

*****Draft*****

**QEMU Ultibo Bare Metal
Socket Test using AraratSynapse
with
Remote Shell and Web Status
07/26/21**

*****Draft*****

Note:

<https://ultibo.org/forum/viewtopic.php?f=13&t=1303&p=11632#p11632>

By Ultibo Wed Jul 21, 2021 9:01 pm

I suspect the version of QEMU that you have on the RPi3B+ is later than the one on the RPi4, try doing `qemu-system-arm -version` on each one.

We recently discovered that the Ultibo SD card driver was not compatible with the latest versions of QEMU, a fix for this is included in the release from today (Ultibo core 2.1.079) so if you update your RTL to the latest either using the RTL Builder or by rerunning the ultiboinstaller script then it should work now.

**<https://en.m.wikipedia.org/wiki/QEMU>. On the pi400-1 I ran
`./ultiboinstaller.sh` on pi400-1.**

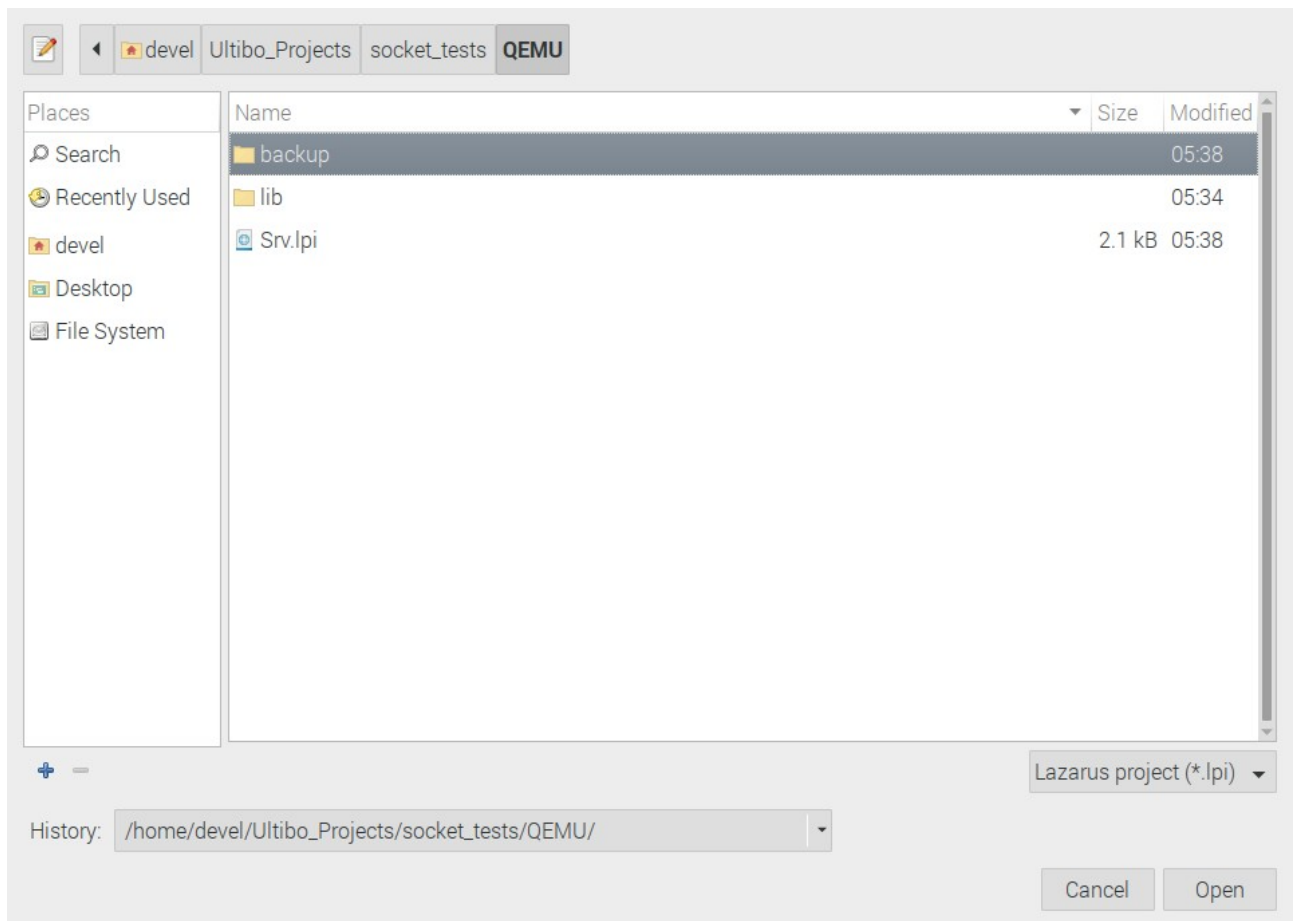
QEMU is a [hosted virtual machine monitor](#): it emulates the machine's [processor](#) through dynamic [binary translation](#) and provides a set of different hardware and device models for the machine, enabling it to run a variety of [guest operating systems](#). It also can be used with [Kernel-based Virtual Machine](#) (KVM) to run virtual machines at near-native speed (by taking advantage of hardware extensions such as [Intel VT-x](#)). QEMU can also do emulation for user-level processes, allowing applications compiled for one architecture to run on another.[\[3\]](#)

**Note : Additional software is needed to run QEMU “`sudo apt-get install qemu-system-arm`”.
The following programs are added.**

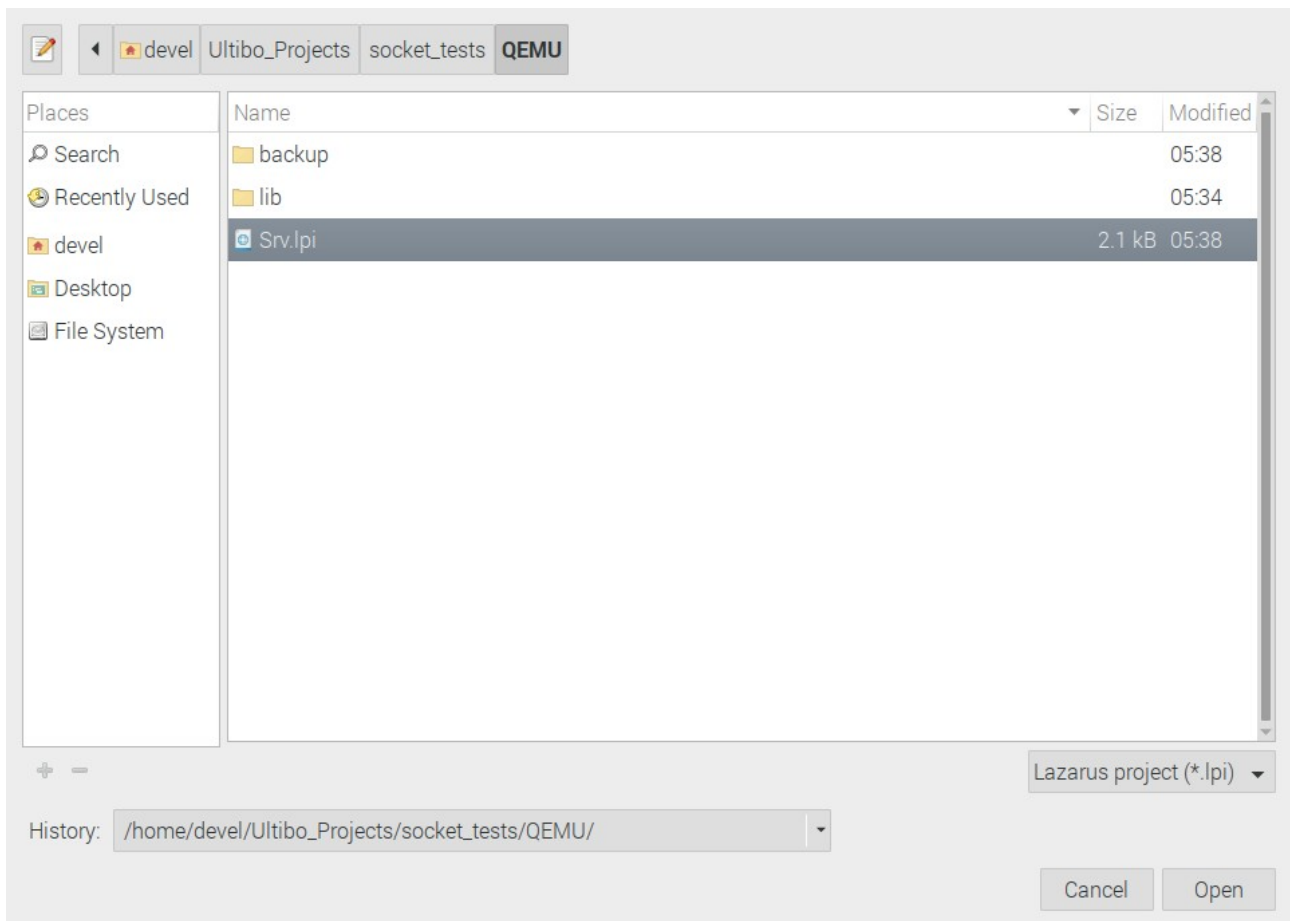
**`/usr/bin/qemu-img /usr/bin/qemu-nbd /usr/bin/qemu-system-aarch64
/usr/bin/qemu-io /usr/bin/qemu-pr-helper /usr/bin/qemu-system-arm`**

The command line for starting Lazarus IDE (Ultibo Edition) “`~/ultibo/core/lazarus.sh`”

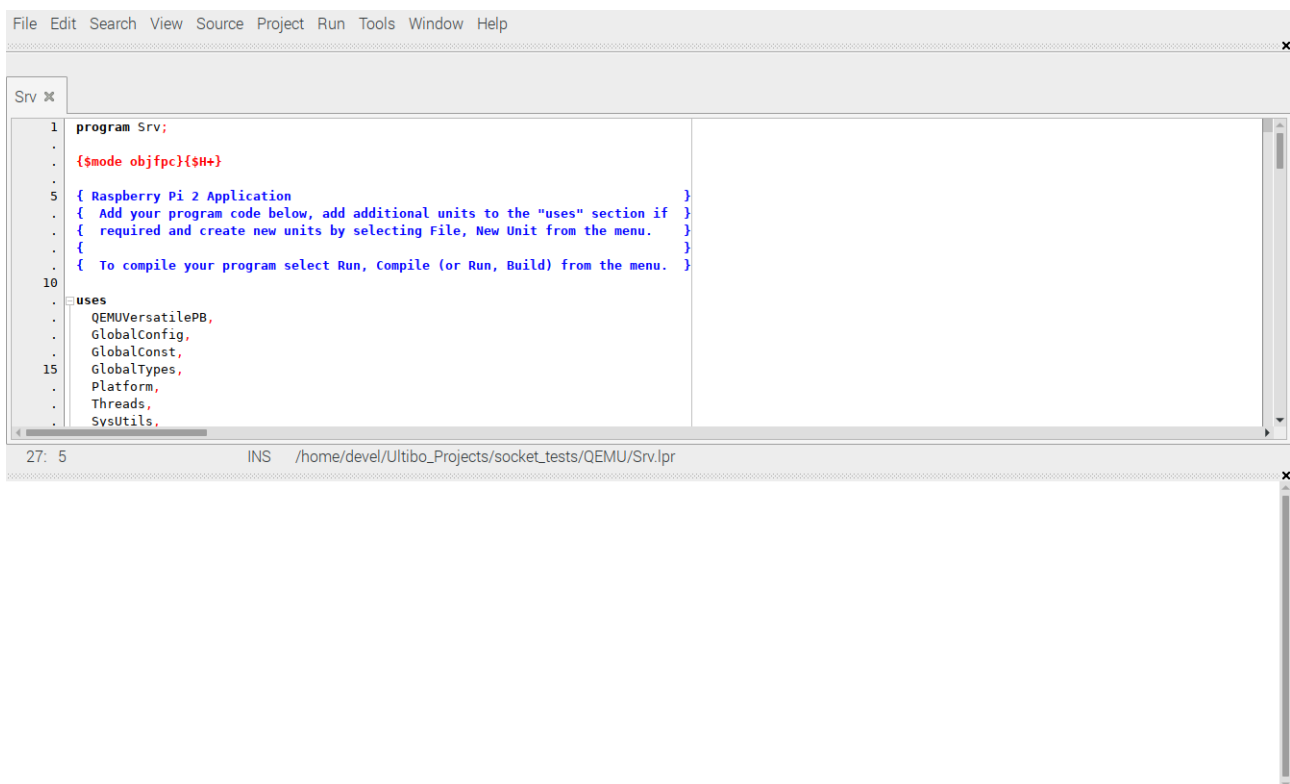
Project/Open Project



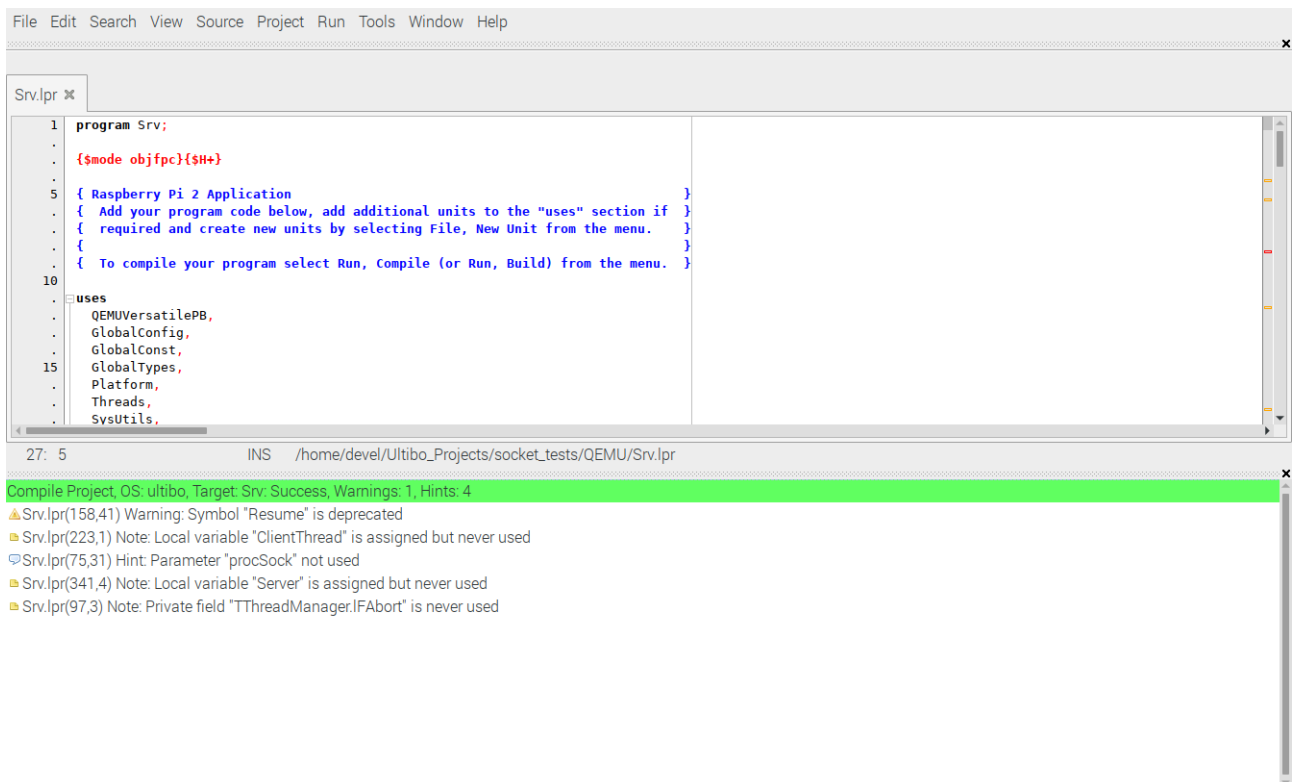
Select Srv.lpi



Depreess Open



Run/Compile The kernel.bin is created when the Green bar appears.



startqemu.sh

```
#!/bin/bash
```

```
qemu-system-arm -machine versatilepb -cpu cortex-a8 -kernel kernel.bin \
```

```
-net
```

```
user,hostfwd=tcp::5080-:80,hostfwd=tcp::5023-:23,hostfwd=tcp::5069-:69,hostfwd=tcp::6050-:505
```

```
0 -net nic \
```

```
-drive file=disk.img,if=sd,format=raw
```

Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)

```
Socket successfully initialized
Bind RPi2B or RPi4B on 5050
Bind QEMU localhost 6050
telnet QEMU localhost 5023
tftp QEMU localhost 5069
WebStatus QEMU http://localhost:5080/status
```

Webstatus General

Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)

General

Platform

Memory

Heap Blocks

CPU

FPU

GPU

RTL

Clock

Locale

Threading

Thread List

Scheduler

Devices

Drivers

Handles

USB

PCI

MMC / SD / SDIO

Network

Storage

Filesystem

Disk Cache

Keyboard

Mouse

Touch

Framebuffer

Environment

Page Tables

Vector Tables

IRQ / FIQ / SWI

GPIO

Configuration

General

Release Name: Beetroot

Release Version: 2.1.079

Release Date: 21 July 2021

Time (Local): 26-7-21 12:01:39

Time (UTC): 26-7-21 12:01:39

Timezone: UTC

Daylight Start: None

Daylight Date: N/A

Standard Start: None

Standard Date: N/A

Temperature (SoC): 0 degrees Celcius

Uptime: 0 days 00:20:36

Webstatus Memory

Ultibo Core (Release: Beetrout Version: 2.1.079 Date: 21 July 2021)

	Memory	
General		
Platform		
Memory	Initial Heap	
Heap Blocks		
CPU	INITIAL_HEAP_SIZE	65536
FPU	INITIAL_HEAP_BASE	0x003DB000
GPU		
RTL	Heap Status	
Clock		
Locale	TotalAddrSpace:	130175232
Threading	TotalUncommitted:	90010388
Thread List	TotalCommitted:	40164844
Scheduler	TotalAllocated:	40164844
Devices	TotalFree:	90010388
Drivers	FreeSmall:	0
Handles	FreeBig:	0
USB	Unused:	90010388
PCI	Overhead:	0
MMC / SD / SDIO	HeapErrorCode:	0
Network		
Storage	FPC Heap Status	
Filesystem		
Disk Cache	MaxHeapSize:	130175232
Keyboard	MaxHeapUsed:	41413348
Mouse	CurrHeapSize:	130175232
Touch	CurrHeapUsed:	40168104
Framebuffer	CurrHeapFree:	90007128
Environment		
Page Tables	Heap Statistics	
Vector Tables		
IRQ / FIQ / SWI	HEAP_STATISTICS not defined	
GPIO		
Configuration	Heap Blocks	

Webstatus Platform

Ultibo Core (Release: Beet: x

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General

Platform

Memory

Heap Blocks

CPU

FPU

GPU

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IRQ / FIQ / SWI

GPIO

Configuration

Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)

Platform

Board Type:

BOARD_TYPE_QEMUVPB

Board Model:

0

Board Serial:

0x0000000000000000

Board Revision:

0x00000000

Chip Revision:

0x00000000

Firmware Revision:

0x00000000 (0)

Machine Type:

MACHINE_TYPE_VERSATILEPB

Memory Base:

0x00000000

Memory Size:

268435456

Page Size:

4096

Large Page Size:

65536

Section Size:

1048576

Power State

POWER_ID_MMC0:

POWER_STATE_OFF

POWER_ID_MMC1:

POWER_STATE_OFF

POWER_ID_MMC2:

POWER_STATE_OFF

POWER_ID_MMC3:

POWER_STATE_OFF

POWER_ID_UART0:

POWER_STATE_OFF

POWER_ID_UART1:

POWER_STATE_OFF

POWER_ID_UART2:

POWER_STATE_OFF

POWER_ID_UART3:

POWER_STATE_OFF

POWER_ID_USB0:

POWER_STATE_OFF

POWER_ID_USB1:

POWER_STATE_OFF

POWER ID USB2:

POWER STATE OFF

Webstatus MMC / SD / SDIO

Ultibo Core (Release: Beetr x

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mypi3-20:5080/status/mmc

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Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)

General

Platform

Memory

Heap Blocks

CPU

FPU

GPU

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Configuration

MMC / SD / SDIO

Devices

MMC Id	Name	State	Type
1	MMC1	MMC_STATE_INSERTED	MMC_TYPE_SD
0	MMC0	MMC_STATE_EJECTED	MMC_TYPE_MMC

Hosts

SDHCI Id	Name	State	Type
1	SDHCI1	SDHCI_STATE_ENABLED	SDHCI_TYPE_MMCI
0	SDHCI0	SDHCI_STATE_ENABLED	SDHCI_TYPE_MMCI

SDIO Drivers

Driver Id	Name	State
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Telnet Using port 5023

```
File Edit Tabs Help
devel@mypi3-20:~/Ultibo_Projects/socket_tests/doc $ telnet localhost 5023
```

dir

type "Test File.txt"

type "Another File.txt"

```
File Edit Tabs Help
Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)
(Type HELP for a list of available commands)
>dir
  Directory of C:\

19-9-17 09:55:26      <DIR>          www
19-9-17 10:03:04          31  Test File.txt
19-9-17 10:03:06          53  Another File.txt
          2 file(s) 84 bytes
          1 dir(s)

C:\>type "Test File.txt"
This is a test file for Ultibo!

C:\>type "Another File.txt"
This is another test file, just like the first one.

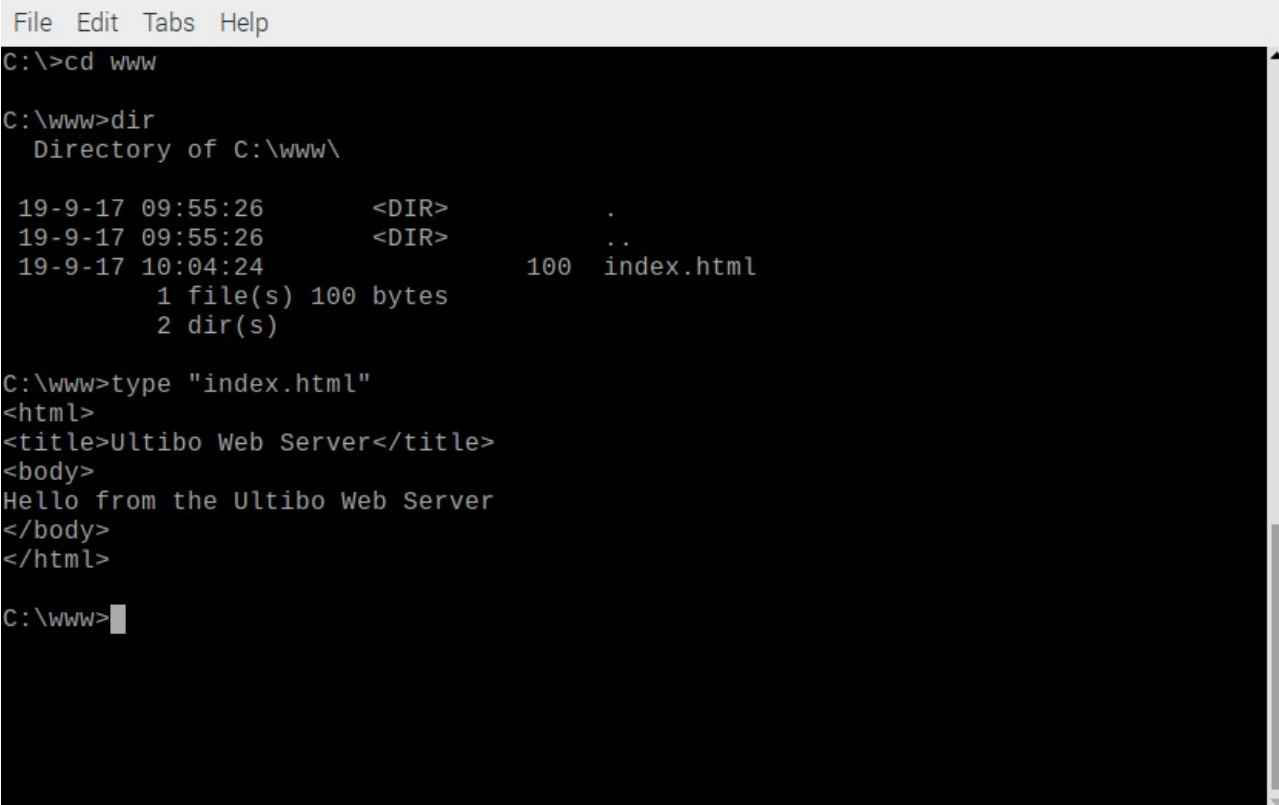
C:\>
```

clear

cd www

dir

type "index.html"

A screenshot of a Windows command prompt window. The window has a title bar with 'File Edit Tabs Help'. The command prompt shows the following sequence of commands and output:
C:\>cd www
C:\www>dir
Directory of C:\www\
19-9-17 09:55:26 <DIR> .
19-9-17 09:55:26 <DIR> ..
19-9-17 10:04:24 100 index.html
1 file(s) 100 bytes
2 dir(s)
C:\www>type "index.html"
<html>
<title>Ultibo Web Server</title>
<body>
Hello from the Ultibo Web Server
</body>
</html>
C:\www>
The window has a vertical scrollbar on the right side.

logout

```

File Edit Tabs Help
C:\>cd www
C:\www>dir
Directory of C:\www\

19-9-17 09:55:26      <DIR>      .
19-9-17 09:55:26      <DIR>      ..
19-9-17 10:04:24             100  index.html
                1 file(s) 100 bytes
                2 dir(s)

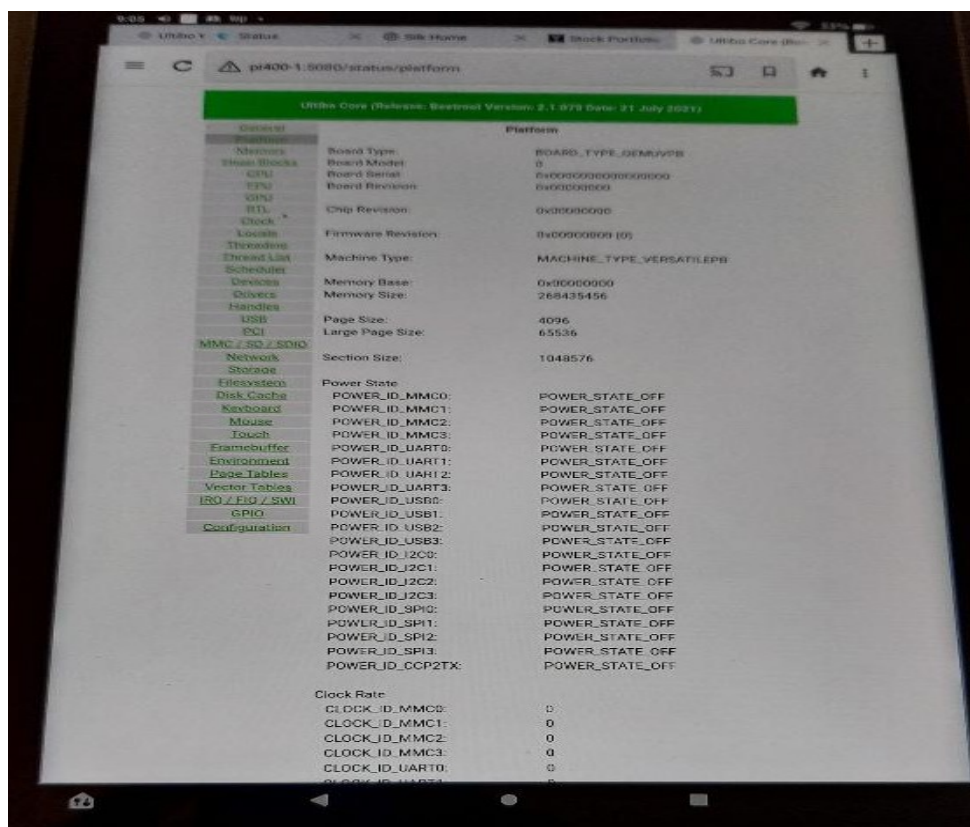
C:\www>type "index.html"
<html>
<title>Ultibo Web Server</title>
<body>
Hello from the Ultibo Web Server
</body>
</html>

C:\www>logout
Goodbye!
Connection closed by foreign host.
devel@mypi3-20:~/Ultibo_Projects/socket_tests/doc $

```

pi400-1 is connected wireless and running QEMU.

With a Fire 10 tablet which is also connected wireless.



This is a client using telnet mypi3-20 6050 to a QEMU server!!!!!!

```
File Edit Tabs Help
devel@mypi3-20:~/Ultibo_Projects/socket_tests/doc $ telnet mypi3-20 6050
Trying 2600:1700:69f0:42c0::2c...
Trying 2600:1700:69f0:42c0:58b0:345f:f03:548a...
Trying 192.168.1.245...
Connected to mypi3-20.
Escape character is '^]'.
This is a client using telnet mypi3-20 6050 to a QEMU server!!!!!!
```

The QEMU Svr below

Machine View

Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)

```
Socket successfully initialized
Bind RPi2B or RPi4B on 5050
Bind QEMU localhost 6050
telnet QEMU localhost 5023
tftp QEMU localhost 5069
WebStatus QEMU http://localhost:5080/status
WAccepted connection from :0
e have 1 client threads!
60
This is a client using telnet mypi3-20 6050 to a QEMU server!!!!!!
we get it from 0 thread
T I
```

telnet pi400-1 6050

abcdefghijklmnopqrstuvwxy

```
File Edit Tabs Help
devel@pi400-1:~/Ultibo_Projects/socket_tests/QEMU $ telnet pi400-1 6050
Trying 127.0.1.1...
Connected to pi400-1.
Escape character is '^]'.
abcdefghijklmnopqrstuvwxyz
█
```

QEMU pi400-1

Machine View

Ultibo Core (Release: Beetroot Version: 2.1.079 Date: 21 July 2021)

```
Socket successfully initialized
Bind RPi2B or RPi4B on 5050
Bind QEMU localhost 6050
telnet QEMU localhost 5023
tftp QEMU localhost 5069
WebStatus QEMU http://localhost:5080/status
Accepted connection from :0
We have 1 client threads!
Accepted connection from :0
We have 2 client threads!
28
abcdefghijklmnopqrstuvwxyz
we get it from 1 thread
a
```