

*****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 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

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

Welcome to minicom 2.8

OPTIONS: I18n

Port /dev/ttyACM0, 06:09:46

Press CTRL-A Z for help on special keys

```
cd - change directory  
cp - copy file
```

format - format the filesystem
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 |
| kermit |
/: ls | ascii |
4 ls list directory +-----+
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

File Edit Tabs Help

ls - list directory

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

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

| | [..]|

| | a64.bin|

| | bb.bin|

| | img1.pgm|

s| | img128.pgm|

un| | l128.pgm|

| | l64.pgm|

| |

| |

te| |

| |

/:| |

6 | |

fi| |

/:| |

CC| |

(Escape to exit, Space to tag)

+-----+

file transfered, size: 0

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

/: put a64.bin

```
ls - list directory
mkdir - create directory
mount - mount filesystem
mv - rename file or directory
+-----[xmodem upload - Press CTRL-C to quit]-----+
|Sending a64.bin, 32 blocks: Give your local XMODEM receive command now|
|.
sta|Bytes Sent: 4224 BPS:2153
unmo|
|Transfer complete
ls|
|READY: press any key to continue...|
test+-----+

/: ls

0 a64.bin
4 ls list directory

/: rm a64.bin
10 rm remove file or directory
file /a64.bin removed
/: put a64.bin
```



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

vi - vi editor
lsklt - 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 tranfered, size: 4224

/: ls

      4224 a64.bin
4 ls list directory

/: █
```

XX

```
/: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