How to install and configure CircuitPython onto a Raspberry Pi Pico

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Introduction

CircuitPython is a programming language heavily based on MicroPython designed to easily run on microcontrollers that allows you to easily implement Adafruit devices. For our design project we installed CircuitPython onto our Raspberry Pi Pico in order for us to easily design a controller that can make use of a variety of systems including windows, linux, and our beaglebone green.

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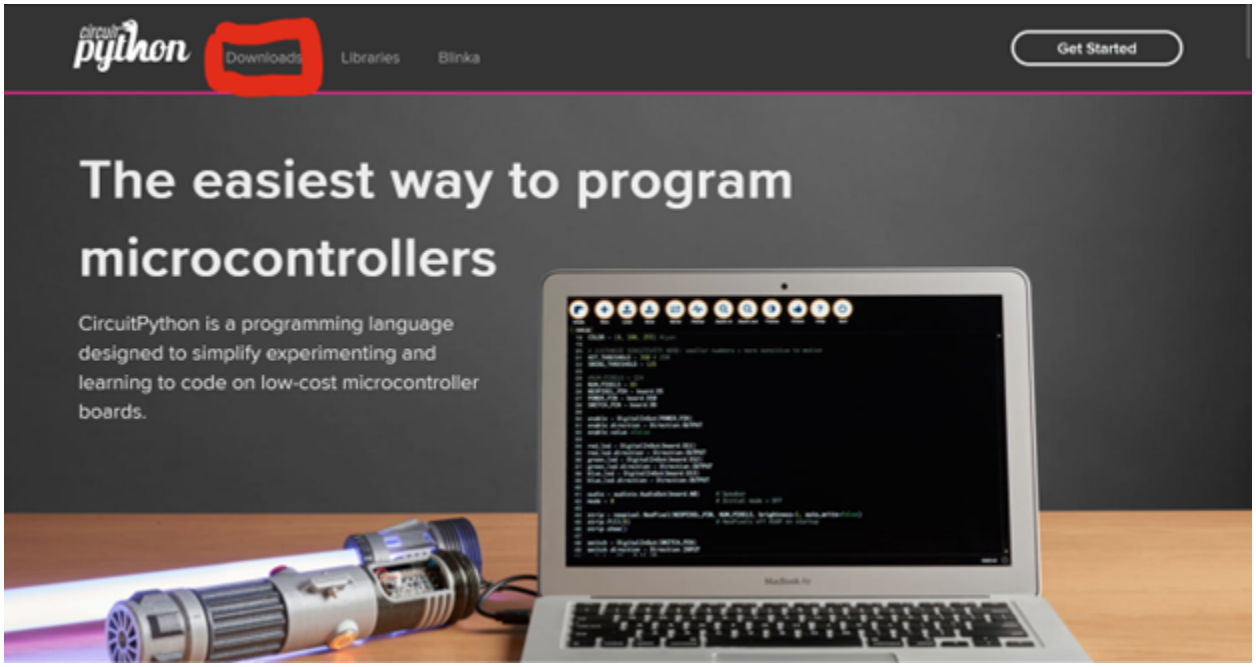
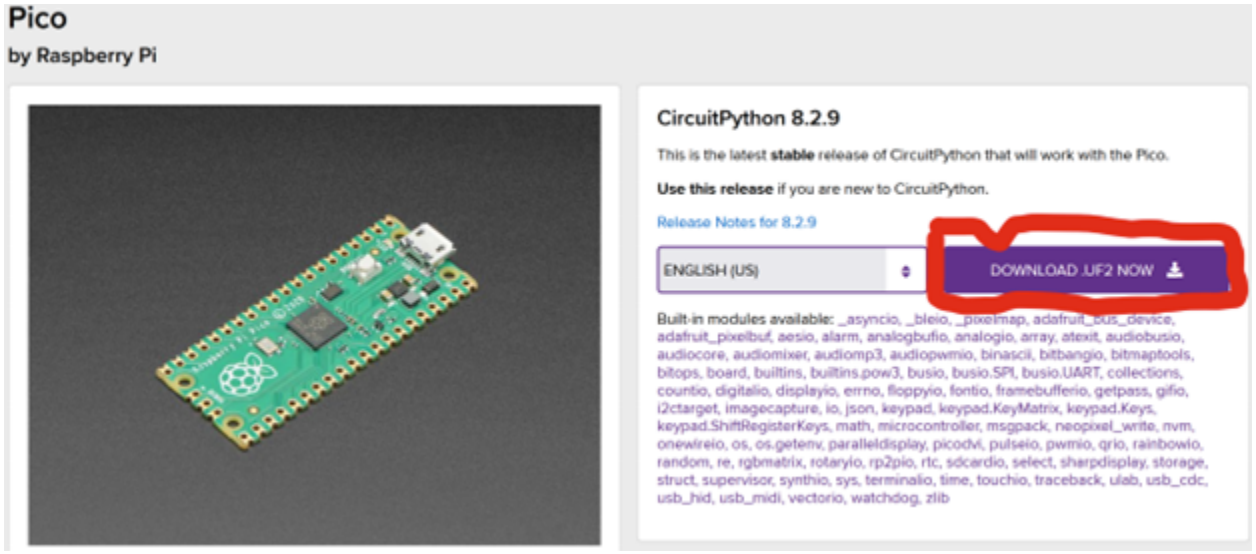
Setup

The first thing that you need to do after acquiring your microcontroller is go to the official CircuitPython website at
https://circuitpython.org/
and head over to the downloads page



Next from downloads page, head over to your microcontroller which in our case was the pico and download the latest release

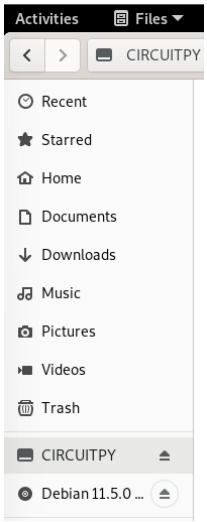


After downloading the software the next thing that you will need to do is plug your Pico into your computer via the microUSB cable while holding down the white boot select button (BOOTSEL). Your computer should detect the Pico as a new removable drive called RPI-RP2

You will need to copy the CircuitPython file which should look similar to
adafruit-circuitpython-raspberry_pi_pico-en_US-8.2.9.uf2
onto your Raspberry Pi. To do this copy the open up your terminal and navigate to your downloads file which typically should be
(home):$cd Downloads
Check that you have correctly downloaded the file with the ls command and then copy the file onto your raspberry pi using the command
(home)/Downloads:$ sudo cp adafruit-circuitpython-raspberry_pi_pico-en_US-X.X.X.uf2 /media/(user)/RPI-RP2

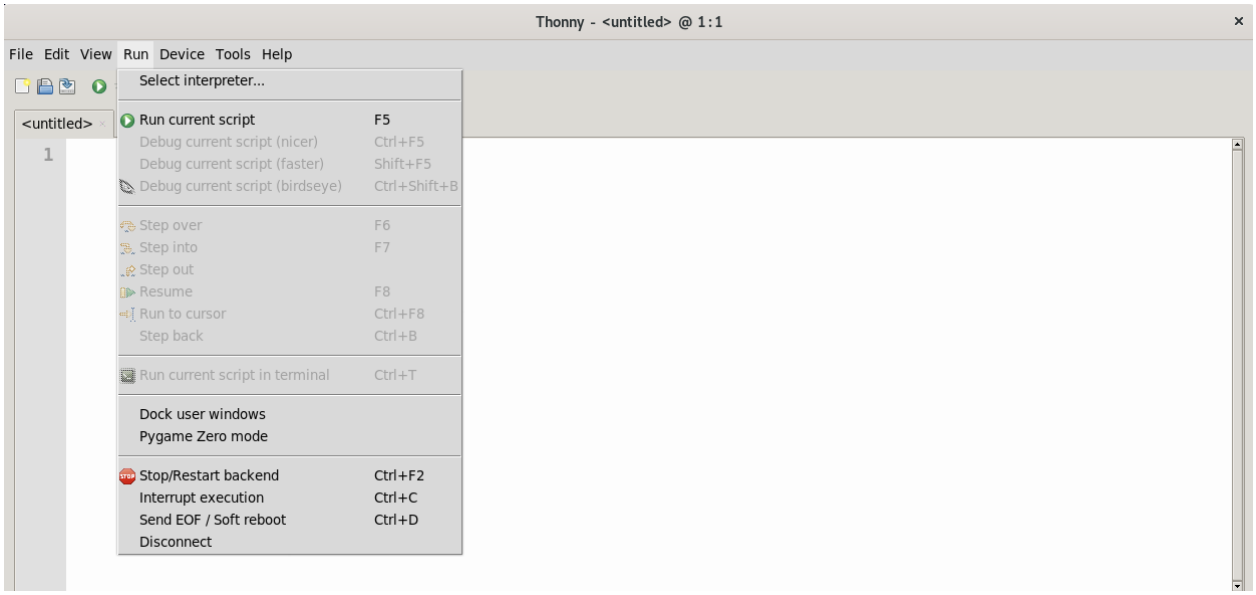
Replace (user) with your username

The Pico should disconnect from your computer and then reconnect under the new name CIRCUITPY. If it shows up you have correctly installed circuit python onto your Raspberry Pi Pico.

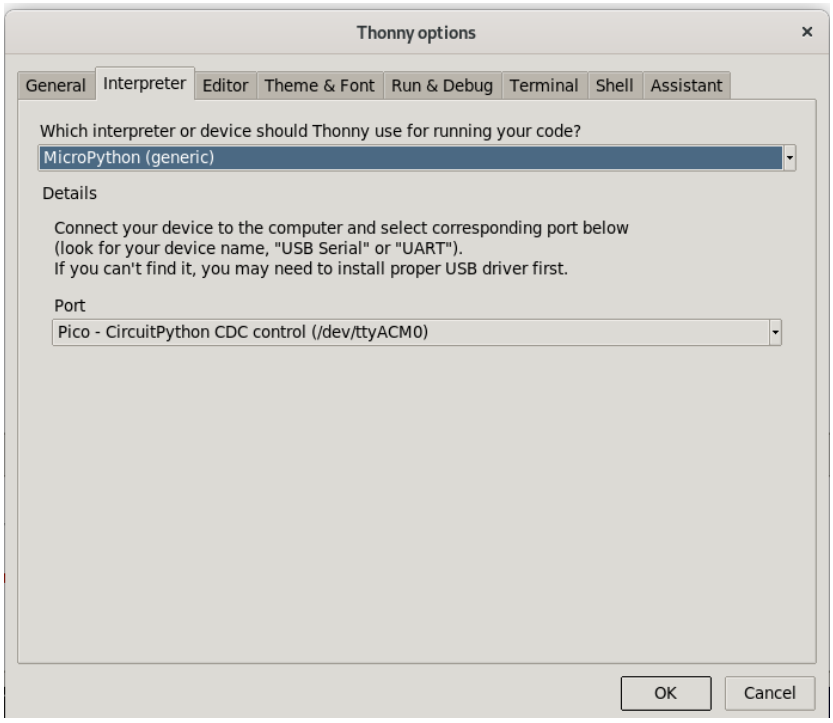


Next in order to write and run programs on your Pico we recommend you install Thonny, an intuitive Python IDE
$sudo apt update
$sudo apt install thonny
After downloading it run the following command
$sudo usermod -aG dialout (user)

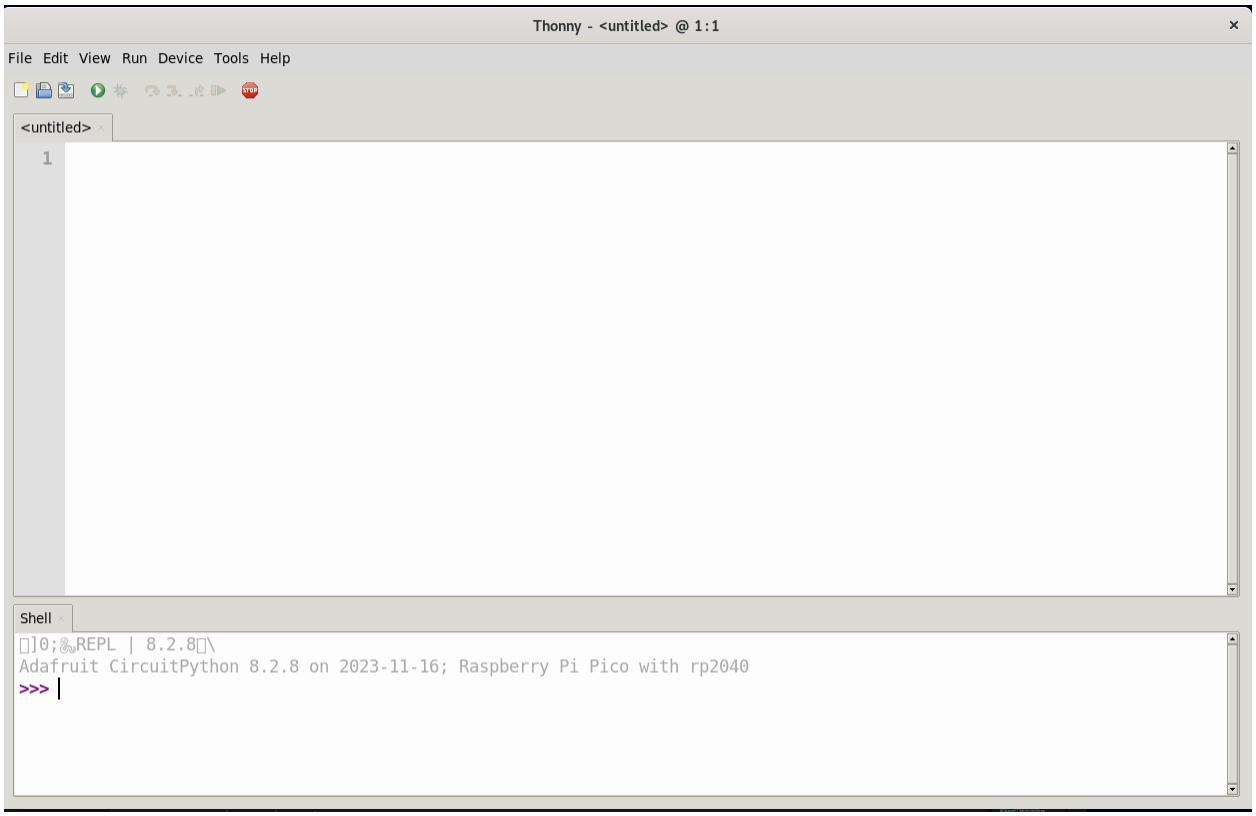
Next open up thonny and at the top under Run select Select interpreter…



Under the drop down menu for the interpreter, select MicroPython (generic) and under port select your Pico
Should look similar to Pico - CircuitPython CDC control (/dev/ttyACM0)



Next hit OK and on the main menu hit the red stop sign (Stop/Restart Backend)
If all goes well the shell should restart and boot similar to
Adafruit CircuitPython 8.2.8 on 2023-11-16; Raspberry Pi Pico with rp2040
>>>



Congratulations, you have now installed CircuitPython and are ready for developing your own controller. Adafruit has many sample guides and libraries

References

1. https://circuitpython.org/board/raspberry_pi_pico/
2. https://learn.adafruit.com/welcome-to-circuitpython/installing-circuitpython
3. https://www.youtube.com/watch?v=onBkPkaqDnk
4. https://www.youtube.com/watch?v=a7BUz0wA5ek