

*****Default*****

repo rp2040-rp2350-freertos
repo is for both the RP2040 & RP2350
supporting Raspberry Pi repo <https://github.com/raspberrypi/FreeRTOS-Kernel.git>
01/16/24

*****Default*****

build-steps-notes

Several env variables need to be setup

```
export PICO_SDK_PATH=/home/devel/pico2/pico-sdk
export FREERTOS_KERNEL_PATH=/home/devel/pico2/freertos-lib/FreeRTOS-Kernel
export PICO_EXTRAS_PATH=/home/devel/pico-extras
export PIPELINEC_REPO="$HOME/PipelineC"
export OSS_CAD_SUITE=$HOME/oss-cad-suite/
export PICTOOL_FETCH_FROM_GITHUB=/home/devel/pico2/BUILT_PICOTOOL
```

Starting from [git@github.com:develone/rp2040-freertos-project.git](https://github.com/develone/rp2040-freertos-project.git) dev branch
Uses FreeRTOS-Kernel
from Raspberry Pi repo <https://github.com/raspberrypi/FreeRTOS-Kernel.git>

```
steps for using repo https://github.com/develone/rp2040-rp2350-freertos.git
devel@pi5-90:~/rp2350-freeRTOS/build $ echo $FREERTOS_KERNEL_PATH
/home/devel/pico2/freertos-lib/FreeRTOS-Kernel
cd pico2
git clone https://github.com/develone/rp2040-rp2350-freertos.git
cd FreeRTOS-Kernel
cd ..
git clone https://github.com/develone/pico-sdk.git -b my-2.1.0
cd pico-sdk
git submodule update --init
cd ../BUILT_PICOTOOL/
git clone https://github.com/raspberrypi/picotool.git
mkdir build
cd build
cmake ../
sudo make install
cd ~/
git clone https://github.com/develone/rp2040-rp2350-freertos.git
cd ~/rp2040-rp2350-freertos
./compile-rp2350.sh
or
./compile-rp2350.sh
mkdir build-rp2040
```

There is currently 1 remaining compile error in this repo that needs to be fixed
this error is only for the rp2350.

[95%] Building C object 2cores/CMakeFiles/multicore.dir/multicore.c.o
/home/devel/rp2040-rp2350-freertos/2cores/multicore.c: In function 'core1_entry':

/home/devel/rp2040-rp2350-freertos/2cores/multicore.c:26:31: error: 'SIO_IRQ_PROC1' undeclared (first use in this function)

```
26 |   irq_set_exclusive_handler(SIO_IRQ_PROC1, core1_interrupt_handler);  
    |   ^~~~~~
```

/home/devel/rp2040-rp2350-freertos/2cores/multicore.c:26:31: note: each undeclared identifier is reported only once for each function it appears in

make[2]: * [2cores/CMakeFiles/multicore.dir/build.make:76:**

2cores/CMakeFiles/multicore.dir/multicore.c.o] Error 1

make[1]: * [CMakeFiles/Makefile2:3078: 2cores/CMakeFiles/multicore.dir/all] Error 2**

make: * [Makefile:91: all] Error 2**

```
devel@pi5-90:~/rp2040-rp2350-freertos $ find . -name *.uf2 | wc
```

```
39   39  1730
```

```
devel@pi5-80:~/rp2040-rp2350-freertos $ find . -name *.uf2 | wc
```

```
39   39  1730
```

```
mkdir build-rp2350
```

```
cd build-rp2350
```

```
cmake .. -DPICO_BOARD=pico2 -DPICO_PLATFORM=rp2350
```

```
make
```

```
or
```

```
make VERBOSE=1 > make_output.txt 2>&1
```

```
cd build-rp2040
```

```
cmake .. -DPICO_BOARD=pico -DPICO_PLATFORM=rp2040
```

```
make
```

```
or
```

```
make VERBOSE=1 > make_output_rp2040.txt 2>&1
```

This repo is for both the RP2040 & RP2350

Programming the Pico RP2040 or Pico2 RP2350.

/home/devel/rp2040-rp2350-freertos/build-2350/freertos/test-read-crc16/test-read-crc16.uf2 needs to be copied /media/devel/RP2350

ot

/home/devel/rp2040-rp2350-freertos/build-2040/freertos/test-read-crc16/test-read-crc16.uf2 needs to be copied /media/devel/RPI-RP2

Welcome to minicom 2.8

OPTIONS: I18n

Port /dev/ttyACM0, 09:40:48

Press CTRL-A Z for help on special keys

```
devel@pi5-90:~ $ minicom ACM0
```

Depress CR

cd - change directory

cp - copy file

format - format the filesystem
hex - simple hexdump, use -p to paginate
get - get file (xmodem)
ls - list directory
mkdir - create directory
mount - mount filesystem
mv - rename file or directory
put - put file (xmodem)
q - quit
rm - remove file or directory
status - filesystem status
unmount - unmount filesystem
vi - vi editor
lskl - lifting step 0 klt 1
j2k - In File Out Frile Compression Ratio Compression 0 Decompression 1
test_pnmio - test_pnmio

./: format
are you sure (y/N) ? y
2 format format the filesystem
formatted
:mount
6 mount mount filesystem

mount
6 mount mount filesystem
./:put a64.bin
Ctrl A S

File Edit Tabs Help

```
mv - rename file or directory
put - put file (xmodem) Compression Ratio Compression
q - quitest_pnmio
rm - remove file or directory
status - filesystem status
unmount - unmount filesystem
vi - vi editor +-[Upload]--+
lskl - lifting step 0 klt | zmodem |
j2k - In File Out Frile C| ymodem |tio Compression 0 Decompression 1
test_pnmio - test_pnmio | xmodem |
/: ls | kermit |
4 ls list directory | ascii |
filesystem is not mounted +-----+
/: mount
6 mount mount filesystem
mounted
/: ls

4224 a64.bin
4224 bb.bin
4 ls list directory
```

File Edit Tabs Help

ls - list directory

+-----[Select a file for upload]-----+

|Directory: /home/devel

| [master-repos]

| [my-projects-docs]

| [nextpnr]

| [openssl-teest]

s| [oss-cad-suite]

un| [pico]

| [pico-examples]

| [pico-extras]

| [pico-ice]

te| [pico-ice-sdk]

| [pico2]

/:| [picocom]

6 | [pshell]

fi| [releases-oss-cad-suite]

/:| [rp2040-freertos-project]

CC| (Escape to exit, Space to tag)

+-----+

file transfered, size: 0

[Goto] [Prev] [Show] [Tag] [Untag] [Okay]

/: put a64.bin

File Edit Tabs Help

ls - list directory

+-----[Select a file for upload]-----+

|Directory: /home/devel/rp2040-freertos-project|

| [i2c]|

| [klt]|

| [klt-test]|

| [kltdwt-ultibo]|

s| [lifting]|

un| [littlefs]|

| [openjpeg]|

| [pico-lifting]|

| [pico-lifting-sf]|

te| [pico-littlefs]|

| [pico-ultibo]|

/:| [pico_sleep]|

6 | [rp2040-logic-analyzer]|

fi| [sleep]|

/:| ☐ [test-images]|

CC| (Escape to exit, Space to tag)|

+-----+

file transfered, size: 0

[Goto] [Prev] [Show] [Tag] [Untag] [Okay]

/: put a64.bin


```
devel@pi5-90: ~
File Edit Tabs Help

vi - vi editor
lskl - lifting step 0 klt 1
j2k - In File Out Frile Compression Ratio Compression 0 Decompression 1
test_pnmio - test_pnmio

/: ls

0 a64.bin
4 ls list directory

/: rm a64.bin
10 rm remove file or directory
file /a64.bin removed
/: put a64.bin
C8 put put file (xmodem)

file transfered, size: 4224

/: ls

4224 a64.bin
4 ls list directory

/: █
```

```
/: hex -p a64.bin
0000 a19d9c9d 9fa2a2a6 aca59475 5d5e5e5e '.....u]^^^'
0010 64686766 6466676b 6d6e6e6c 6b6a6969 'dhgfdgkmmnlkjii'
0020 66656966 5e525054 55524d42 3c393534 'feif^RPTURMB<954'
0030 3454837f 52332a27 2828274d 5b483934 '4T..R3*('(M[H94'
0040 3c9f9d9e a0a1a3a7 a6998263 5c5f5f5d '<.....c\_]
0050 62676766 65636466 676a6b6a 6a6a6767 'bggfecdfgjkjjgg'
0060 6a656264 5d564f4d 4e50514c 47433c36 'jebd]VOMNPQLGC<6'
0070 322f3b6c 9198958c 867a706b 6e7c6953 '2;/l.....zpkn|s'
0080 48609d9c 9e9fa5a6 9e896857 5a5c5d5e 'H`.....hWZ\]^'
0090 5b606567 6866646a 6c6d6c68 66646463 '['eghfdjlmhfdhc'
00a0 64645f59 58524c47 423f454a 48484b4c 'dd_YXRLGB?EJHHKL'
00b0 5b55483f 4e718f99 9ca0a1a1 aab0afa8 '[UH?Nq.....'
00c0 b4bf219b 9b9da4a8 9f90847f 7f807f7d '!.....}'
00d0 7e7b7a7c 807e7e80 82868584 7f7a7878 '~{z|.~~.....zxx'
00e0 76767470 6d6a6562 605d5a65 75777578 'vvtpmjeb`]Zeuwux'
00f0 73777970 5b484646 3e3f474e 59657582 'swyp[HFF>?GNYeu.'
0100 86a2b53c a0a3a6a6 a5a09fa2 a3a4a3a1 '...<.....'
0110 9f9e9e9f 9f9fa2a3 a3a4a5a5 a3a4a2a1 '.....'
0120 a2a1a0a1 a0a2a1a0 9f9e9d9d 9da0a1a2 '.....'
0130 a39f9b9c 9d989495 97969695 928e8a88 '.....'
0140 87858586 2eaaaaa5 a09fa1a3 a5a6a7a8 '.....'
0150 a7a6a5a4 a7a8aaae adabadae adacadad '.....'
0160 adadaeaf afb1b1b3 b3b2b0ad afadaaab '.....'
/:j2k a64.bin r.pgm 0
```


4 in_fname = a64.bin out_fname = r.pgm CR 0 C/D = 0
15 j2k In File Out Frile Compression Ratio Compression 0 Decompression 1

hello_freertos1

Welcome to minicom 2.8

OPTIONS: I18n

Port /dev/ttyUSB0, 10:08:42

Press CTRL-A Z for help on special keys

Running on RP2350

Starting FreeRTOS on core 0:

Hello from worker count=0

Hello from main task count=0

blink_task starts

Hello from main task count=1

hello_freertos2

Welcome to minicom 2.8

OPTIONS: I18n

Port /dev/ttyUSB0, 09:58:54

Press CTRL-A Z for help on special keys

Running on RP2040

Starting FreeRTOS SMP on both cores:

Hello from worker count=0

worker is on core 0

main task is on core 0

Hello from main task count=0

blink_task starts

blink task is on core 1

Hello from main task count=1

2tasks

Welcome to minicom 2.8

OPTIONS: I18n

Port /dev/ttyUSB0, 07:19:04

Press CTRL-A Z for help on special keys

Running on RP2350

LED is ON!

LED is OFF!

LED is ON!

LED is OFF!

LED is ON!

LED is OFF!

LED is ON!

LED is OFF!

Scheduling

Welcome to minicom 2.8

OPTIONS: I18n

Port /dev/ttyUSB0, 06:55:44

Press CTRL-A Z for help on special keys

Running on RP2350

Task 2 is currently running

Task 1 is currently running

Task 2 is currently running

Task 1 is currently running

Task 2 is currently running

Task 1 is currently running

Task 2 is currently running

Task 1 is currently running

Task 2 is currently running

Task 1 is currently running

Mutex

Running on RP2350

111111111

222222222

111111111

222222222

111111111

222222222

111111111

222222222

111111111

222222222

111111111

pico-littlefs-examples-0-1-2

example0.uf2

devel@pi5-90:~ \$ minicom myusb0

format (N/y) ?

FS: blocks 64, block size 4096, used 2

Boot count: 1

File size (should be 4) : 4

example1.uf2

devel@pi5-90:~ \$ minicom myusb0

Hit any key

File list

.

..
boot_count
End of list
Creating 32 files
File list

.

..
11086282596.tst
11131774259.tst
11134519721.tst
11159678392.tst
11255903633.tst
11410932295.tst
1154866954.tst
11573908997.tst
11629436278.tst
11646566880.tst
11734980231.tst
11746841065.tst
11874488172.tst
11885772828.tst
11904406061.tst
11932629191.tst
12062972839.tst
12129434355.tst
12147260458.tst
1282962927.tst
1293130104.tst
1382971559.tst
152650143.tst
1569326942.tst
1642008697.tst
1735430261.tst
1758014368.tst
1777190218.tst
1780581502.tst
1821919613.tst
1921421196.tst
1989347765.tst

boot_count
End of list
FS: blocks 64, block size 4096, used 2
Renaming 32 files
File list

.

..
21086301339.tst
21131773644.tst
21134533206.tst
21159706183.tst
21255894638.tst
21410982328.tst

2154921717.tst
21573850618.tst
21629472393.tst
21646551583.tst
21734954360.tst
21746817558.tst
21874498707.tst
21885758435.tst
21904349650.tst
21932618552.tst
22062977112.tst
22129422604.tst
22147248085.tst
2282940432.tst
2293089415.tst
2382947672.tst
252666208.tst
2569361057.tst
2642038150.tst
2735394186.tst
2758029919.tst
2777127093.tst
2780551553.tst
2821919874.tst
2921385587.tst
2989380682.tst
boot_count
End of list
FS: blocks 64, block size 4096, used 2
Verifying then removing 32 files
File list
.
..
boot_count
End of list
FS: blocks 64, block size 4096, used 2
Pass

example2.uf2

Hit any key
FS: blocks 64, block size 4096, used 2
Creating 200K file
FS: blocks 64, block size 4096, used 53
reading 200K file
removing file
FS: blocks 64, block size 4096, used 2
Pass