CoderDojo

Part of Raspberry Pi

Make a crowd display with micro:Bits and Python

Design your image

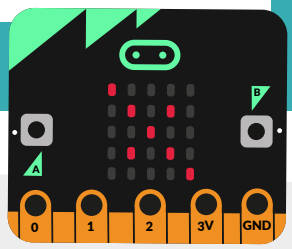
1. Connect the micro:bit to your computer using the USB cable.
2. Open the Mu editor.

3. Add this code to import the libraries you'll need:

```
import radio
import random
from microbit import display, Image, button_a, sleep
```

4. Create an image to be shown on the LEDs of the micro:bit, for example: Click the **Flash** button at the top of the Mu window. Your image should appear on the LEDs. Can you edit your code to display a different image?

```
pic = Image("90009:"
            "07070:"
            "00500:"
            "07070:"
            "90009")
display.show(pic, delay=100, wait=False)
```



Set up the radio

1. Add some code to turn on the radio:

```
radio.on()
```

2. Now add some code that will be triggered when Button A is pressed to send a radio message. Enter some text to send as the message (for example "now").

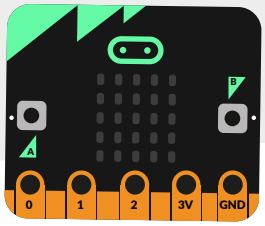
```
while True:
    if button_a.was_pressed():
        radio.send('now')
```

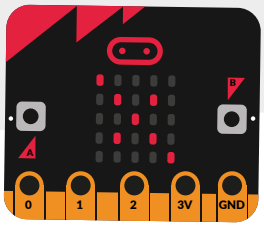
3. Move your **display.show** line so that it is only triggered when the same radio message is received.

```
message = radio.receive()
if message == 'now':
    display.show(pic, delay=100, wait=False)
```

4. Find someone else who is at the same point, and test your code. Does pressing your A button make their image appear on their micro:bit?

5. an you add **sleep** and **display.clear()** commands so that the image disappears after a short pause?





Triggering an avalanche of messages

1. To trigger an avalanche, have the micro:bits re-broadcast the message sometimes, but not always, after they receive it: use **random.randint** to choose a random number, and only transmit the message again if the number matches a specific value.

2. Use **random.randint** again to include a slight pause of up to 5 seconds before re-broadcasting.

```
while True:
    if button_a.was_pressed():
        radio.send('now')

    message = radio.receive()
    if message == 'now':
        display.show(pic, delay=100, wait=False)
        sleep(300)
        display.clear()
        if random.randint(0, 9) == 0:
            sleep(random.randint(0,5000))
            radio.send('now')
```

3. Test your code as group and adjust the values in the **random.randint** commands so that avalanches occur as often as you like.

4. Work as a group to extend the project:

- Modify the code that so pressing Button B has a different effect than pressing Button A.
- Can you coordinate your micro:bits so that pressing a button on one of them causes a text message to be displayed on the others one letter at a time?