

*****Draft*****

**Converting a project kldwt-ultibo/main.c to a freeRTOS project
pico-ultibo/main.c
Testing several freeRTOS features Tasks, Mutex, Semaphores, Events, and
Streams
04/19/2022**

*****Draft*****

```
openocd -f interface/raspberrypi-swd.cfg -f target/rp2040.cfg -c "program  
2tasks/2tasks.elf verify reset exit"
```

```
openocd -f interface/raspberrypi-swd.cfg -f target/rp2040.cfg -c "program  
kldwt-ultibo/kldwt-ultibo.elf verify reset exit"
```

03/27/22

Merged Ultibo_Projects/picotransfer/RPi3/FileHandling.lpr with
Ultibo_Projects/picoledonoff/RPi3/picoledonoff.lpr.
into Ultibo_Projects/picotransfer/RPi3/picokldwtultibo.lpr. Now the hw
version can read & parse one of
2 64 x 64 image found in a64.bin or bb.bin. Starting with rp2040-freertos-
project/klt-test/main.c. Made modifications in rp2040-freertos-project/kldwt-
ultibo/main.c
which now sends Sync until a '4' is sent from the host. Then it sends Ready and
expects 4160 characters of data
which make up a 64 x 64 image with a CRC added added to each row. The pico
processes the image
and sends "Command (1 = Send or 0 = Wait):" When the '1' is received the pico
sends the results of the
"klt-feature-detect" and then with the "dwt lifting step".

With a Semaphore

```
File Edit Tabs Help
2222222222
2222222222
1111111111
1111111111
1111111111
2222222222
2222222222
1111111111
2222222222
1111111111
2222222222
1111111111
2222222222
1111111111
2222222222
2222222222
2222222222
2222222222
2222222222
1111111111
1111111111
2222222222
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.8 | VT102 | Offline | ttyACM0
```

Without a Semaphore

```
File Edit Tabs Help
2221112212
1222112
222222
1221111
211122
21212211111222122212
1211
212211
1
212
22122
112221
111222111112221
2222122222212222
112221222122111
22112212111121112212
22122
122211
2221211212
21111211111
```

In the image below two tasks display either 1111111111 or 2222222222. If a Semaphore was not used
Xx

```
File Edit Tabs Help
Task1 event occurred
Task2 event occurred
Task3 event occurred
Task4 event occurred
111111111
222222222
LED is ON!
111111111
222222222
LED is OFF! streamFlag=1 DynStreamBuffer=0x20001d20
numbytes1=1 numbytes2=29
rdnumbytes1=30 Event=1
EGroup=0x20001d00
  S t r i n g   T o   S e n d   S t r i n g   T o   S e n d
Task1 event occurred
Task2 event occurred
Task3 event occurred
Task4 event occurred
111111111
222222222
LED is ON!
111111111
222222222
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.8 | VT102 | Offline | ttyACM0
```

Xx

```
File Edit Tabs Help
sync event occurred
ready event occurred
Task3 event occurred
Task4 event occurred
LED is ON!
LED is OFF! streamFlag=1 DynStreamBuffer=0x20005ee0
numbytes1=1 numbytes2=29
rdnumbytes1=30 Event=1
EGroup=0x20005ec0
  S t r i n g   T o   S e n d   S t r i n g   T o   S e n d
sync event occurred
ready event occurred
Task3 event occurred
Task4 event occurred
Sync
Sync
Sync
Sync
Sync
Sync
Sync
Sync
Sync
Sync
```