

Creating a wireless messaging device with the BBC Micro:Bit

The aim here is to use the Micro:Bit to send simple binary messages from one bit to another.

It builds heavily on the work of Duncan Maidens of Birmingham City University (<https://www.dropbox.com/sh/z3vjmjq2wf8880l/AAAcqGgz7befYooUY3zjzmhta?dl=0>).

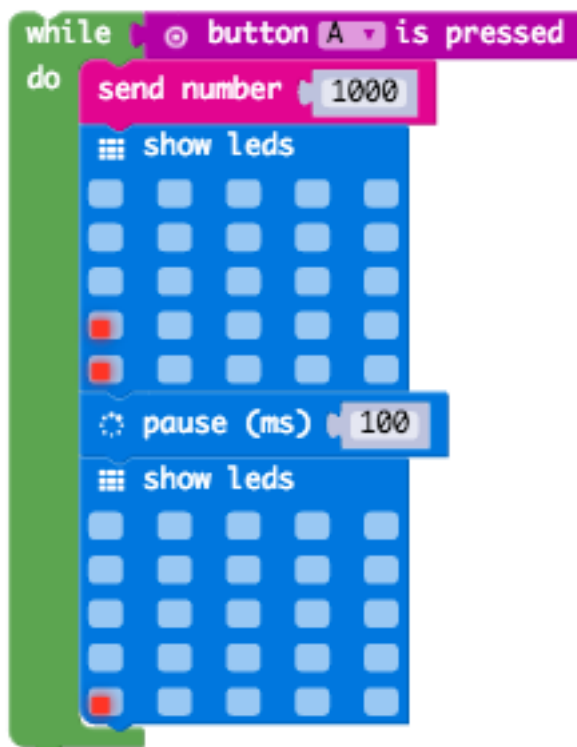
To create the script, go to pxt.io (this provides you with a block-based interface similar to Scratch and the Microsoft Block Editor). The advantage of PXT is that you can use the **radio** blocks to send data wirelessly.

This is how you build the program up:



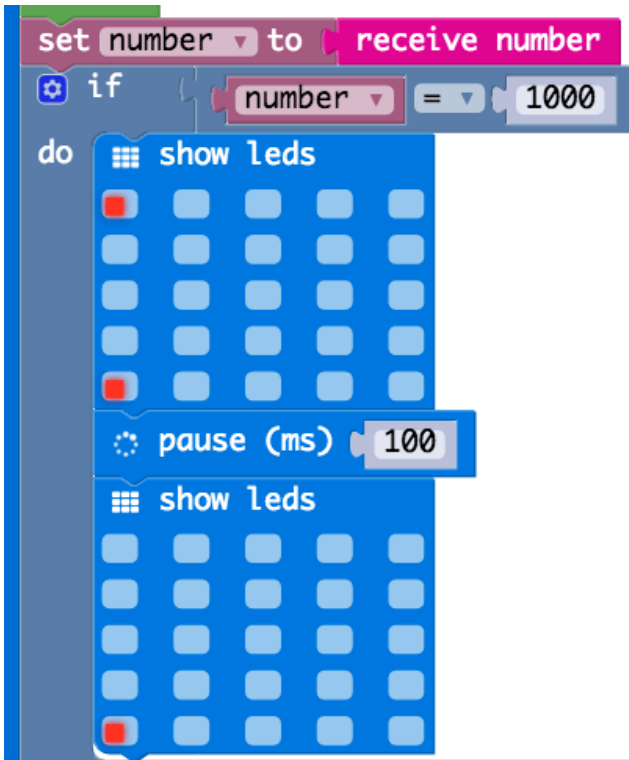
Just like any radio controlled device you need to ensure a common frequency. You can use any number from 0 to 255, as long as both bits are matched with the same number.

The rest of the script we want to loop forever.

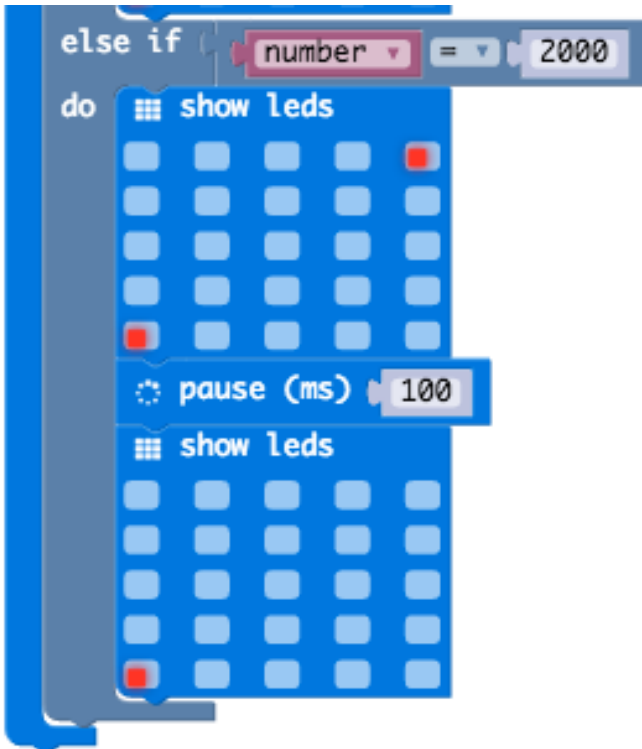


When you press button A we want to send a number (I picked 1000 but it's completely arbitrary) and also flash a pixel locally to show it has worked (the bottom left light stays on so you can easily see if the bit is powered from the front).

Repeat for button B and run one after the other.



Next we need to capture a received number and display the input on the top row if the received value is Button A.



And of course display the opposite pixel on the top row if Button B is received.

The overall script should look like this:

Download this as a hex file and copy to 2 Micro:Bits.

Then change the group to 1, download and copy to 2 more.

Repeat for as many sets as you need.

```
set group 0
forever
  while button A is pressed
    do
      send number 1000
      show leds
      pause (ms) 100
      show leds
  while button B is pressed
    do
      send number 2000
      show leds
      pause (ms) 100
      show leds
set number to receive number
if number = 1000
  do
    show leds
    pause (ms) 100
    show leds
else if number = 2000
  do
    show leds
    pause (ms) 100
    show leds
```