**********Draft**********

4 pico_w and virtual bare metal ultibo
connecting with mosquitto broker
12/02/22

**********Draft**********

Using pico_w with mosquiito broker provides a method to send messages from a RPi4B to several pico_w at the same time.

Two shells are needed on each of four RPi4B used to program the pico_w and monitor the results of connecting WiFi and to mosquitto broker.
On the first shell
. Ultibo_Projects/picoultibo.sh used to set the path for openocd & QEMU
cd pico_w-remotes/remotex where x is 6, 5, 2, or 1
./o-ocd.sh which with openocd programs the pico_w.

On the 2 shell
minicom myusb0 used to monitor connecting WiFi and to mosquitto broker.

You need to generate a password file

mosquitto_passwd -c /home/devel/mosquitto-pw testuser

These are the setting used for mosqiitto

> #listener 8883 192.168.1.211
> #listener 1884 192.168.1.211
> listener 9883
> #listener 9883 192.168.1.175
> listener 1883
> user testuser
> per_listener_settings true
> #password_file /etc/mosqitto/mosquitto-pw
> password_file /home/devel/mosquitto-pw
> #acl_file file /etc/mosquitto/acl_file.conf
> allow_anonymous false

Four pico_w connecting with a mosquitto broker.
devel@pi4-27:~ $ mosquitto -c /etc/mosquitto/mosquitto.conf
1669982679: mosquitto version 2.0.11 starting
1669982679: Config loaded from /etc/mosquitto/mosquitto.conf.
1669982679: Opening ipv4 listen socket on port 9883.
1669982679: Opening ipv6 listen socket on port 9883.
1669982679: Opening ipv4 listen socket on port 1883.
1669982679: Opening ipv6 listen socket on port 1883.
1669982679: mosquitto version 2.0.11 running
1669982707: New connection from 192.168.1.175:53408 on port 1883.
1669982707: New client connected from 192.168.1.175:53408 as remote6 (p2, c1, k100, u'testuser').
1669982859: Client remote6 has exceeded timeout, disconnecting.
1669983119: New connection from 192.168.1.159:59570 on port 1883.

1669983119: New client connected from 192.168.1.159:59570 as remote5 (p2, c1, k100, u'testuser').
1669983273: Client remote5 has exceeded timeout, disconnecting.
1669983823: New connection from 192.168.1.160:60277 on port 1883.
1669983824: New client connected from 192.168.1.160:60277 as remote2 (p2, c1, k100, u'testuser').
1669983975: Client remote2 has exceeded timeout, disconnecting.
1669984108: New connection from 192.168.1.176:50787 on port 1883.
1669984108: New client connected from 192.168.1.176:50787 as remote1 (p2, c1, k100, u'testuser').
1669984767: New client connected from ::1:52408 as auto-631024F1-4EA3-AEEA-E044-63594A65365A (p2, c1, k60, u'testuser').
1669984767: Client auto-631024F1-4EA3-AEEA-E044-63594A65365A disconnected.

devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 1 to pico_w remotes 6, 5, 2, & 1'
devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 1 to pico_w remotes 6, 5, 2, & 1'
devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 1 to pico_w remotes 6, 5, 2, & 1'
devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 2 to pico_w remotes 6, 5, 2, & 1'
devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 3 to pico_w remotes 6, 5, 2, & 1'
devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 3 to pico_w remotes 6, 5, 2, & 1'
devel@pi4-27:~ $ mosquitto_pub -t 'topic_qos0' -u 'testuser' -P 'password123' -m 'message 4 to pico_w remotes 6, 5, 2, & 1'

remote6
blink_task starts
MQTT client "remote6" connection cb: status 0
MQTT client "remote6" request cb: err 0
MQTT client "remote6" request cb: err 0
MQTT client "remote6" publish cb: topic topic_qos0, len 40
MQTT client "remote6" data cb: len 40, flags 1
MQTT client "remote6" publish cb: topic topic_qos0, len 40
MQTT client "remote6" data cb: len 40, flags 1
MQTT client "remote6" publish cb: topic topic_qos0, len 40
MQTT client "remote6" data cb: len 40, flags 1
MQTT client "remote6" publish cb: topic topic_qos0, len 40
MQTT client "remote6" data cb: len 40, flags 1
MQTT client "remote6" connection cb: status 256

remote5
blink_task starts
MQTT client "remote5" connection cb: status 0
MQTT client "remote5" request cb: err 0
MQTT client "remote5" request cb: err 0
MQTT client "remote5" publish cb: topic topic_qos0, len 40
MQTT client "remote5" data cb: len 40, flags 1
MQTT client "remote5" publish cb: topic topic_qos0, len 40

MQTT client "remote5" data cb: len 40, flags 1
MQTT client "remote5" publish cb: topic topic_qos0, len 40
MQTT client "remote5" data cb: len 40, flags 1
MQTT client "remote5" publish cb: topic topic_qos0, len 40
MQTT client "remote5" data cb: len 40, flags 1
MQTT client "remote5" connection cb: status 256

remote2
blink_task starts
MQTT client "remote2" connection cb: status 0
MQTT client "remote2" request cb: err 0
MQTT client "remote2" request cb: err 0
MQTT client "remote2" publish cb: topic topic_qos0, len 40
MQTT client "remote2" data cb: len 40, flags 1
MQTT client "remote2" publish cb: topic topic_qos0, len 40
MQTT client "remote2" data cb: len 40, flags 1
MQTT client "remote2" connection cb: status 256

remote1
MQTT client "remote1" connection cb: status 0
MQTT client "remote1" request cb: err 0
MQTT client "remote1" request cb: err 0
MQTT client "remote1" publish cb: topic topic_qos0, len 40
MQTT client "remote1" data cb: len 40, flags 1
MQTT client "remote1" connection cb: status 256

devel@pi4-27:~ $ mosquitto_sub -t 'update/memo' -u 'testuser' -P 'password123'

hello there

hello there

hello there

hello there

hello there
message1
message1

hello there

hello there

. Ultibo_Projects/picoultibo.sh used to set the path for openocd & QEMU

cd /Ultibo_Projects/Pauls-ultibo-mqtt/QEMU

#!/bin/bash
qemu-system-arm -machine versatilepb -cpu cortex-a8 -kernel kernel.bin \

-net
user,hostfwd=tcp::5080-:80,hostfwd=tcp::5023-:23,hostfwd=udp::5069-:69,hostfwd=tcp::6050-:505
0 -net nic \
 -drive file=disk.img,if=sd,format=raw