

*****Draft*****

Testing the pshell project for addition to rp2040-freertos-project

The initial work consisted of 2 repos pshell & littlefs

which provides a flash file system & vi

05/26/22

*****Draft*****

```
picotool info --bus 1 --address 6 -f -a
```

The device was asked to reboot into BOOTSEL mode so the command can be executed.

Program Information

```
name:          pshell
features:      UART stdin / stdout
               USB stdin / stdout
binary start: 0x10000000
binary end:   0x1001be8c
```

Fixed Pin Information

```
0:  UART0 TX
1:  UART0 RX
```

Build Information

```
sdk version:    1.3.0
pico_board:     pico
boot2_name:     boot2_w25q080
build date:     May 22 2022
build attributes: Release
```

Device Information

flash size: 2048K

ROM version: 2

The device was asked to reboot back into application mode.

picotool info --bus 1 --address 8 -f -a

The device was asked to reboot into BOOTSEL mode so the command can be executed.

Program Information

name: test-read-crc16

features: USB stdin / stdout

binary start: 0x10000000

binary end: 0x10014834

Fixed Pin Information

none

Build Information

sdk version: 1.3.0

pico_board: pico

boot2_name: boot2_w25q080

build date: May 25 2022

build attributes: Release

Device Information

flash size: 2048K

ROM version: 2

The device was asked to reboot back into application mode.

Only required "Ultibo_Projects/rebuild-repo.sh" if the rp2040-freertos-project is not present or a fresh start is desired.

```
cd rp2040-freertos-project/build/
```

```
cmake ..
```

```
make
```

An 8 bit crc working in "rp2040-freertos-project"

These are the files from pshell that are now compiled in the libcrc16.a

9 20 158 crc16.h

130 475 4015 fs.h

6 21 134 vi.h

19 46 328 xcommon.h

10 23 202 xreceive.h

8 19 154 xtransmit.h

to libcrc16.a

arm-none-eabi-ar t crc16/libcrc16.a

crc16.c.obj

head-tail.c.obj

cvtutils.c.obj

lfs_util.c.obj

lfs.c.obj

fs.c.obj

xreceive.c.obj

xtransmit.c.obj

vi.c.obj

The pshell project has crc16. I created a library

<https://github.com/develone/rp2040-freertos-project/tree/master/crc16>

<https://github.com/develone/rp2040-freertos-project/blob/master/crc16/CMakeLists.txt>

This is still a WIP to add other files to library vi.c

```
set(PICO_SDK_CRC16_SOURCE CRC16-Files)
```

```
add_library(crc16
```

```
    ${PICO_SDK_CRC16_SOURCE}/crc16.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/head-tail.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/cvtutils.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/lfs_util.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/lfs.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/fs.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/xreceive.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/xtransmit.c
```

```
        ${PICO_SDK_CRC16_SOURCE}/vi.c
```

```
)
```

```
target_include_directories(crc16 PUBLIC
```

```
    .
```

```
    ${PICO_SDK_CRC16_SOURCE}/include
```

```
        ${PICO_SDK_CRC16_SOURCE}/hardware
```

```
    ${PICO_SDK_CRC16_SOURCE}/portable/GCC/ARM_CM0
```

```
)
```

<https://github.com/develone/rp2040-freertos-project/blob/master/doc/libcrc16.dis>

```
File Edit Tabs Help
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
0x4c3
This is a place holder for the pshell task
Hello, world!
```

from repo pshell crc16.c crc16.h from repo littlefs lfs.c lfs_util.c lfs.h lfs_util.h

from libcrc.a repo rp2040-freertos-project cvtutils.c head-tail.c head-tail.h

These now are used to create libcrc16.a

**from the repo pshell fs.h vi.c xcommon.h xreceive.h xtransmit.h fs.c vi.h
xreceive.c xtransmit.c**

fs.c has the following .h files which prevents from being included in libcrc16.a

#include "hardware/flash.h"

#include "hardware/regs/addressmap.h"

#include "hardware/sync.h"

**xreceive.c & xtransmit.c have the following .h files which prevents from being
included in libcrc16.a**

#include "pico/stdlib.h"

vi.c has the following **.h** files which prevents from being included in **libcrc16.a**
#include "pico/stdlib.h"

The files from **pshell** & **littlefs** could not be include in **libcrc16.a** **fs.h** **vi.h**
xreceive.c **xtransmit.c** **fs.c** **vi.c** **xcommon.h** **xreceive.h** **xtransmit.h**

Now in the **libcrc16.a**

crc16.h **lfs.h** **lfs_util.h** **crc16.c** **lfs.c** **lfs_util.c**

From previous **libcrc.a** **head-tail.h** **head-tail.c** **cvtutils.c**

The library also provides a circular buffer.

The library was tested on a **pico** with the following

<https://github.com/develone/rp2040-freertos-project/blob/master/test-read-crc16/main.c>

```
File Edit Tabs Help
devel@pi4-27:~/rp2040-freertos-project/build/test-read-crc16 $ cd ../../
devel@pi4-27:~/rp2040-freertos-project $ cd testcrc16/
devel@pi4-27:~/rp2040-freertos-project/testcrc16 $ ./tst
Hello, world!
0x4c3
devel@pi4-27:~/rp2040-freertos-project/testcrc16 $
```

Testing in Linux RPi4B+ 8Gb Raspberry Pi O/S

rp2040-freertos-project/testcrc16-RPi

One of the Ultibo members post the folloing

<https://ultibo.org/forum/viewtopic.php?f=9&t=1640&start=30>

by [Gavinmc42](#) »

This is interesting, talk about about adding Pascal to it.

<https://forums.raspberrypi.com/viewtopic.php?t=323018>

With a shell, editor and Pascal, OTA update of just the Pascal code should be smaller/quicker?

Hmm, should look at OTA of Micropython on Picos or has that been done?

Forked “<https://github.com/lurk101/pshell>”

“git clone [git@github.com](https://github.com):develone/pshell.git”

```
“cd pshell”
```

```
“git submodule update -init”
```

```
mkdir build
```

```
cd build
```

```
cmake ..
```

```
make
```

The image below is running test-read-crc16.elf

```
File Edit Tabs Help
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
0x4c3
Hello, world!
```

First needed format followed by mount

Created tt.txt using vi from the pshell

```
File Edit Tabs Help
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

/: ls

    899 tt.txt
   1798 ttt.txt
   3596 xx.txt

/: status

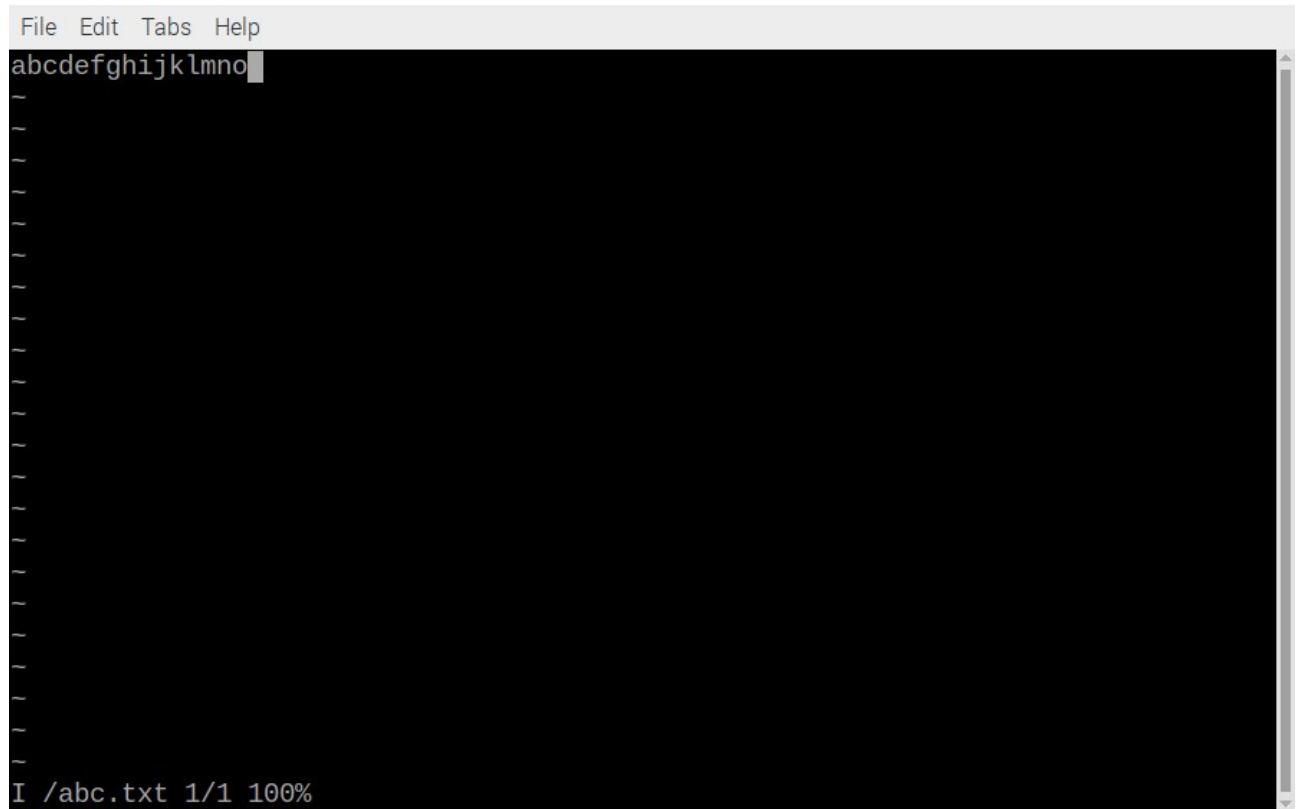
flash base 0x100000, blocks 256, block size 4096, used 5, total 1048576 bytes, .

/:
```

m

m

The image below is using the vi command



m

File Edit Tabs Help

```
/: ls
```

```
    16 abc.txt  
   899 tt.txt  
  1798 ttt.txt  
  3596 xx.txt
```

```
/: █
```