

\*\*\*\*\*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.**

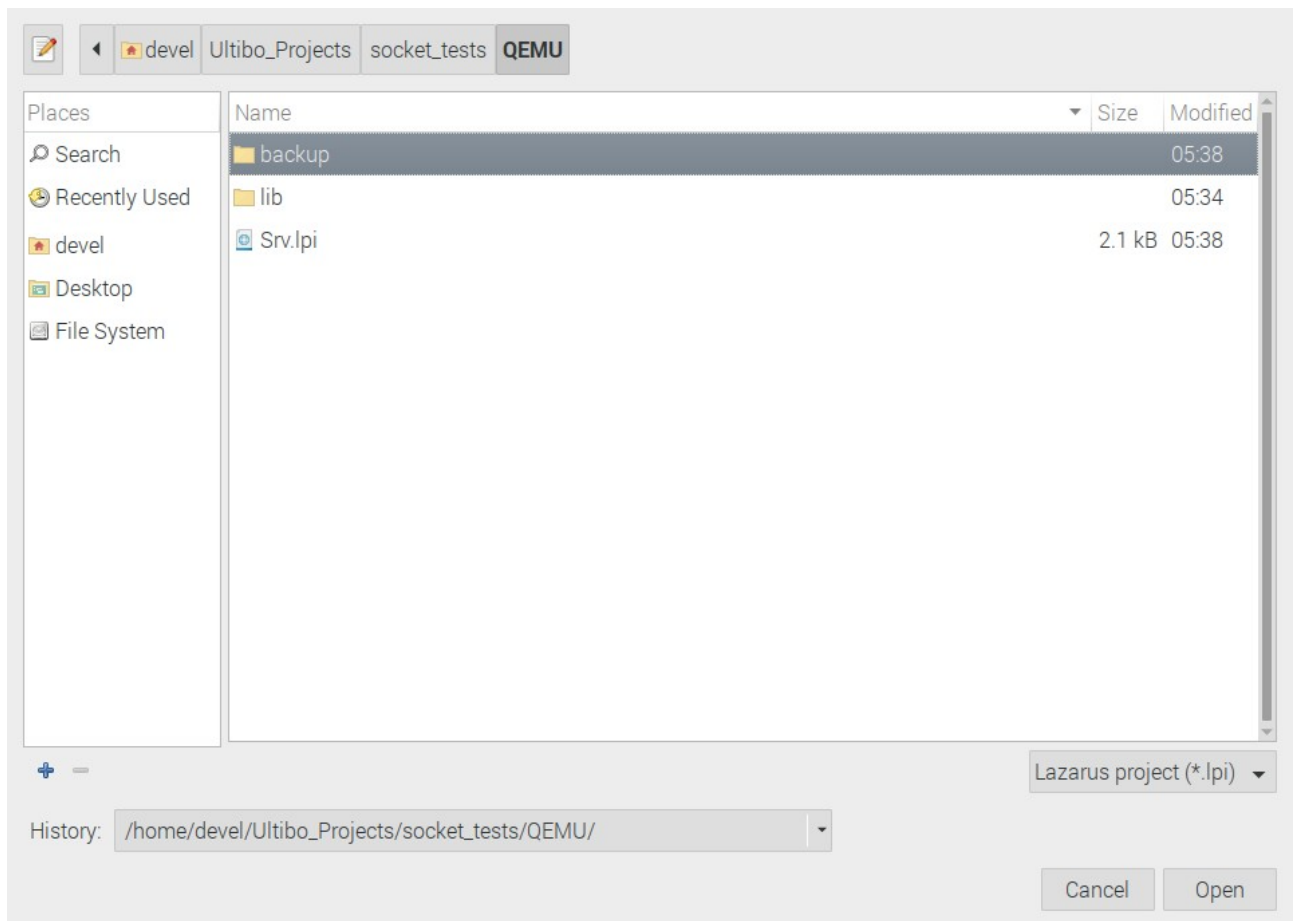
**QEMU is a [hosted virtual machine monitor](#): it emulates the machine's [processor](#) through dynamic [binary translation](#) and provides a set of different hardware and device models for the machine, enabling it to run a variety of [guest operating systems](#). It also can be used with [Kernel-based 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.**

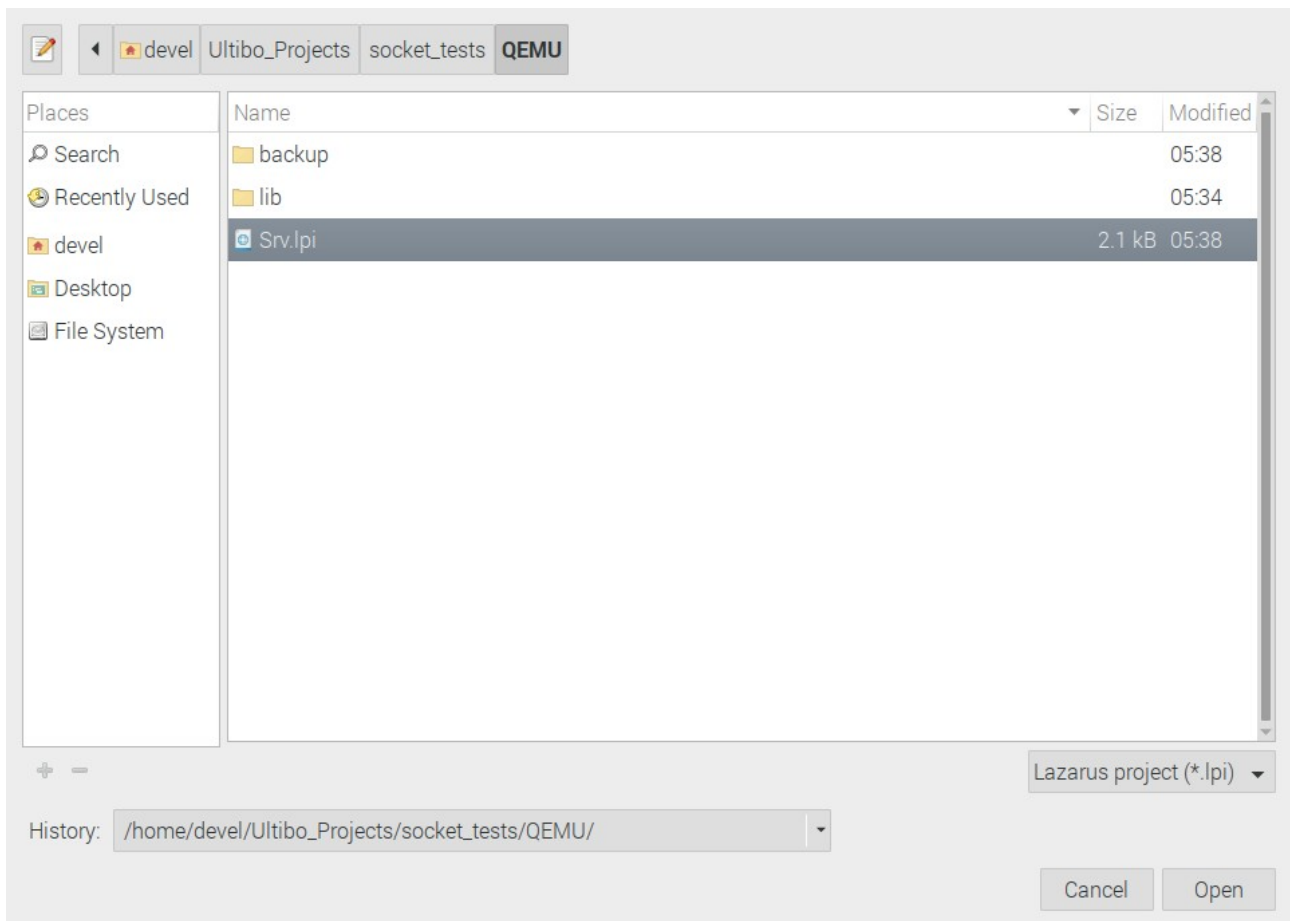
**/usr/bin/qemu-img /usr/bin/qemu-nbd /usr/bin/qemu-system-aarch64  
/usr/bin/qemu-io /usr/bin/qemu-pr-helper /usr/bin/qemu-system-arm**

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

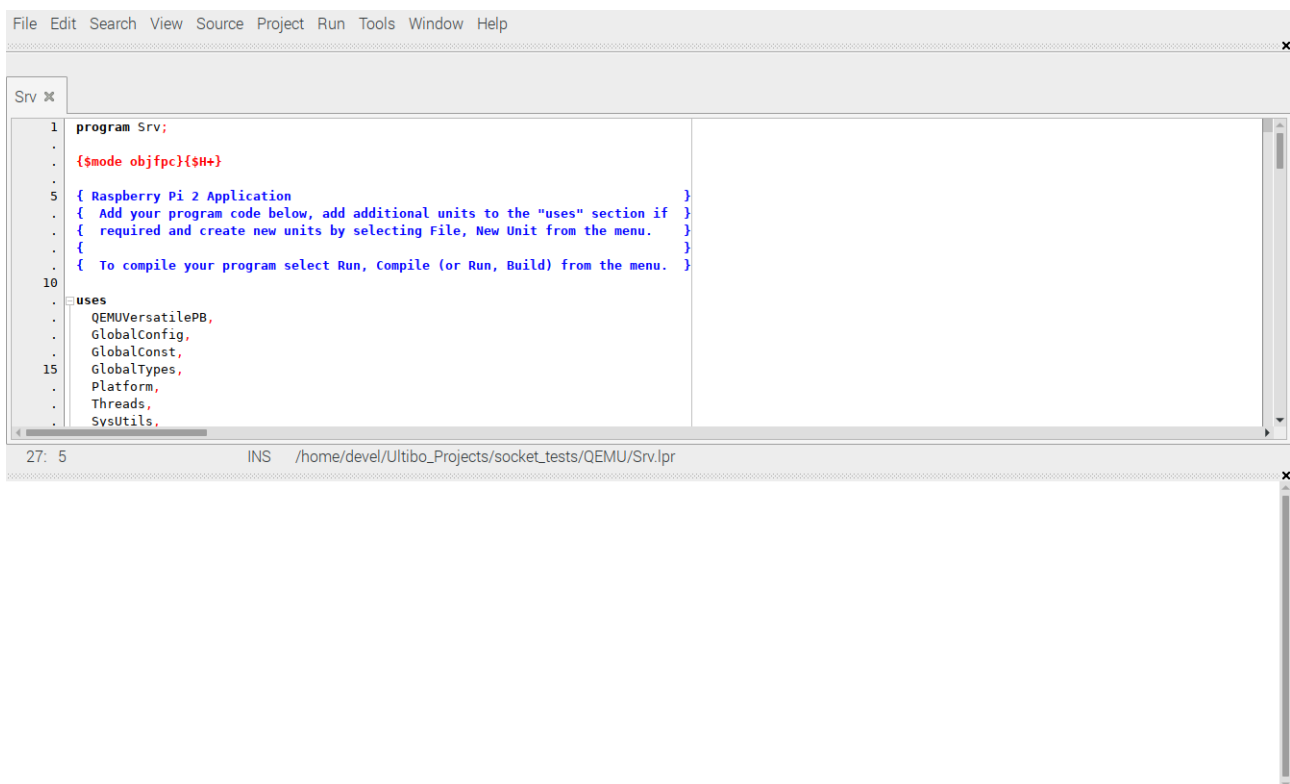
**Project/Open Project**



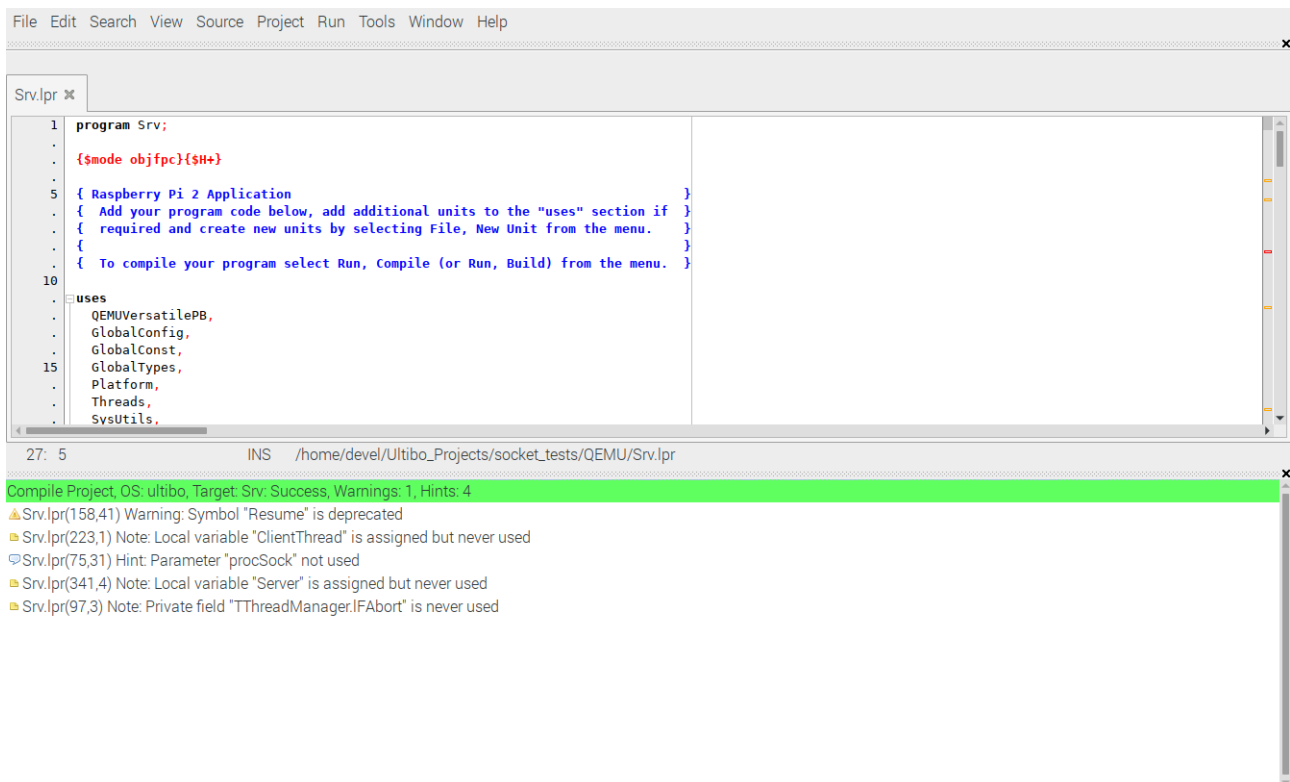
Select Srv.lpi



## 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

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General

Platform

Memory

Heap Blocks

CPU

FPU

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RTL

Clock

Locale

Threading

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USB

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MMC / SD / SDIO

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

## Webstatus Platform

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

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Heap Blocks

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Configuration

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



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

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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 |
|-----------|------|-------|
|-----------|------|-------|

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.

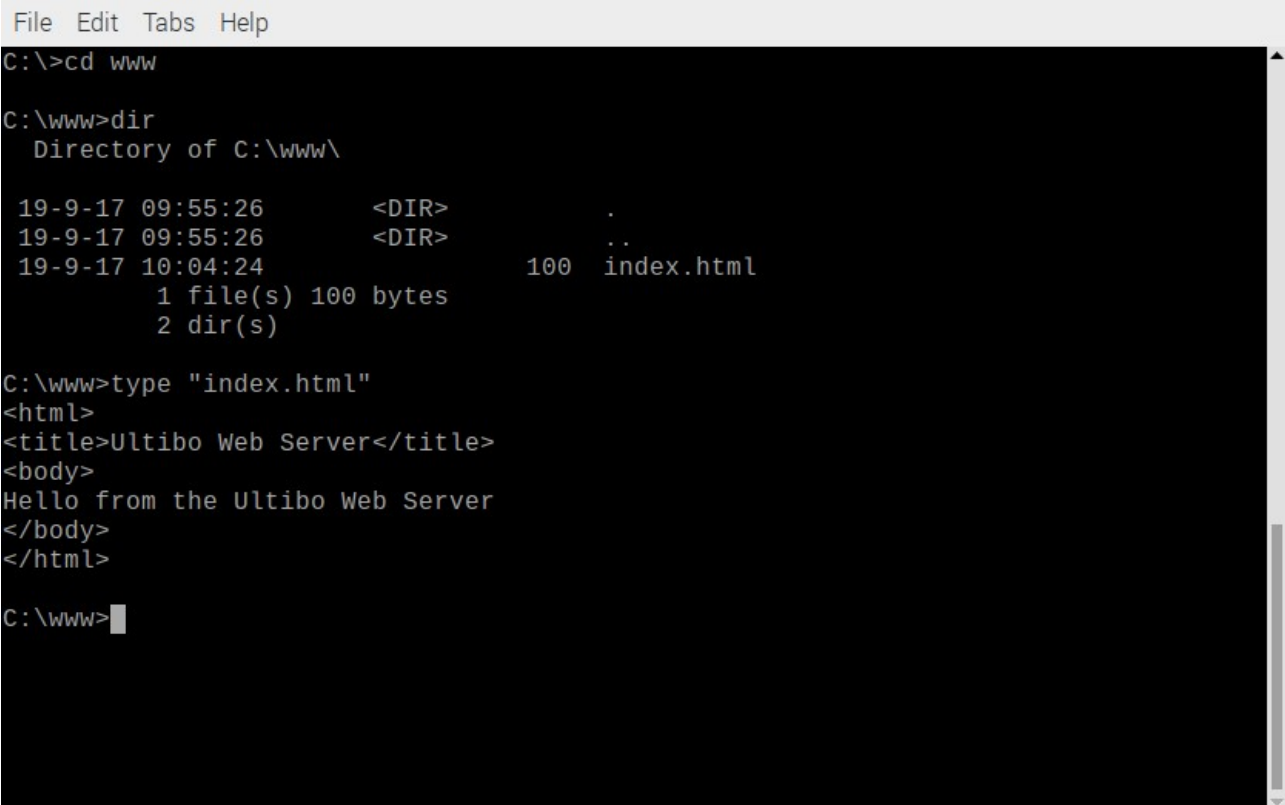
C:\>
```

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\

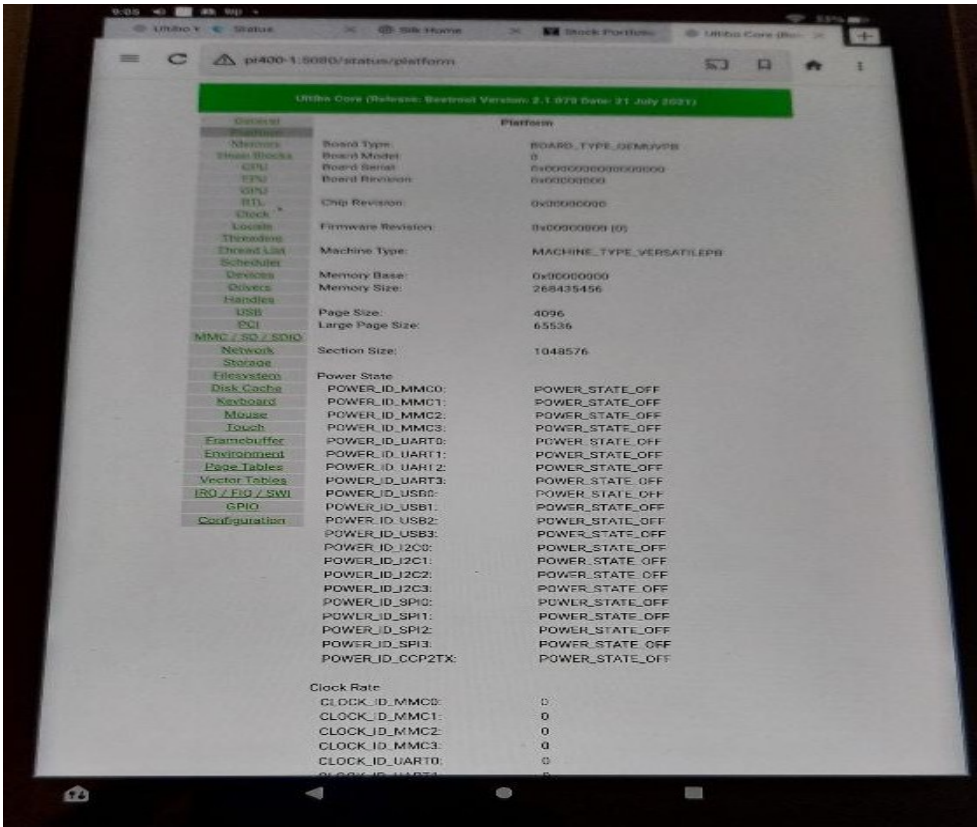
19-9-17 09:55:26      <DIR>      .
19-9-17 09:55:26      <DIR>      ..
19-9-17 10:04:24             100  index.html
                1 file(s) 100 bytes
                2 dir(s)

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

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
```