use a bit of masking tape to hold it in place



- Solder the pins in place, remove the masking tape, and clip off the extra wire



Congrats! Your board is finished.