Bricked MicroPython rescue firmware

Post Reply

- Print view

Search this topic...

9 posts • Page **1** of **1**

hippy

Posts: 10892

Joined: Fri Sep 09, 2011 10:34 pm

Location: UK

Bricked MicroPython rescue firmware

Quote

Fri Feb 26, 2021 4:05 pm

If you 'brick MicroPython' on your Pico by creating a 'main.py' which prevents the REPL from being entered, prevents Thonny and other tools from accessing the Pico; this firmware should rescue you from that situation by renaming

'main.py' to something else; probably 'main-1.py' for most people.

When the 'MicroPython_RenameMainDotPy.uf2' image is flashed to your Pico and it has done its thing, its on-board LED will repeatedly flash five times. MicroPython can then be reflashed and everything should work again - Except 'main.py' won't be there to be executed and brick things again.

Flashing this firmware can be preferable to using 'flash_nuke.uf2' because it only affects 'main.py', leaves the MicroPython internal file system otherwise unaffected.

If you access the Pico through Thonny while the 'MicroPython_RenameMainDotPy' firmware is flashed, pressing Ctrl-D will have it report what it did, what it renamed 'main.py' to.

Acknowledgements and Copyright

"MicroPython_RenameMainDotPy" is derived from MicroPython, Copyright (c) 2013-2021 Damien P. George.
https://github.com/micropython/micropython (https://github.com/micropython/micropython)

Download ...

MicroPython_RenameMainDotPy.uf2.zip (./download/file.php?id=45227&sid=86a359115a7ab96ab5429d7231e44468)
(182.54 KiB) Downloaded 497 times

hippy

Posts: 10892
Joined: Fri Sep 09, 2011 10:34 pm
Location: UK

Re: Bricked MicroPython rescue firmware

Quote

Fri Feb 26, 2021 4:38 pm

Source Code ...

MicroPython_RenameMainDotPy.source.zip (./download/file.php?id=45229&sid=86a359115a7ab96ab5429d7231e44468)
(12.04 KiB) Downloaded 80 times

Code:

```
pi@Pi3B:/tmp $ ls -l *.zip
-rw-r--r-- 1 pi pi  12329 Feb 26 16:28 MicroPython_RenameMainDotPy.source.zip
```

Code:

```
pi@Pi3B:/tmp $ unzip -l MicroPython_RenameMainDotPy.source.zip
Archive:  MicroPython_RenameMainDotPy.source.zip
  Length      Date    Time    Name
---------  ---------- -----   ----
        0  2021-02-26 16:26   ports/rp2_MicroPython_RenameMainDotPy/
     7135  2021-02-26 16:23   ports/rp2_MicroPython_RenameMainDotPy/main.c
        0  2021-02-26 16:24   ports/rp2_MicroPython_RenameMainDotPy/modules/
      945  2021-02-26 16:23   ports/rp2_MicroPython_RenameMainDotPy/modules/_rescue.py
    24363  2021-02-26 16:23   ports/rp2_MicroPython_RenameMainDotPy/pyexec.c
     4611  2021-02-26 16:23   ports/rp2_MicroPython_RenameMainDotPy/CMakeLists.txt
---------                     -------
    37054                     6 files
```

Building

Clone the MicroPython 'rp2' port as 'rp2_MicroPython_RenameMainDotPy", then overlay the extracted source over the top. Build as usual.

scruss

Posts: 4477
Joined: Sat Jun 09, 2012 12:25 pm
Location: Toronto, ON
Contact: Website

Re: Bricked MicroPython rescue firmware

Quote

Fri Feb 26, 2021 5:39 pm

hippy (./memberlist.php?mode=viewprofile&u=1729&sid=86a359115a7ab96ab5429d7231e44468) wrote: ↑ (./viewtopic.php?p=1827358&sid=86a359115a7ab96ab5429d7231e44468#p1827358)

> *Fri Feb 26, 2021 4:05 pm*
>
> If you 'brick MicroPython' on your Pico by creating a 'main.py' which prevents the REPL from being entered ...

I'm glad I've only ever had to hit the "Stop" button in Thonny to get the REPL back.

So does this create a boot.py that renames the existing main.py and exits?

‘Remember the Golden Rule of Selling: “Do not resort to violence.”’ — McGlashan.
Pronouns: he/him

~~konstructorAzul~~

Posts: 1
Joined: Fri Feb 26, 2021 6:43 pm

Re: Bricked MicroPython rescue firmware

Quote

Fri Feb 26, 2021 6:53 pm

I dont have a main.py. I can flash everything with no errors. I have the 5 blinks repeating. Thonny gives gray bars in the shell output. When I try to open a file from the rpi pico, it throws the error: cant complete: device is busy -- cant perform this action now. please wait or cancel current work and try again! I dont want to nuke it because I have a bunch of untransfered files.

~~papous~~

Posts: 81
Joined: Fri Jan 05, 2018 5:50 am

Re: Bricked MicroPython rescue firmware

Quote

Sat Feb 27, 2021 9:54 am

Can we have some more details on this for the uninitiated?
will it unbrick ESP32?

~~fivdi~~

Posts: 462
Joined: Sun Sep 23, 2012 8:09 pm
Contact: Website

Re: Bricked MicroPython rescue firmware

Quote

Sat Feb 27, 2021 11:11 am

> *hippy (./memberlist.php?mode=viewprofile&u=1729&sid=86a359115a7ab96ab5429d7231e44468) wrote: ↑ (./viewtopic.php?p=1827358&sid=86a359115a7ab96ab5429d7231e44468#p1827358)*
> *Fri Feb 26, 2021 4:05 pm*
>
> If you 'brick MicroPython' on your Pico by creating a 'main.py' which prevents the REPL from being entered, prevents Thonny and other tools from accessing the Pico;

In general, creating a 'main.py' won't prevent access to the REPL and hitting ctrl+c will typically be enough to interrupt main.py and enter the REPL.

Running the following two rshell (https://github.com/dhylands/rshell) commands from the command line is likely to be all that's needed to rename main.py to main-1.py in many cases:

> Code:
>
> ```
> rshell --quiet --port /dev/ttyACM0 cp /pyboard/main.py /pyboard/main-1.py
> rshell --quiet --port /dev/ttyACM0 rm /pyboard/main.py
> ```

~~hippy~~

Posts: 10892
Joined: Fri Sep 09, 2011 10:34 pm
Location: UK

Re: Bricked MicroPython rescue firmware

Quote

Sat Feb 27, 2021 12:37 pm

> *fivdi (./memberlist.php?mode=viewprofile&u=36125&sid=86a359115a7ab96ab5429d7231e44468) wrote: ↑ (./viewtopic.php?p=1827758&sid=86a359115a7ab96ab5429d7231e44468#p1827758)*
> *Sat Feb 27, 2021 11:11 am*
>
> In general, creating a 'main.py' won't prevent access to the REPL and hitting ctrl+c will typically be enough to interrupt main.py and enter the REPL.

Agreed. This is mostly needed for those who have put something in 'main.py' which causes Ctrl-C not to work. I have done that when using 'micropython.kbd.intr(-1)' so I could read raw 8-bit characters from the host over USB, also viewtopic.php?f=146&t=305399 (https://www.raspberrypi.org/forums/viewtopic.php?f=146&t=305399) and I recall a couple of others have hit similar problems.

The problem is, once Ctrl-C is blocked, the REPL can't be entered and Thonny, rshell, ampy all rely on being able to get to the REPL to allow interaction with the file system. There's no way to get into the Pico to delete 'main.py' or do anything else to prevent it blocking REPL on every power-up. There's nothing more which can be done beyond re-flashing another .uf2

And that .uf2 has had to have been 'flash_nuke.uf2' because most other things won't wipe the MicroPython internal file system so it remains intact, along with the problematic 'main.py' once MicroPython has been flashed again.

Nuking isn't desirable because that loses everything in flash, including files which have not been backed-up on the host, requiring needed files to be re-loaded again. This is the answer to; who will rid me of this troublesome 'main.py' ?

Blocking Ctrl-C will most times be a simple rookie mistake when unfamiliar with the consequences it has with no thought to avoiding those. The realisation that the Pico is 'bricked' only occurs after having done it. And it's not exactly clear how to recover from that. Efforts to reflash MicroPython and other .uf2 are found to be fruitless leaving only nuking. This provides a better route out of that situation.

I have been following the No Button Boot (NBB) threads and it looks possible to incorporate a means of recovery, forcing 'main.py' renaming, within MicroPython even if Ctrl-C is blocked without introducing adverse effects. This utility firmware would still be needed for people not using such a modified MicroPython.

~~hippy~~

Posts: 10892
Joined: Fri Sep 09, 2011 10:34 pm
Location: UK

Re: Bricked MicroPython rescue firmware

Quote

Sat Feb 27, 2021 12:51 pm

> *papous (./memberlist.php?mode=viewprofile&u=254266&sid=86a359115a7ab96ab5429d7231e44468) wrote: ↑ (./viewtopic.php?p=1827722&sid=86a359115a7ab96ab5429d7231e44468#p1827722)*
> *Sat Feb 27, 2021 9:54 am*
>
> Can we have some more details on this for the uninitiated?

Not sure what more details are needed. It's a hacked MicroPython build which runs "_rescue.py" rather than "main.py" at start-up which renames "main.py" so that no longer runs when MicroPython is re-flashed and re-boots.

> *papous (./memberlist.php?mode=viewprofile&u=254266&sid=86a359115a7ab96ab5429d7231e44468) wrote: ↑ (./viewtopic.php?p=1827722&sid=86a359115a7ab96ab5429d7231e44468#p1827722)*
> *Sat Feb 27, 2021 9:54 am*
>
> will it unbrick ESP32?

Possibly, if it's 'main.py' or its presence which is bricking things.

Edit line 122 in 'ports/esp32/main.c' to be "_rescue.py" rather than "main.py" and drop "_rescue.py" into the "ports/esp32/modules" sub-directory. All the rest of my changes were cosmetic and niceties.

You will need to remove Pico specific code from my "_rescue.py". That should work but I have never built MicroPython for ESP32 so can't promise it will.

~~luisdaniel.ta~~

Posts: 1
Joined: Sat Jun 12, 2021 8:49 pm

Re: Bricked MicroPython rescue firmware

Quote

Sat Jun 12, 2021 8:51 pm

thank you very much, you saved my life

Display posts from previous:
All posts

Sort by
Post time

Ascending

Go

Post Reply

- Print view

9 posts • Page **1** of **1**

Return to “MicroPython”

Jump to

- Community
- General discussion
- Announcements
- Other languages
- Deutsch
- Español
- Français
- Italiano
- Nederlands
- 日本語
- Polski
- Português
- Русский
- Türkçe
- User groups and events
- The MagPi
- Using the Raspberry Pi
- Beginners
- Troubleshooting
- Advanced users
- Assistive technology and accessibility
- Education
- Picademy
- Teaching and learning resources
- Staffroom, classroom and projects
- Astro Pi
- Mathematica
- High Altitude Balloon
- Weather station
- Programming
- C/C++
- Java
- Python
- Scratch
- Other programming languages
- Windows 10 for IoT
- Wolfram Language
- Bare metal, Assembly language
- Graphics programming
- OpenGLES
- OpenVG
- OpenMAX
- General programming discussion

- Projects
- Networking and servers
- Automation, sensing and robotics
- Graphics, sound and multimedia
- Other projects
- Gaming
- Media centres
- AIY Projects
- Hardware and peripherals
- Camera board
- Compute Module
- Official Display
- HATs and other add-ons
- Device Tree
- Interfacing (DSI, CSI, I2C, etc.)
- Raspberry Pi 400
- Raspberry Pi Pico
- General
- SDK
- MicroPython
- Other RP2040 boards
- Operating system distributions
- Raspberry Pi OS
- Raspberry Pi Desktop for PC and Mac
- Other
- Android
- Debian
- FreeBSD
- Gentoo
- Linux Kernel
- NetBSD
- openSUSE
- Plan 9
- Puppy
- Arch
- Pidora / Fedora
- RISCOS
- Ubuntu
- Ye Olde Pi Shoppe
- For sale
- Wanted
- Off topic
- Off topic discussion

- Board index
- All times are UTC
- Delete cookies

Follow us

- Sign up to newsletter
- Twitter
- Facebook
- YouTube
- Instagram
- LinkedIn

About Raspberry Pi

- News
- Contact us
- Trademark
- About us
- Accessibility
- Cookies
- Licensing
- Terms and conditions of sale
- Privacy
- Security

For Industry

- Raspberry Pi For Industry
- Powered by Raspberry Pi
- Design Partners

Documentation

- All categories
- Product information portal
- Datasheets

Hardware

- Computers and microcontrollers
- Cameras and displays
- Add-on boards
- Power supplies and cables
- Cases
- Peripherals

Forums

- All forums

Raspberry Pi Store

- Cambridge Store

Raspberry Pi Press

- About Raspberry Pi Press
- The MagPi
- HackSpace
- Wireframe
- Custom PC

Software

- Raspberry Pi OS
- Raspberry Pi Imager
- Raspberry Pi Desktop