The Monarch

boldport.com/monarch

Designed by Boldport, manufactured by Eurocircuits

BOLDPORT CLUB

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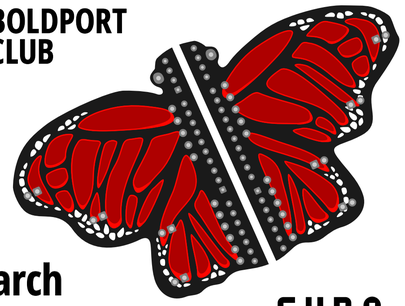
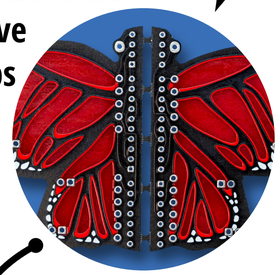
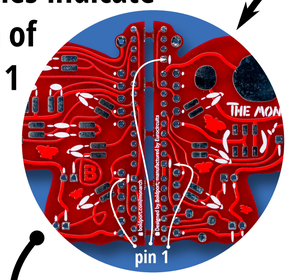


Start

Break the two halves and remove excess tabs

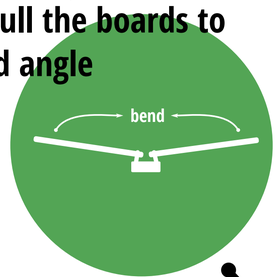


Place the three IC sockets. The small lines indicate the position of pin number 1

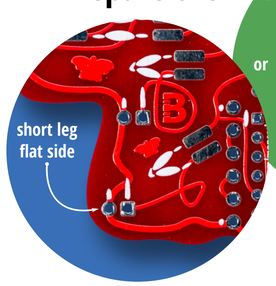


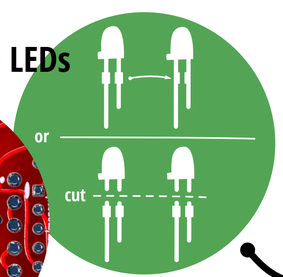
Now solder the sockets leaving a gap between the socket and the board

Gently pull the boards to a desired angle



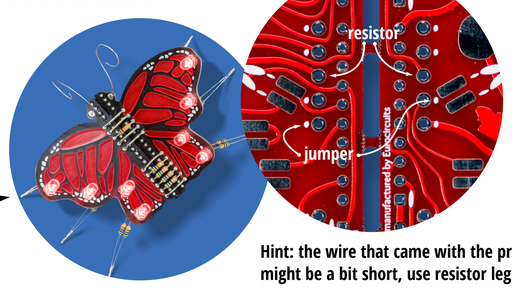
Prepare the LEDs





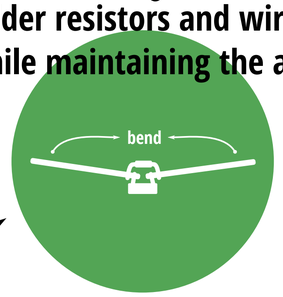
Hint: you can place the LEDs on either side of the board

Prepare the components using this image as a reference.

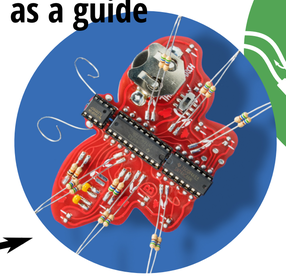


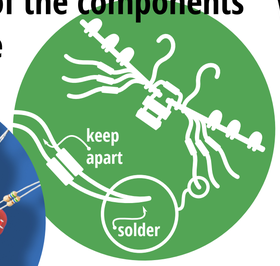
Hint: the wire that came with the project might be a bit short, use resistor leg clippings for some of the jumpers instead to leave plenty for the antennae

Solder resistors and wire jumpers while maintaining the angle

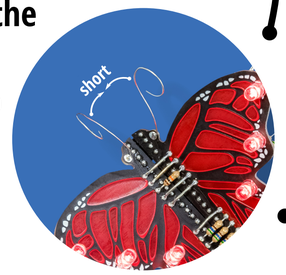


Solder the rest of the components using this image as a guide





Insert battery, turn switch on and touch the antennae together to activate the circuit!



Yay!

Nothing's happening!

Did you notice that sometimes no LEDs are on when you switch the power on? Memory elements such as flip-flops have an undetermined on-state, so sometimes it happens that all of them start 'off'. The problem is that an LFSR doesn't work when all registers are 'off' and a reset to a determined state on power-on was too much for this project.

What to do? Just try again until at least one LED is on when you turn the switch.

This circuit uses an LFSR or 'linear feedback shift register'. With the right feedback through XOR gates we can get all possible states of the amount of retisters, minus one. So here, 2^8 - 1, or 255. A 'formula' thay exhiubits this behavious is called a 'maximal length polinomial'.

LFSRs are used as pseudo-random number generators. The output is random, but predictable. A true random number generator on the other hand is unpredictable.