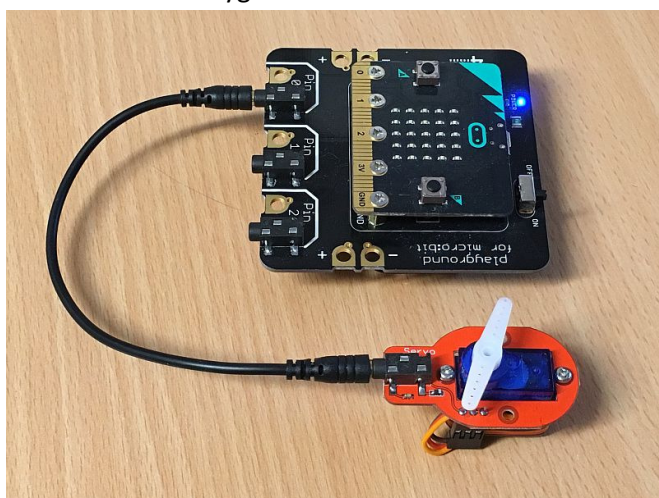## Using the Servo Gizmo with Playground for micro:bit

Requirements:

- Playground for micro:bit, with micro:bit and batteries installed
- Servo Gizmo
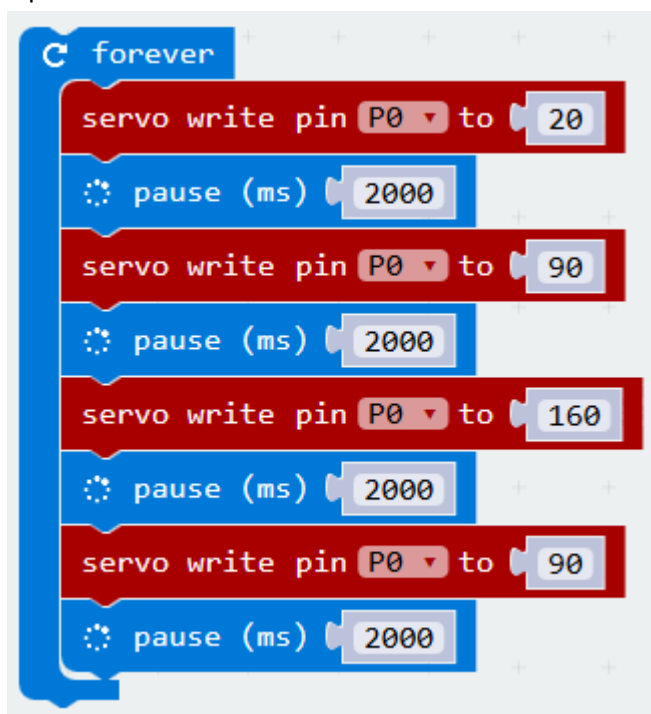- 1 x Connection cable

Connections:

1. Switch Playground OFF
2. Plug connection cable from Pin 0 on Playground and into the Servo Gizmo
3. Switch Playground ON

PXT Software Demo:

This software will Move the servo almost fully left, then centre it, then almost fully right, centre and repeat

Micropython Software

There is (currently) no micropython module to control servos, so it is necessary to change the period and pulse width of a PWM signal. Setting the period to 20ms gives a resolution to the pulse width of about 20us. The nominal pulse widths for servos are 1ms (fully right) to 2ms (fully left). So the 20us resolution gives us about 50 usable positional steps. Normally you can get more movement from a servo by reducing the lowest number and increasing the largest.

```python
from microbit import *
# next line sets the period of the PWM cycle in milli-seconds
# Period of 20ms makes each (1024) step equal to 20 microseconds
# Nominally 1ms for fully right, 1.5ms for centre and 2ms for fully left
# Equates to 50, 75 and 100
# In practice can often go to 35 (min) and 150 (max)
pin0.set_analog_period(20)
while True:
    pin0.write_analog(50)
    sleep(1000)
    pin0.write_analog(75)
    sleep(1000)
    pin0.write_analog(100)
    sleep(1000)
    pin0.write_analog(75)
    sleep(1000)
```

NB. Servos are generally intended to be used at 4.8V, so running them at 3.3V as we do on the Playground reduces their operating range and you may not get the full 180 degrees of travel.