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Programming Raspberry Pi Pico with CircuitPython to emulate a keyboard or a mouse: tiny examples

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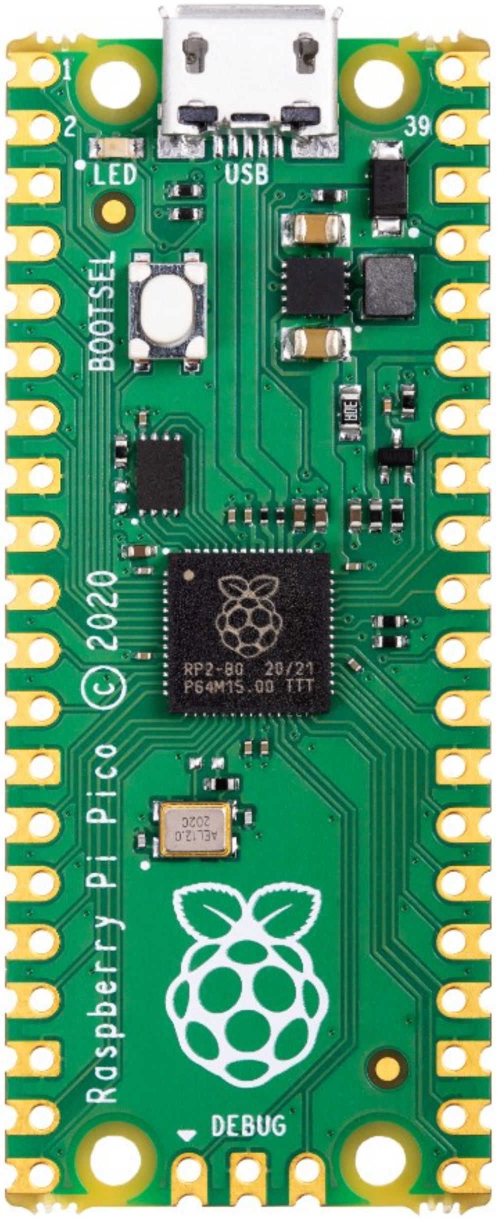


CircuitPython's Human Interface Device (HID) module[1,2]

- 💾 CIRCUITPY
- 🗎 code.py
- 🗁 lib
  - 🗁 adafruit_hid
    - 🗎 mouse.mpy
    - 🗎 keyboard_layout_us.mpy
    - 🗎 keyboard.mpy
    - 🗎 consumer_control.mpy
    - 🗎 keyboard_layout_base.mpy
    - 🗎 keycode.mpy
    - 🗎 consumer_control_code.mpy
    - 🗎 __init__.mpy

1. Install CircuitPython onto Pico.
2. Put the HID library in the lib folder on the CIRCUITPY drive[3].
3. Save a program example to the code.py file and try it.

[1] https://docs.circuitpython.org/en/latest/shared-bindings/usb_hid/index.html

[2] MicroPython also supports HID now.

[3] https://learn.adafruit.com/circuitpython-essentials/circuitpython-hid-keyboard-and-mouse

```
# emulating a keyboard: typing 'n42'*
import usb_hid
from adafruit_hid.keyboard import Keyboard
from adafruit_hid.keycode import Keycode
from time import sleep

keyboard = Keyboard(usb_hid.devices)

sleep(42 / 10)
keyboard.send(Keycode.N, Keycode.FOUR, Keycode.TWO)
```

* https://github.com/kruno-peter/pico-keyboard-mouse/

Keyboard[1] sends keypresses.

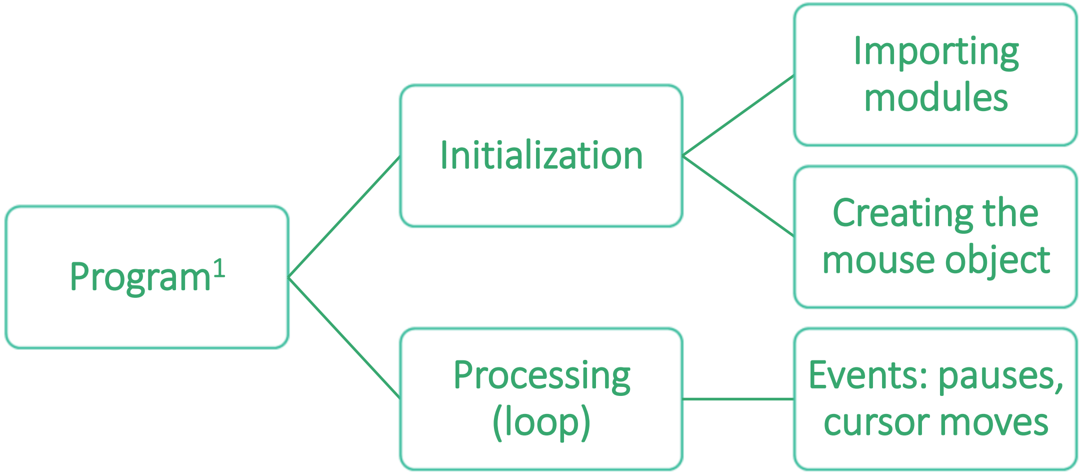
Keycode defines keycodes.

[1] Arduino: **Keyboard.h**, **TrinketKeyboard.h**

1. Connect Pico via USB.
2. Put the cursor quickly where you want to write.
3. Wait a moment.
4. Let the program type *n42*.

→ a custom keyboard or a password keeper

```
# emulating a mouse: moving the cursor
import usb_hid
from adafruit_hid.mouse import Mouse
from time import sleep

mouse = Mouse(usb_hid.devices)

while True:
    sleep(42 / 10)
    mouse.move(-42, 0, 0)                # left
    sleep(42 / 100)
    mouse.move(42, 0, 0)                 # right
```



[1] Arduino sketch: **setup()** and **loop()**

1. Connect Pico via USB.
2. Wait a moment.
3. Let the program move the cursor.

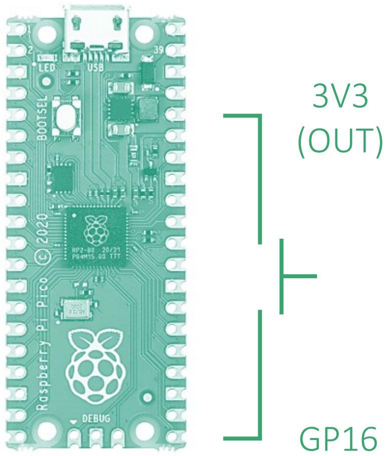
→ *a cheap mouse jiggler or a pointing device*

```
# emulating a mouse: the left click
import usb_hid
from adafruit_hid.mouse import Mouse
import board
import digitalio
from time import sleep

mouse = Mouse(usb_hid.devices)
button = digitalio.DigitalInOut(board.GP16)
button.switch_to_input(pull=digitalio.Pull.DOWN)    # GP16 -> GND

while True:
    if button.value:
        mouse.click(Mouse.LEFT_BUTTON)              # the left click
        sleep(42 / 100)                     # preventing multiple clicks
```

board[1] defines the pin names.

digitalio allows digital control of the IO pins.

1. Connect Pico via USB.
2. *Push the button* (connect GP16 with 3V3 (OUT) using a wire).



→ a pointing device prototype

[1] MicroPython: **machine**

Programming Pico with CircuitPython to act like a keyboard or a mouse is easy – those three simple examples[1,2] are ready for prototyping.

[1] https://github.com/kruno-peter/pico-keyboard-mouse/

[2] bonus: a program that emulates both a mouse and a keyboard

raspberrypi.com

circuitpython.org

learn.adafruit.com

May God and the source be with you.