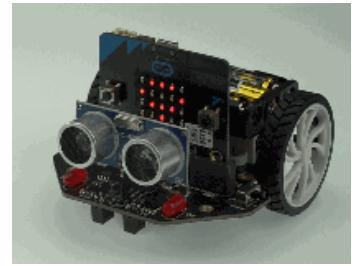


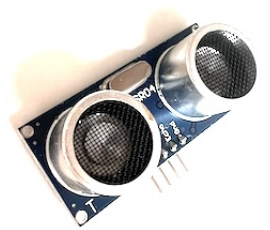


Ultrasonic Bat-Sense



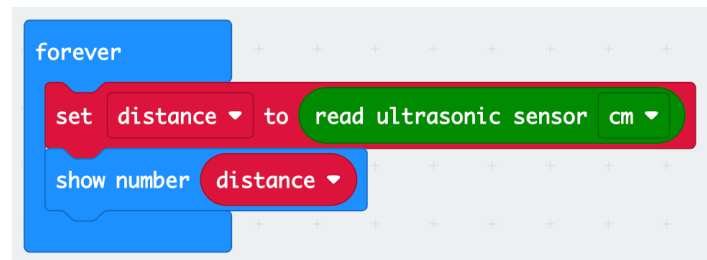
Use a high-pitched **ultrasonic** sound sensor – like bat echo-location.

- 1) Open <https://makecode.microbit.org>
- 2) **+New Project**
- 3) Select +Extensions > click “maqueen”
(**not** Maqueenplus)
- 4) Plug the ultrasonic sensor into the 4-pin socket near the front of the robot.



Ultrasonic echo-location

- 5) In Variables, make a variable called **distance**
- 6) Add the code to the right
- 7) Download to the robot and wait until the amber light stops flashing.
- 8) Don't unplug the robot, but turn it on otherwise the sensor won't work.



*This shows the distance in centimetres (cm) on the display.
Use it to detect your hand in front of the robot.*

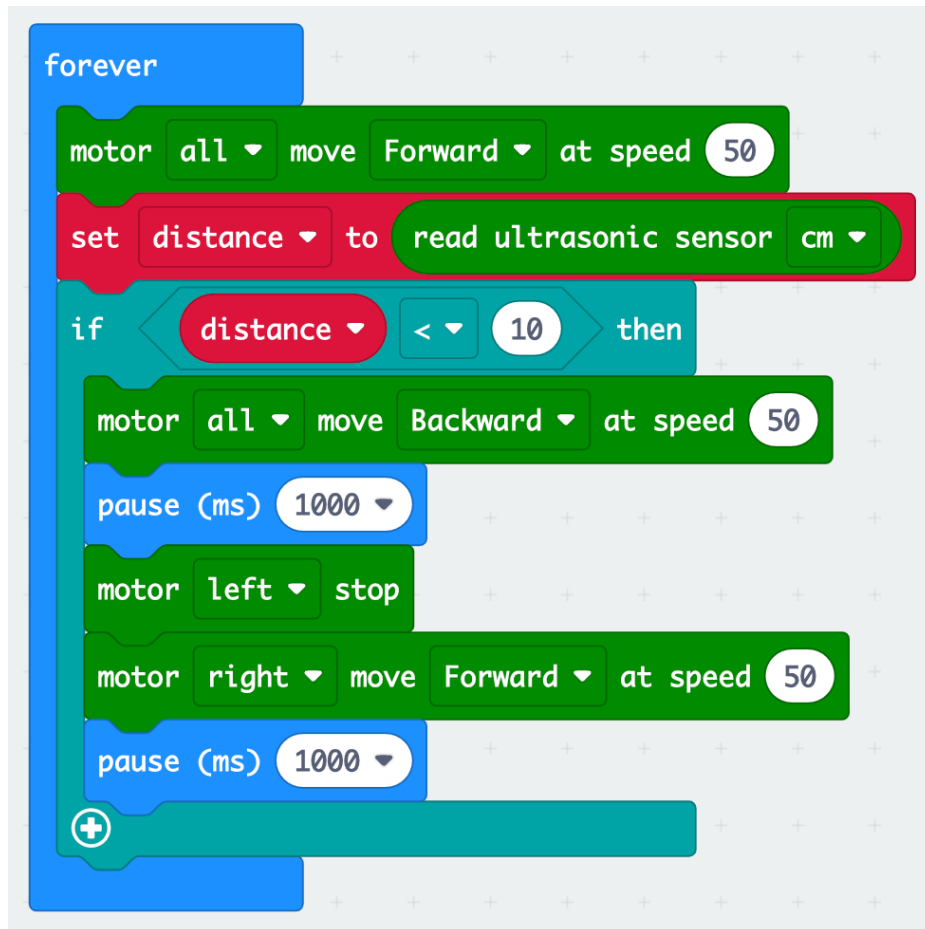
- How close can you get an accurate distance?
- How far away does it reliably detect you?
- Try holding your hand at different angles. What works best?

Obstacle Avoidance

Use the ultrasonic sensor to avoid crashing into objects.

- 1) Try the following code to detect an obstacle, move back, turn, then carry on.

*We have to remove **show number** because it's too slow.*



- Try showing icons to see what the robot is doing.



- Save your code to a USB stick.