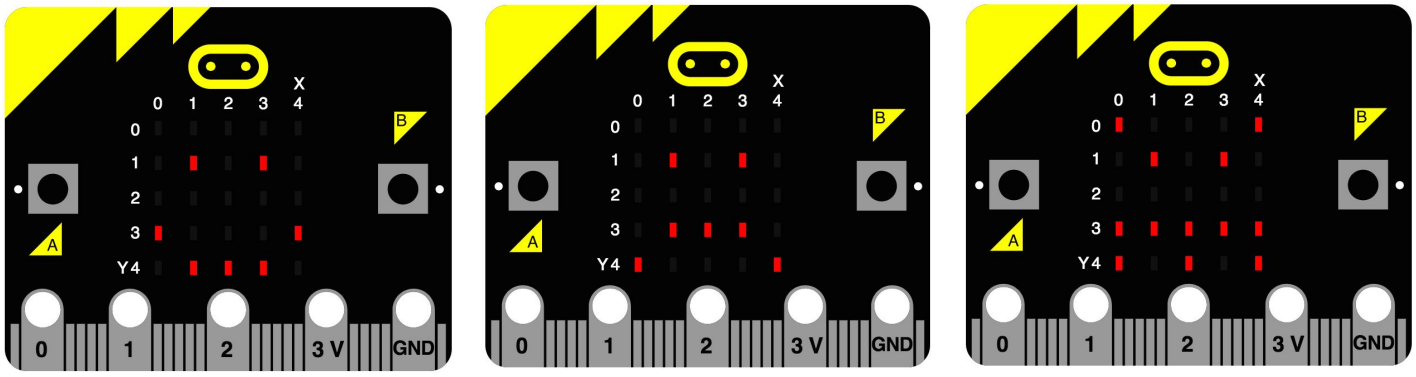
Project 2 - The Mood Badge



For this project, we're going to do some stuff with your micro:bit by pressing the **A** and **B** buttons. Let's see if we can figure out what this code is going to do:

```
from microbit import *

display.clear()

while True:
    a = button_a.was_pressed()
    b = button_b.was_pressed()
    if a and b:
        display.show(Image.ANGRY)
    elif a:
        display.show(Image.HAPPY)
    elif b:
        display.show(Image.SAD)
    sleep(100)
```

`button_a.was_pressed()` and `button_b.was_pressed()` are both functions that come with the microbit library - we get to use them because we wrote `from microbit import *` at the top of our code. These functions return `True` if a button is pressed.

If you press button **A**, the micro:bit shows a Happy Face. If you press button **B** it shows a Sad Face. And if you press both buttons at the same time, the micro:bit shows an Angry Face.

The part that says "`while True:`" is important. This puts the micro:bit into an *infinite loop*. Remember when we talked about `while` loops and how it's bad to get stuck in an infinite loop? Well this is a case where it's actually useful - the micro:bit is always checking for button presses, forever.

How would you change this code? Could you use some different images? Or scroll some text instead?

Remember that you can find other images by pressing the REPL button in your Mu editor and typing this:

```
>>> from microbit import Image
>>> dir(Image)
```

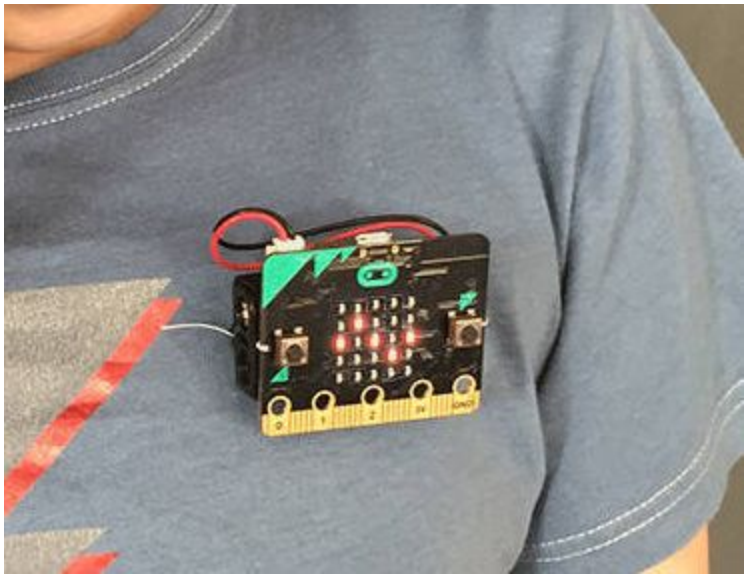
You should see a list that includes a lot of words in UPPER CASE - these are the different images you can use:

```
[ ... 'HEART', 'HEART_SMALL', 'HAPPY', 'SMILE', 'SAD', 'CONFUSED',
'ANGRY', 'ASLEEP', 'SURPRISED', 'SILLY', 'FABULOUS', 'MEH', 'YES', 'NO',
'CLOCK12', 'CLOCK1', 'CLOCK2', 'CLOCK3', 'CLOCK4', 'CLOCK5', 'CLOCK6',
'CLOCK7', 'CLOCK8', 'CLOCK9', 'CLOCK10', 'CLOCK11', 'ARROW_N', 'ARROW_NE',
'ARROW_E', 'ARROW_SE', 'ARROW_S', 'ARROW_SW', 'ARROW_W', 'ARROW_NW',
'TRIANGLE', 'TRIANGLE_LEFT', 'CHESSBOARD', 'DIAMOND', 'DIAMOND_SMALL',
'SQUARE', 'SQUARE_SMALL', 'RABBIT', 'COW', 'MUSIC_CROTCHET',
'MUSIC_QUAVER', 'MUSIC_QUAVERS', 'PITCHFORK', 'XMAS', 'PACMAN', 'TARGET',
'ALL_CLOCKS', 'ALL_ARROWS', 'TSHIRT', 'ROLLERSKATE', 'DUCK', 'HOUSE',
'TORTOISE', 'BUTTERFLY', 'STICKFIGURE', 'GHOST', 'SWORD', 'GIRAFFE',
'SKULL', 'UMBRELLA', 'SNAKE']
```

And if you want to display words instead, remember that you can use the display.scroll() function:

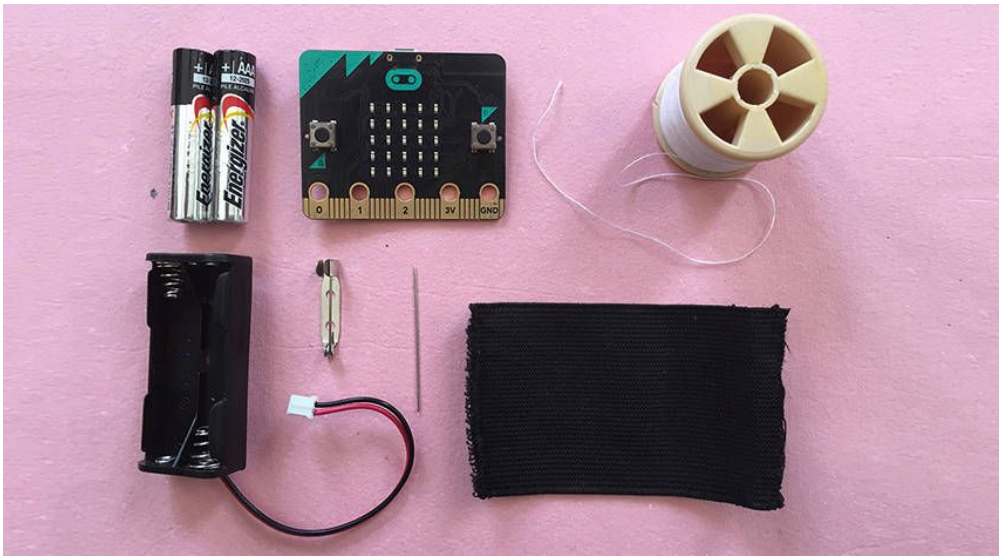
```
    display.scroll('Hello')
```

Now comes the fun part! Let’s make a badge so that we can walk around wearing our mood machines!



Supplies you should have:

1 micro:bit
1 battery holder
2 AAA batteries
thread
1 needle
a piece of elastic
1 safety pin



Step 1: Stitch the elastic

Thread your needle, knot the thread, then stitch along the cut edge of the elastic to close it up.

Step 2: Roll the elastic to hide edges.

Roll the top edge over the shorter edge and tuck in so no raw edges are showing.

Step 3: Stitch the edge down.

Step 4: Checkpoint!

It should now look like a tube.

Step 5: Turn whole tube inside out.

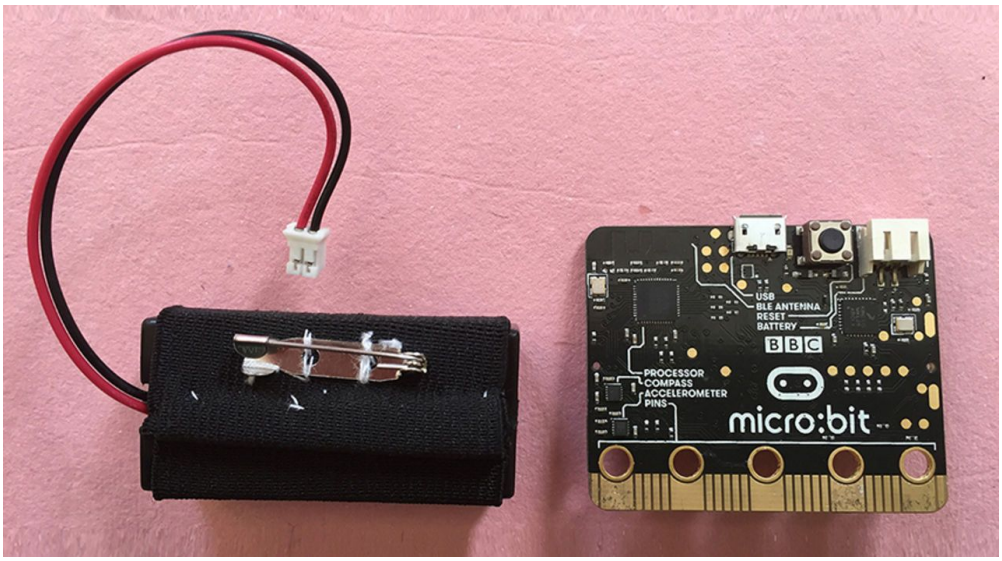
This will neaten it up and hide stitches.

Step 6: Stitch the pin.

Stitch the safety pin securely to one side of the tube, preferable with the seam just below the badge pin, so that when it's worn, it hangs well.

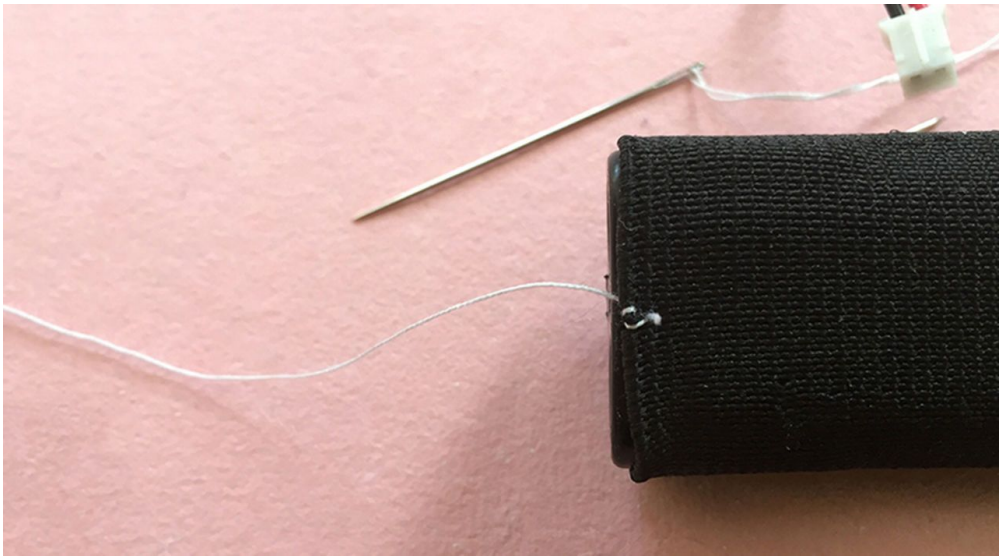
Step 7: Insert the battery holder into the elastic tube.

After inserting 2 AAA batteries, squeeze the battery holder into the tube. It should be a snug fit.



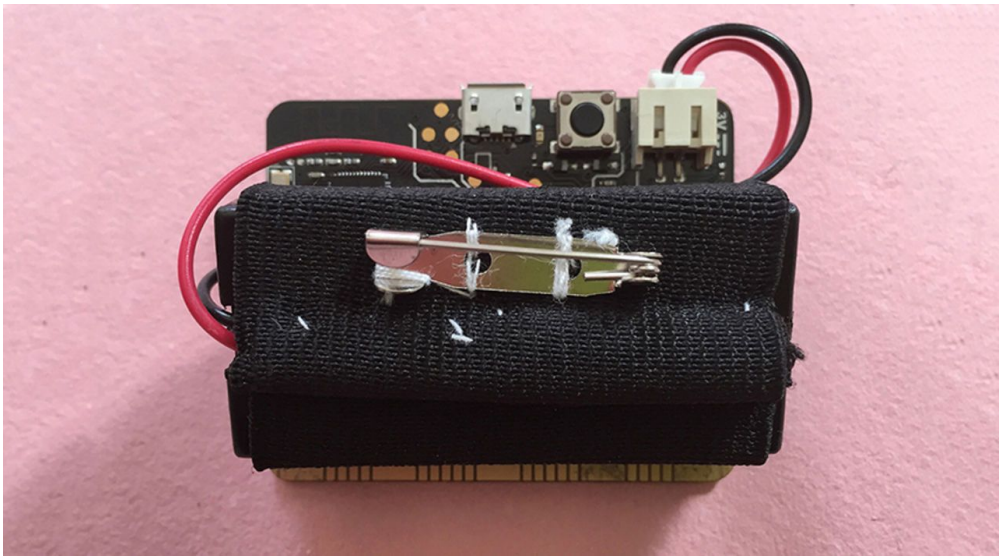
Step 8: Sew a holding stitch.

Knot your thread again and place a stitch on the opposite side to the badge pin in the center edge of the elastic.



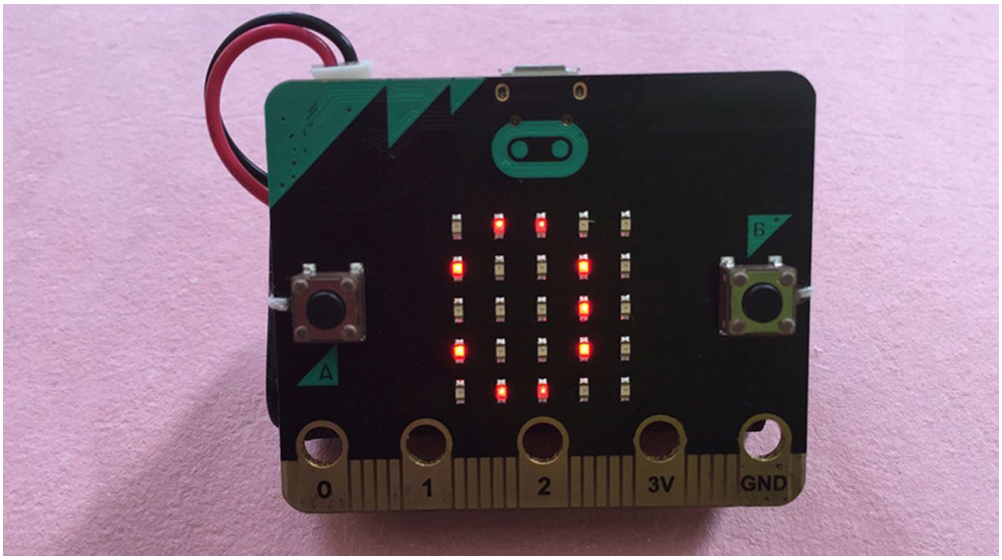
Step 9: Sew elastic to the micro:bit.

Place the tube onto the back of the micro:bit and sew through the holes located on both sides of the micro:bit, right next to the buttons.



Step 10: Plug in the power.

Your micro:bit is now ready to wear. Just press a button (or both buttons) to show people your mood!



For more projects you can do with your micro:bit, check out these resources:

- **The MicroPython guide to BBC micro:bit**

  https://www.microbit.co.uk/python-guide

- **MicroPython/micro:bit documentation:**

  http://microbit-micropython.readthedocs.io/en/latest/

- **Micro:bit projects on Instructables:**

  http://www.instructables.com/howto/microbit/