Coder Workbook for the Morse Code micro:bit project

Project 2

Introduction

The best thing about learning to communicate using morse code is that we don’t even need a keyboard to send any message we want – perfect for our micro:bits!

Make sure you’ve completed Project 1, to make a Morse code transmitter.

Project 2:

Programming the micro:bit into a morse code transceiver

Our next step is to build on our working transmitter to create a transceiver. We don't just want to overwrite the transmitter code though, so we'll:

1. Start a completely new makecode project.
2. Drag and drop our compiled transmitter code into that window.
3. Rename the new project.
4. Delete any empty projects.

We should now have two separate projects.

You'll also need to make sure that your micro:bit is running an up to date version of firmware to continue past this point.

what does firmware do?
firmware tells the micro:bit how to talk to the **host** computer it's plugged into. In fact micro:bits need to know how to talk to *any* computer they might be plugged into!

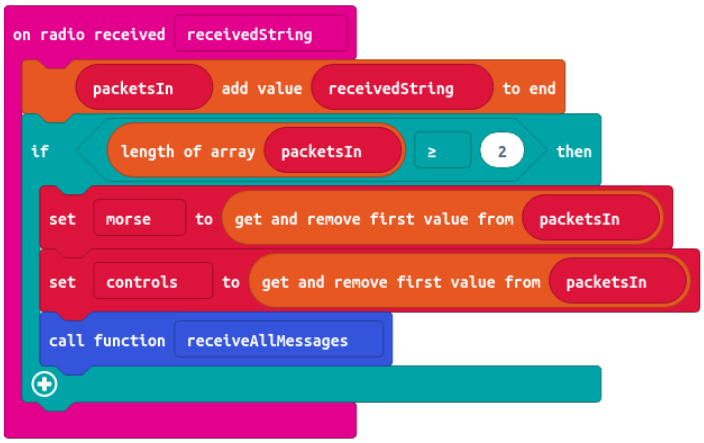
Of course, it needs to know this before we write our programs!

search 'microbit firmware update' on your host computer and follow the instructions on how to do this.

Which version of the micro:bit firmware are you currently using?

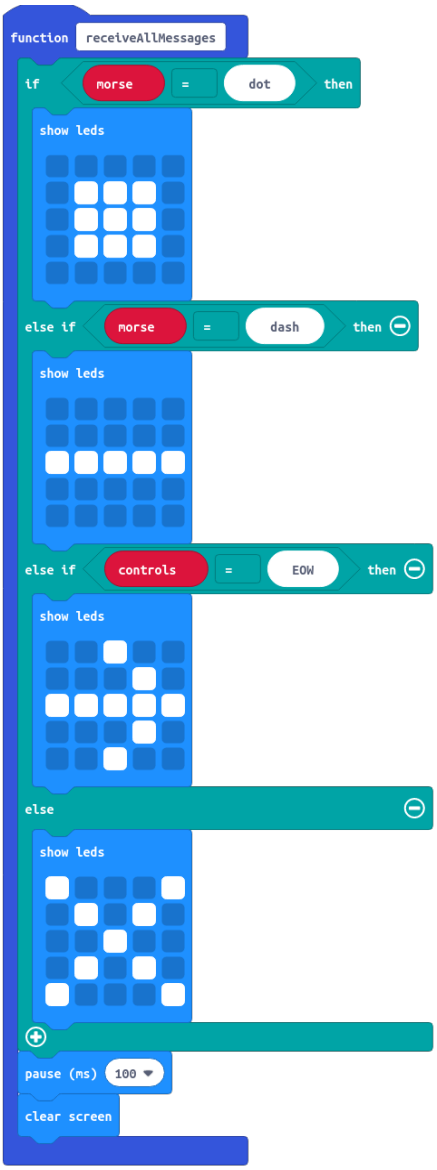
Coding the ‘on radio received’ function:

Remember the transmitters send two messages (packets), one for the morse variable and another for the controls variable.
So we keep listening until at least 2 packets have been received before setting the variables to what the transmitter has sent.
Once they’ve been set, we just need to call a function (which we’ll write next) to receive all messages and show us what the transmitter sent to us.



coding the receiveAllMessages function:

Finally, this new function has the responsibility for showing the receiver what was just sent by the transmitter.



At the moment, you probably won't be able to communicate with anyone else because we're all on random channels. That was important so that we didn't interrupt each other during development of our code.

If you're ready for the next challenge, here it is...

1. get together with any number of other coders and agree on a shared channel for communication.

2. update your code so that instead of picking a random radio channel, it is set to the agreed channel.

3. Think of a single word (perhaps one that begins with an agreed letter), then take turns to send (broadcast) your words to everyone listening and see who'll be the first to successfully decode your message!

4. By the way, once you start transmitting a message, you're not allowed to speak to the receivers until "over and out"!

Can you think of another way it could be useful or fun to program a 'morse speaking' micro:bit?

A maths quiz? A morse code test? What might some of the functions be?