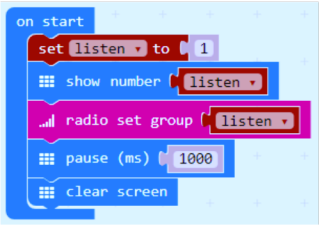
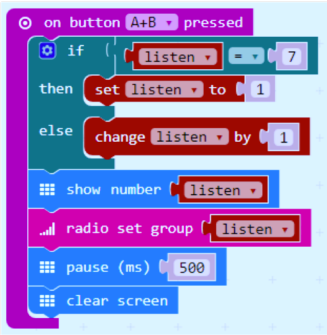
Picture Transmission

MakeCode

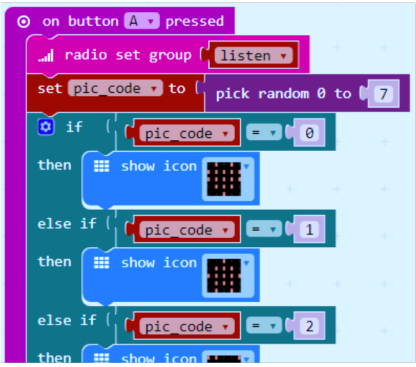
This is some fairly revolting code I wrote to demonstrate things like attenuation (loss of signal strength over distance) and noisy channels. There are better ways to do it, but it does the job.





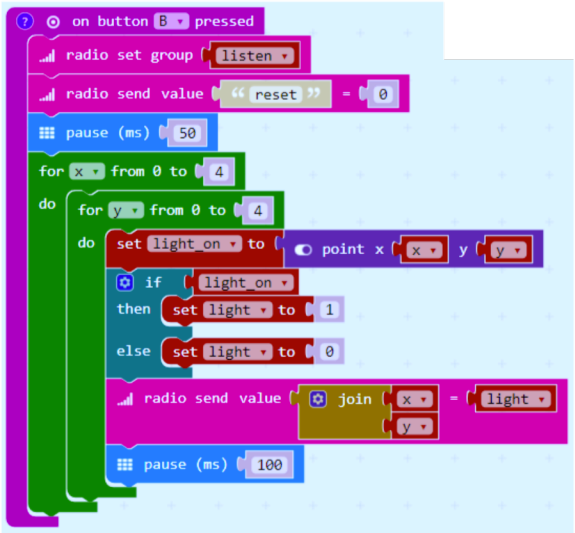
The basic stuff (start/A+B) handles communications groups.

I start with all students on the same group just to drive home the idea that a single unfiltered channel is not good enough for wireless communication.



The A button does some fairly uninspiring stuff - chooses a random picture from a list of 7 and displays it on the screen.

This activity drives home the idea better if you just light up all the pixels, but it isn't as interesting for the students when outside testing out transmission ranges.

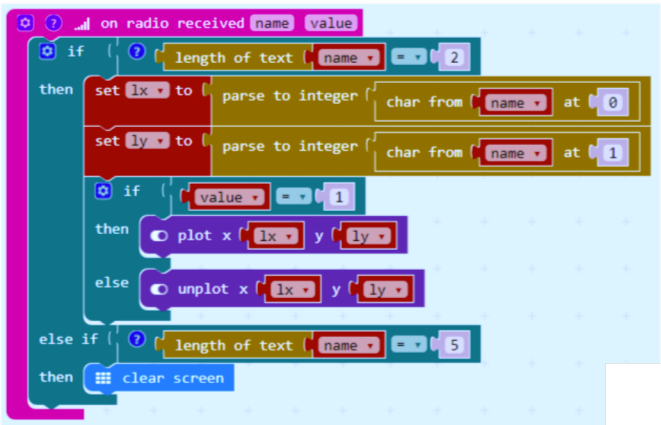


The B button transmits the picture on the screen pixel by pixel with a pause in between each transmission.

The pause has two purposes: we need to give the receiving Micro:bit time to process without filling up the receive queue, and it gives the students something to watch.

It sends each pixel as a set of x/y coordinates, but would probably work just as well as a series of on/off commands. The picture on the other end would look a bit different with this method however.

A "reset" command is sent first to blank out the display.



This is the receive code, which checks what type of command has been sent (coords or reset).

If it's coordinates, it figures out what coordinate has been received and whether it's supposed to be on or off, and modifies the display accordingly.