Use the Pico as Keyboard/Mouse input (DIY Makey Makey)

Want to have some quick button/mouse inputs to add interactivity to your setup? For prototyping this is often done by using a Makey Makey. But the board's quite expensive, and not incredibly versatile. Luckily you can build a very similar input device using a pico. After following the steps below the board will get recognized as a HID (keyboard, mouse, gamepad) by any computer and OS (Mac/Win/Linux).

This process consists of the following steps:

- Installing CircuitPython and copying the AdaFruit Human Interface Device (HID) libraries to the board.
- Changing the code to select the inputs you want to use. You have the following options:
  - Keyboard - any key on a physical keyboard, or combination of keys (ctrl-c and ctrl-v)
  - Mouse - buttons, scroll and mouse movement
  - Media buttons - play, pause, skip, sound level
  - Gamepad buttons (numbered buttons and analog joysticks)

This tutorial uses the first pages of the DIY mechanical keyboard on the Adafruit page.

Installing Circuitpython and HID libraries

First install Circuitpython to the Pico, then copy the libraries to the board. Make sure that the libraries match the version of circuitpython you are running.

Editing the code

Copy the code from this page and save it to your Pico using your favourite Python editor. Don't have one yet? The tutorial page uses Mu editor, but you can use Thonny as well.

As copied, this code maps the following keys to the following pins: --**Note that the code skips pin 15--**

Pin	**Input**
GP0	(KEY, (Keycode.GUI, Keycode.C)),

GP1	(KEY, (Keycode.GUI, Keycode.V)),
GP2	(KEY, [Keycode.THREE]),
GP3	(KEY, [Keycode.FOUR]),
GP4	(KEY, [Keycode.FIVE]),
GP5	(MEDIA, ConsumerControlCode.VOLUME_DECREMENT),
GP6	(MEDIA, ConsumerControlCode.VOLUME_INCREMENT),
GP7	(KEY, [Keycode.R]),
GP8	(KEY, [Keycode.G]),
GP9	(KEY, [Keycode.B]),
GP10	(KEY, [Keycode.UP_ARROW]),
GP11	(KEY, [Keycode.X]), # plus key
GP12	(KEY, [Keycode.Y]),
GP13	(KEY, [Keycode.Z]),
GP14	(KEY, [Keycode.I]),
GP15	**EMPTY - apparently a funky pin according to the tutorial**
GP16	(KEY, [Keycode.O]),
GP17	(KEY, [Keycode.LEFT_ARROW]),
GP18	(KEY, [Keycode.DOWN_ARROW]),
GP19	(KEY, [Keycode.RIGHT_ARROW]),
GP20	(KEY, [Keycode.ALT]),
GP21	(KEY, [Keycode.U]),

You can change the inputs to other KEY codes, other MEDIA codes or other MOUSE codes. Check the Adafruit HID library documentation to see which options for inputs you have. The list is quite long, so have fun! Gamepad takes a bit more effort (for using analog sticks) but the documentation gets you started quickly.

Wire up your Pico!

Connect your inputs to the relevant pins (pin number and GND). Pin pressdowns will only work when there is conductivity, so experiment around with what will connect and what doesn't. The

simplest form is of course just to add a button to the end of the pin.

Removing the 'disk drive'

Once you've followed all steps above, the Pico with circuitpython will still be recognized as a disk drive besides the HID device. You can disable this in various ways if you want to. Simplest appears to be to add a boot file like here: 'create a file boot.py containing the following code:'

```
import storage

storage.disable_usb_drive()
```

And that's it. BUT: as the Pico is no longer a disk drive, it's no longer possible to edit the code! So make sure you do this last and back up your codes. If all else fails you can always nuke your pi to get it back to the factory state, see bottom of the page here.

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