

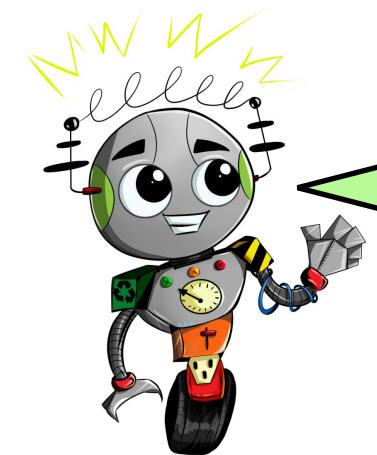
BUZZING BOTS

Making worksheet

Here's what you will need to get started:

- 1 x BBC micro:bit attached to a **servo:lite** board
- 2 x **continuous servos** (GS-3360BB) with wheels
- 3 x AAA rechargeable batteries
- 3 x elastic bands
- 1 x paper coffee cup
- 1 x piece of scrap cardboard at least 10cm x 10cm

You will also need a pencil, scissors and strong glue, as well as coloured pens and scraps for decorating.

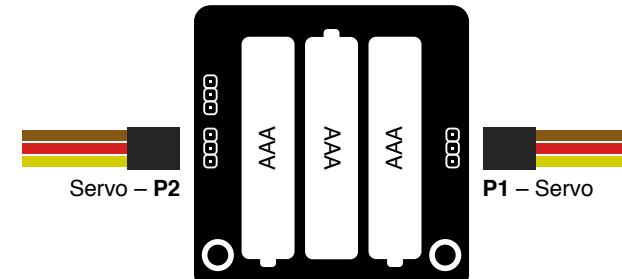


Coffee cups are not normally accepted in household recycling collection schemes but can now be returned for recycling at some high street coffee store chains. They can also be recycled in food and drink cartons banks at Reuse and Recycling Centres.

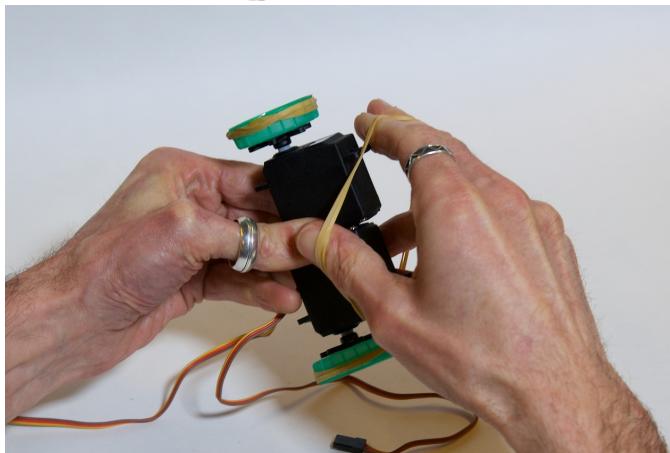
Better still, take advantage of the discounts offered by many coffee shops by taking along your own reusable cup!



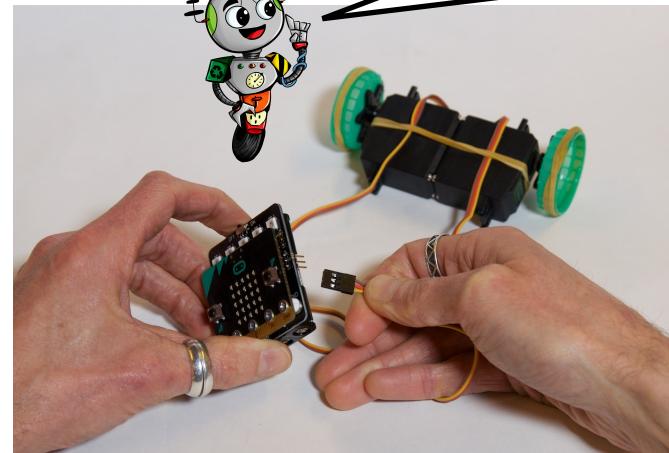
This diagram shows where the cables attach:



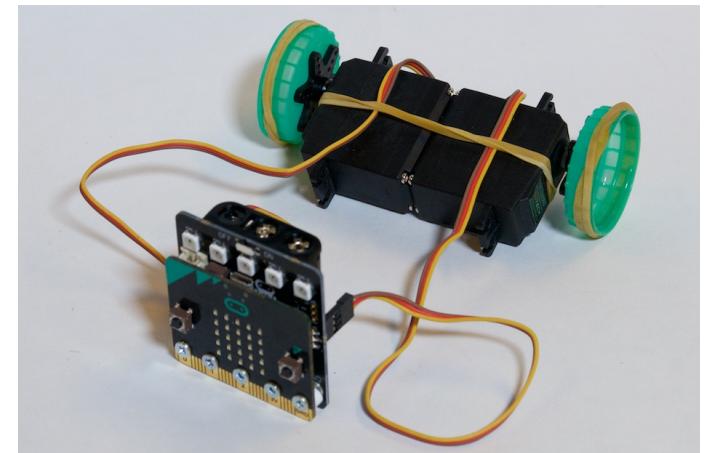
Stretch an elastic band (doubled if necessary) around the outer rim of the wheel on each servo to make tyres.



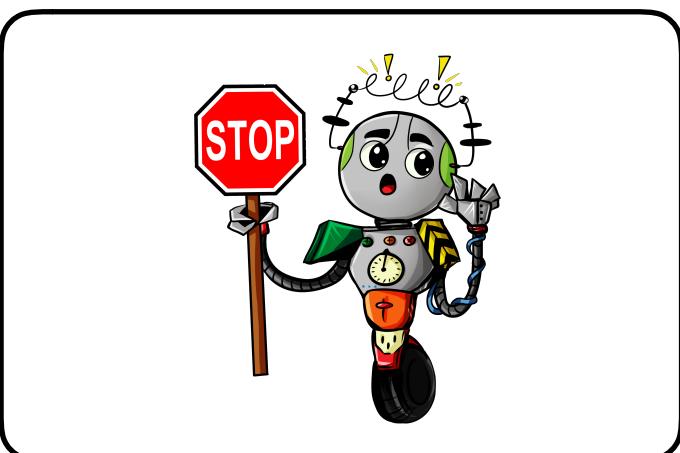
Place one servo on top of the other and attach them together with another elastic band.



Loop the cables back under the elastic band and connect to the servo pins on the back of the servo:lite board with the brown wires at the top.



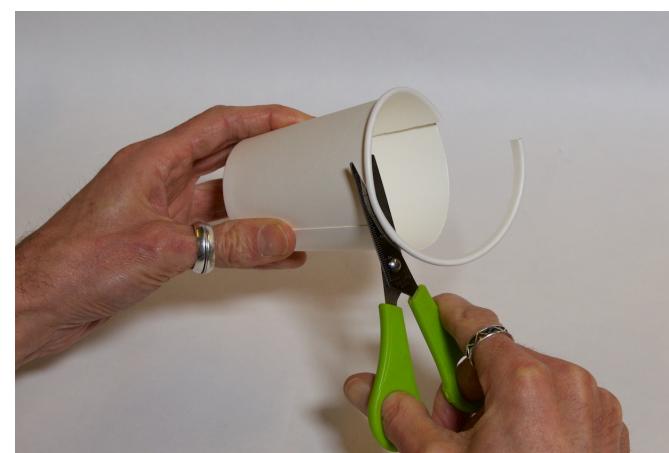
Make sure the servo cables are attached so that they don't cross over each other, otherwise your bee will drive the wrong way!



It is best to follow the [Programming Worksheet](#) now to learn how to control the servo motors.



On the opposite side to the inside seam in the cup, make a straight cut from the top to the base. If your cup has a ridged outer layer, peel this off.



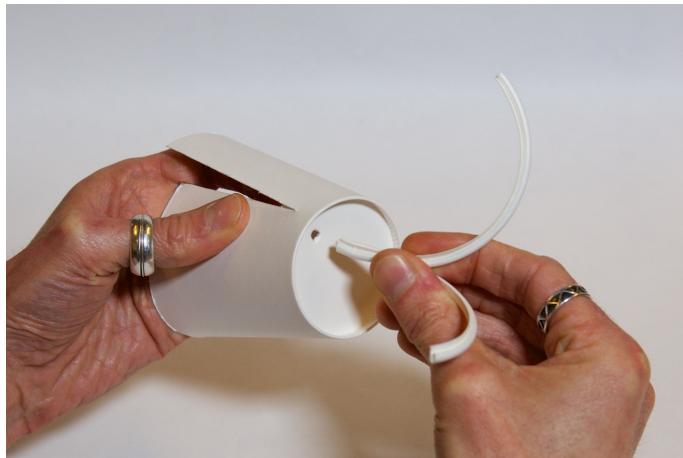
Starting at the cut you have just made, carefully cut around the top of the cup to remove the lip. **Keep the lip to one side!**



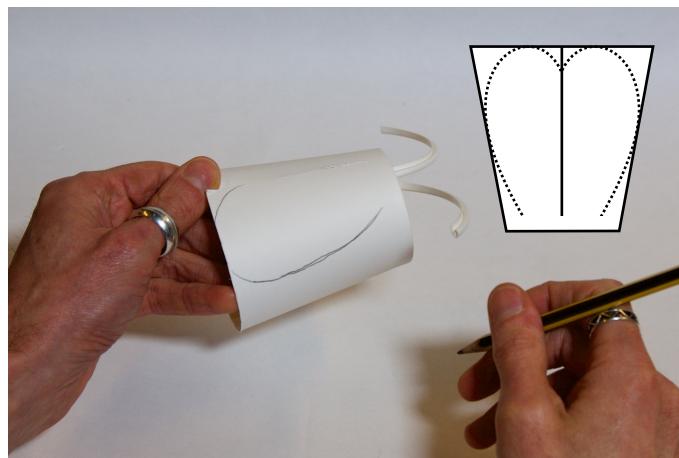
Use the tip of a pencil to poke a hole in the bottom of the cup near the straight cut.



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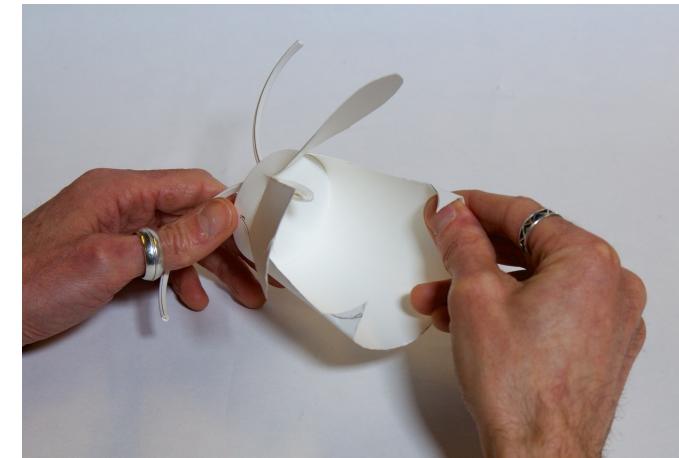
Fold the removed lip of the cup in half and poke into the hole to make the bee's antennae.



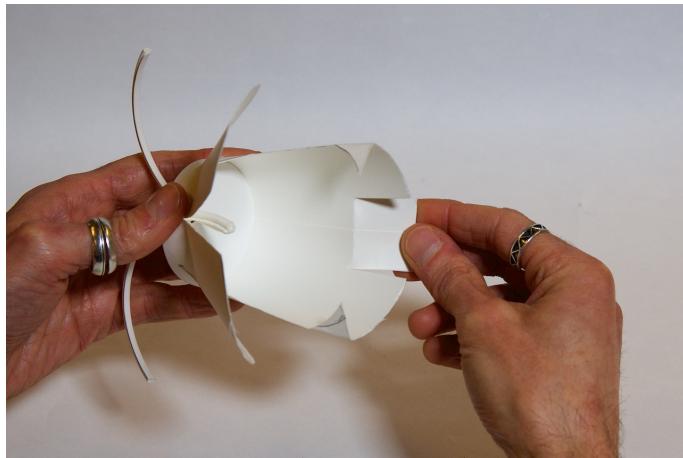
With a pencil, draw wings on either side of the straight cut in the shape of a heart with the point missing.



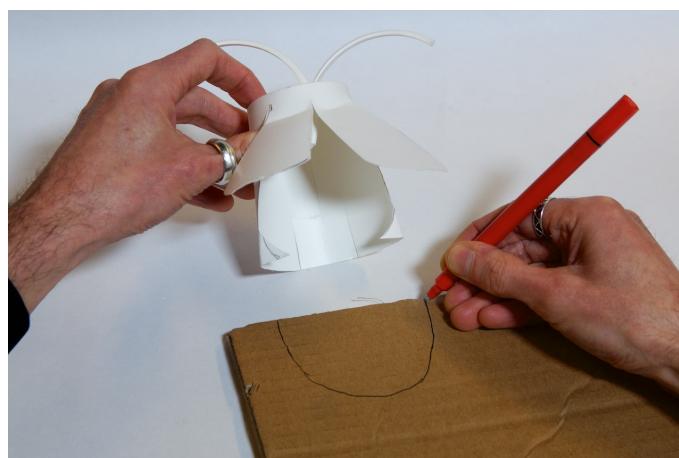
Cut around the outlines of the wings and fold them up slightly. **Be careful not to cut them out completely!**



Fold down the leftover points at the top of the cup inwards to make two small flaps.



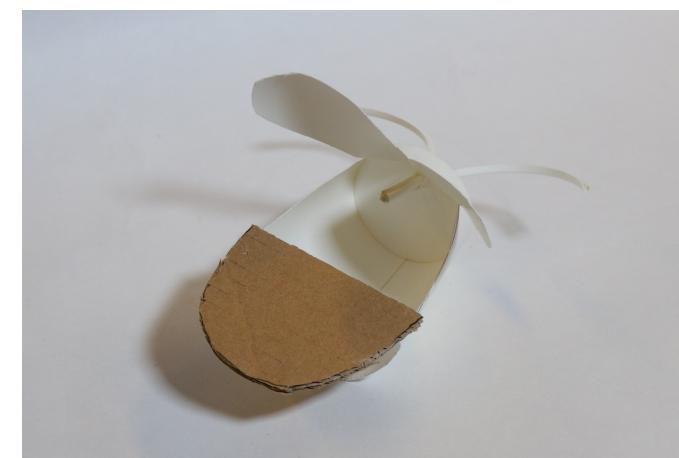
Make two short cuts (about 3cm) at the top of the cup, on the opposite side to the wings, and fold this down slightly to make a square flap.



Draw the abdomen of your bee – a tongue shape – on cardboard, using the cup to get the width right, then cut this out.



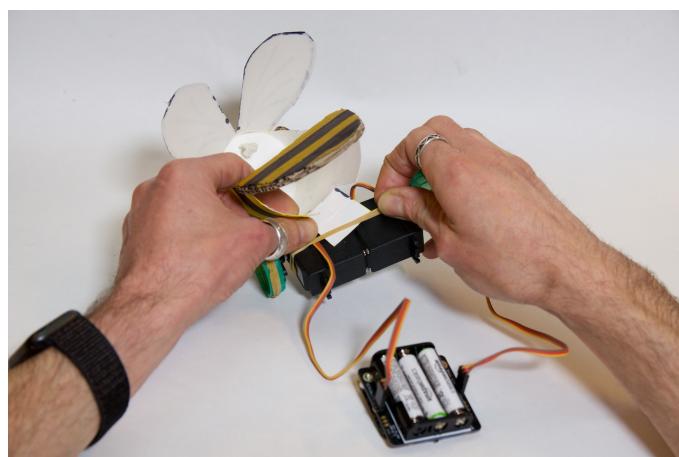
Put a small blob of glue onto each of the pointed flaps.



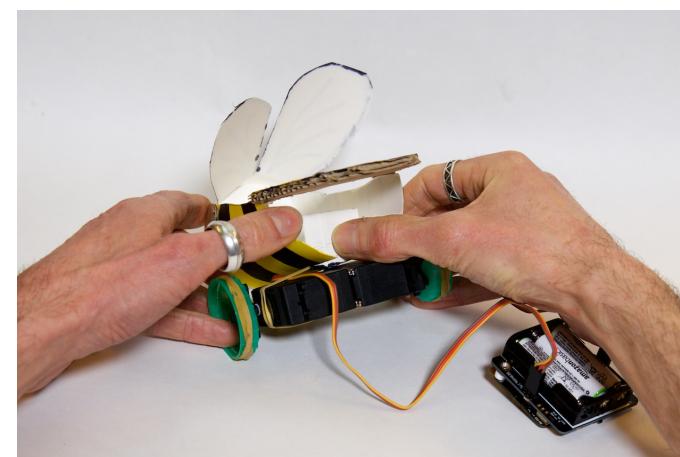
Stick the cardboard abdomen across the two flaps, with the straight edge to the front.



Now decorate your bee with pens and bits of scrap material!



Slide the flap at the bottom of the bee body under the elastic band with the front of the bee pointing away from the micro:bit.



Fold the flap up 90° to make a lip to help support the micro:bit.



Place the micro:bit upright inside the bee body, carefully tucking the loose cables inside. Your Buzzing Bot is now finished!