

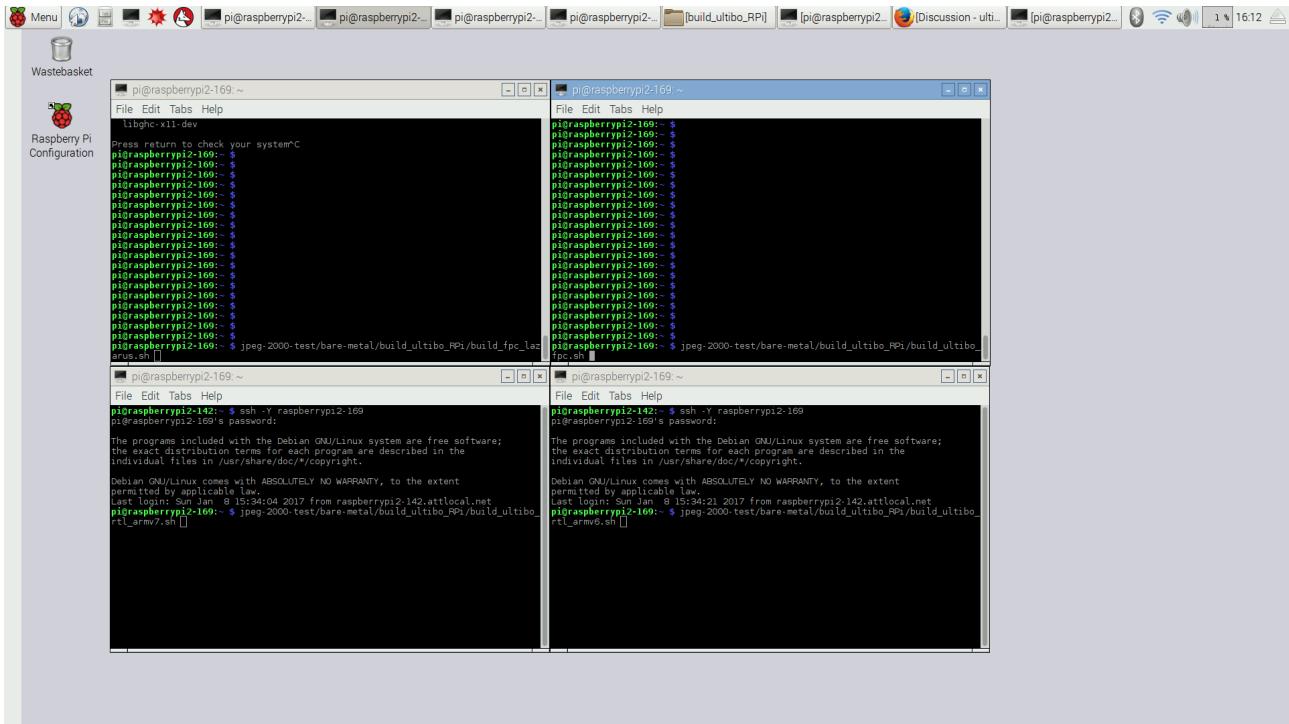
***** Draft *****

Ultibo provides bare metal programming for the Rpi-Zero, RP2B, and RPi3B Compiling Ultibo Edition for Raspberry Pi (Rpi)

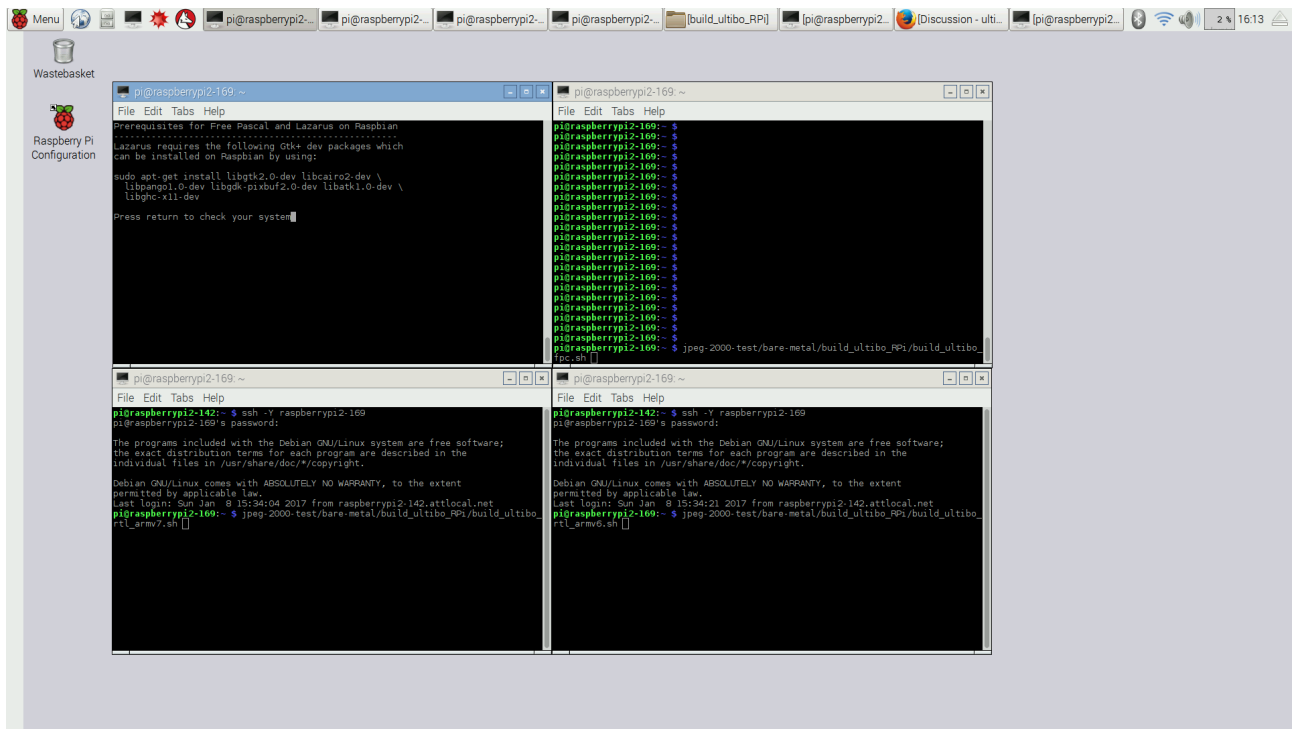
01/08/17

Based on information found at https://ultibo.org/wiki/Building_for_Raspbian

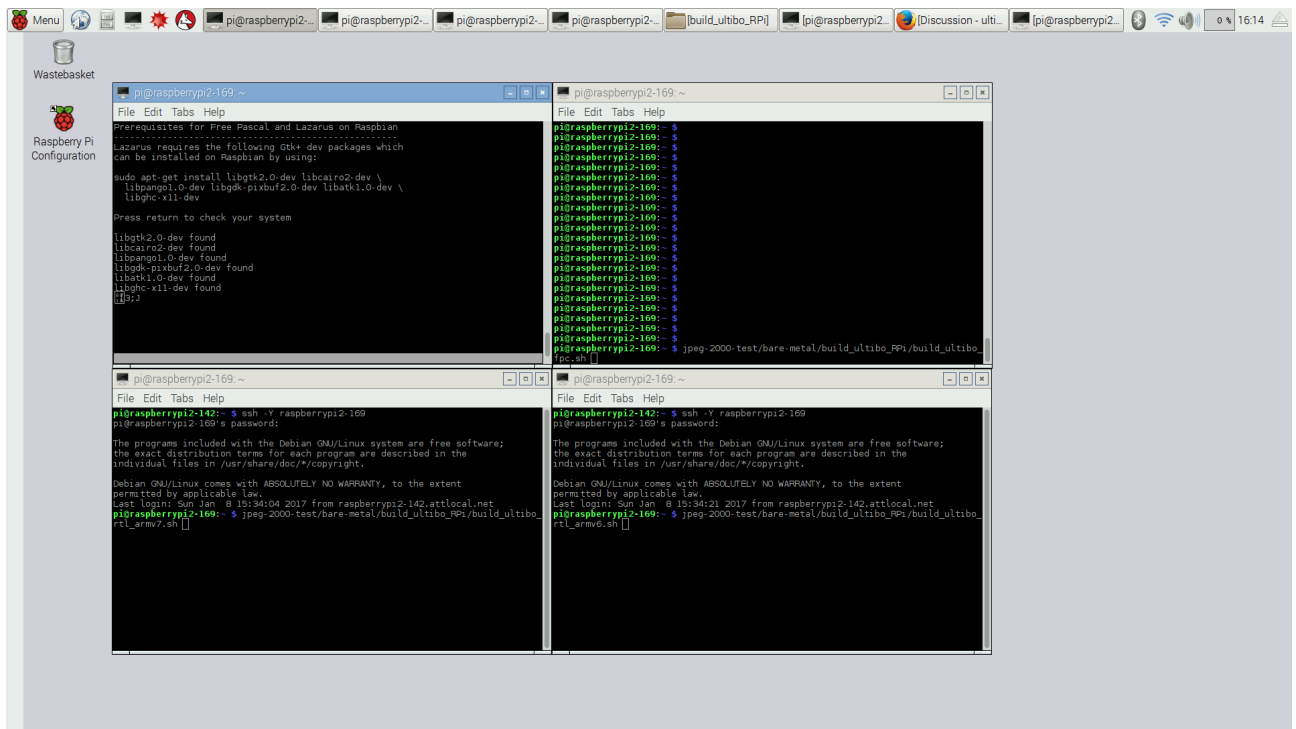
The scripts and config files are found at https://github.com/develone/jpeg-2000-test/tree/master/bare-metal/build_ultibo_RPi



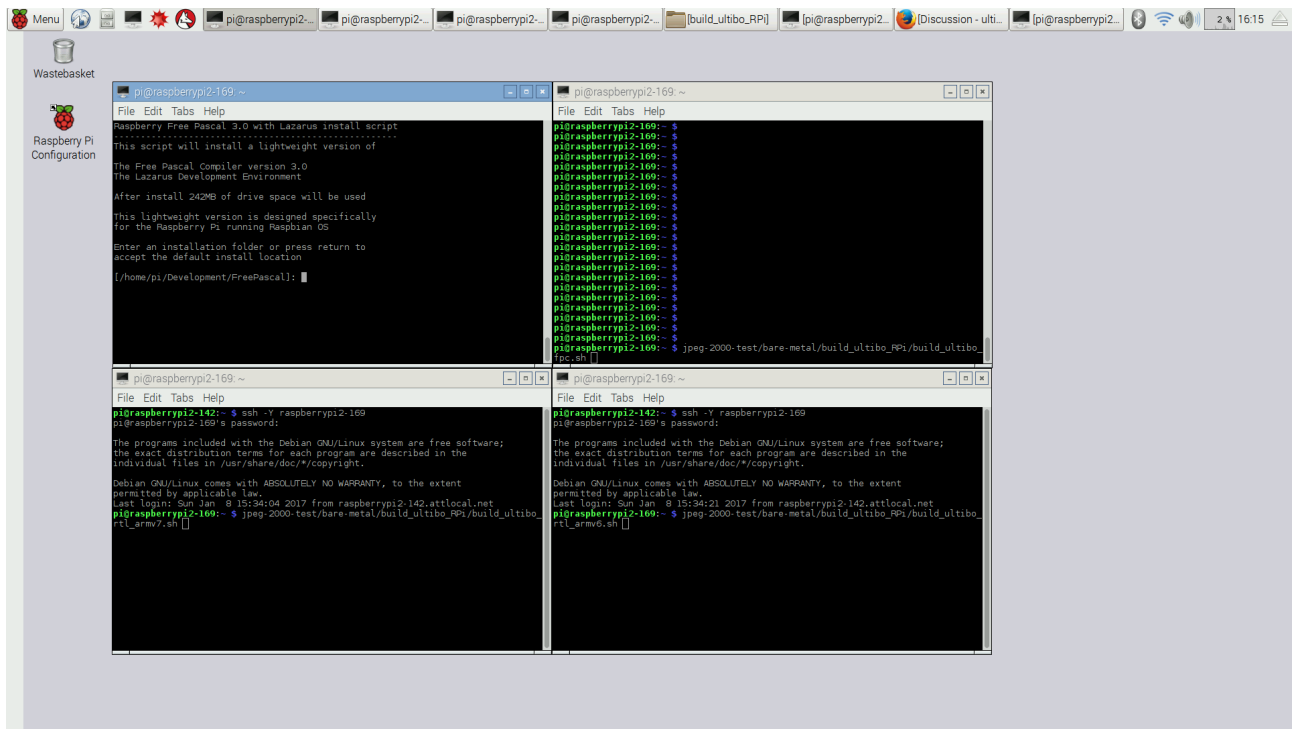
B



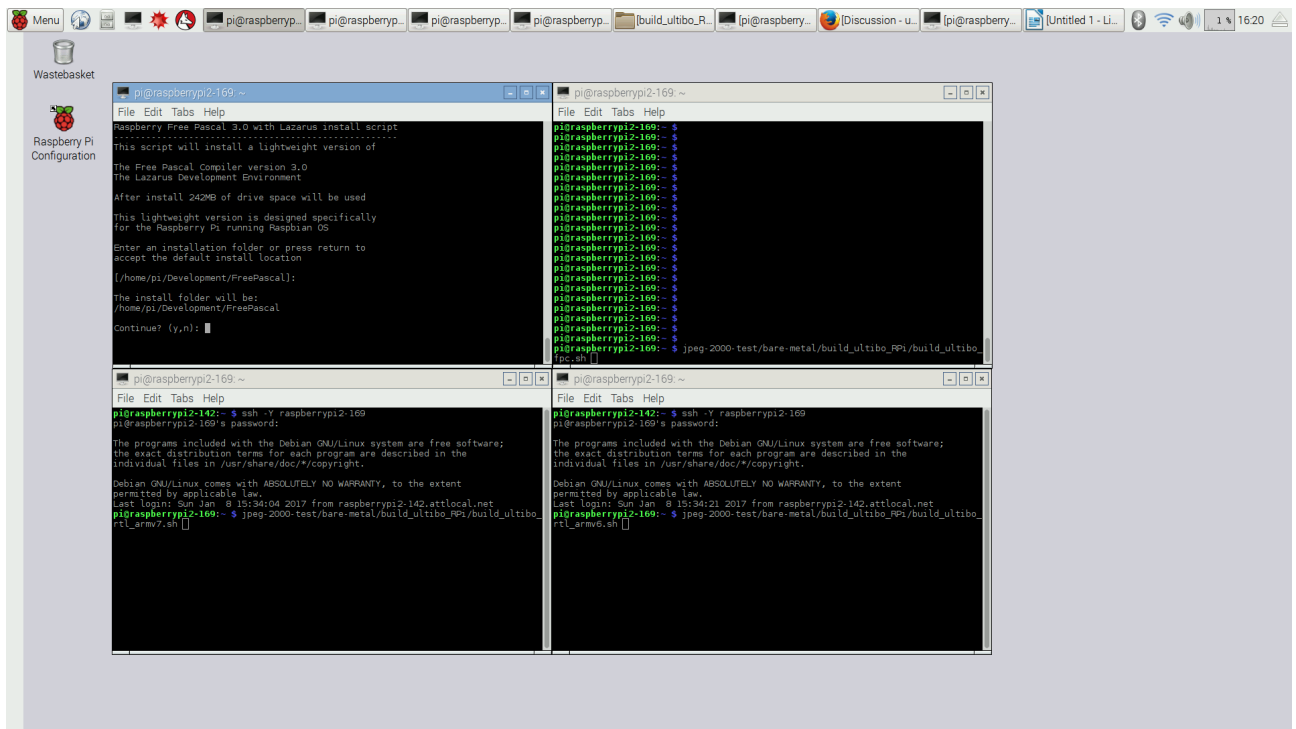
C



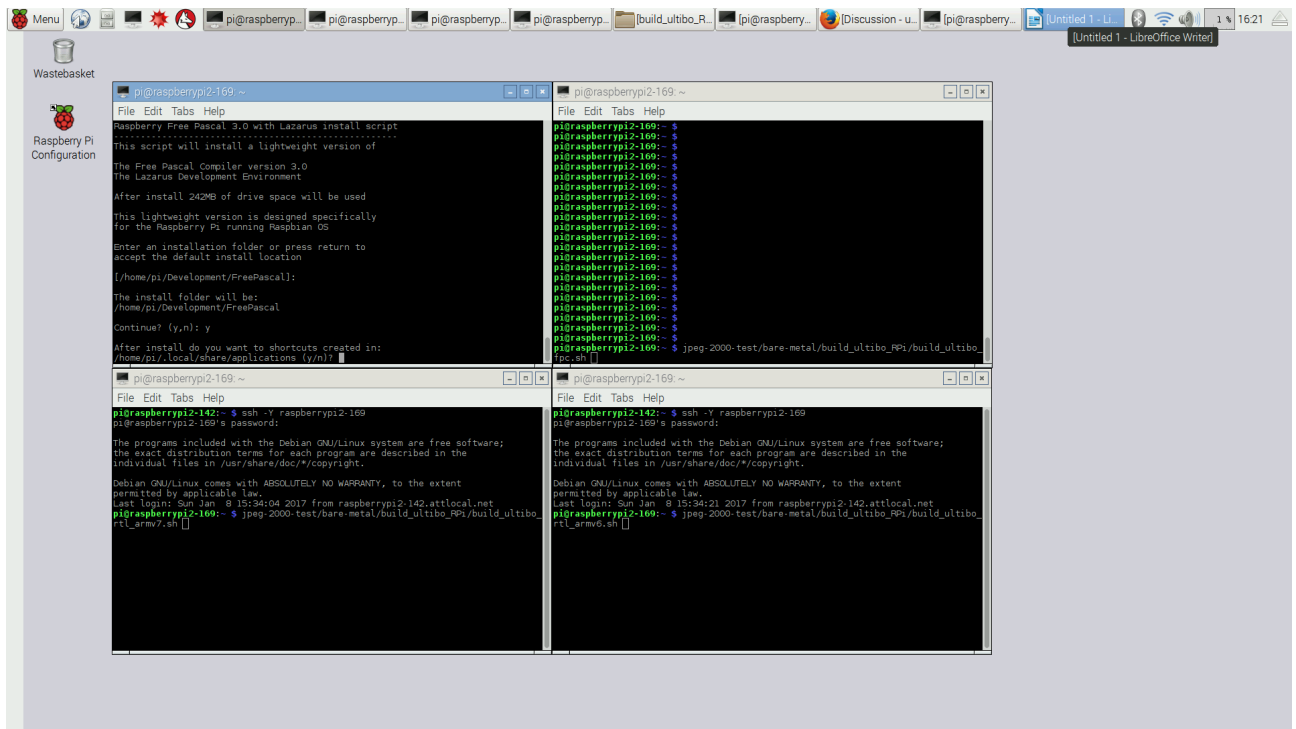
D



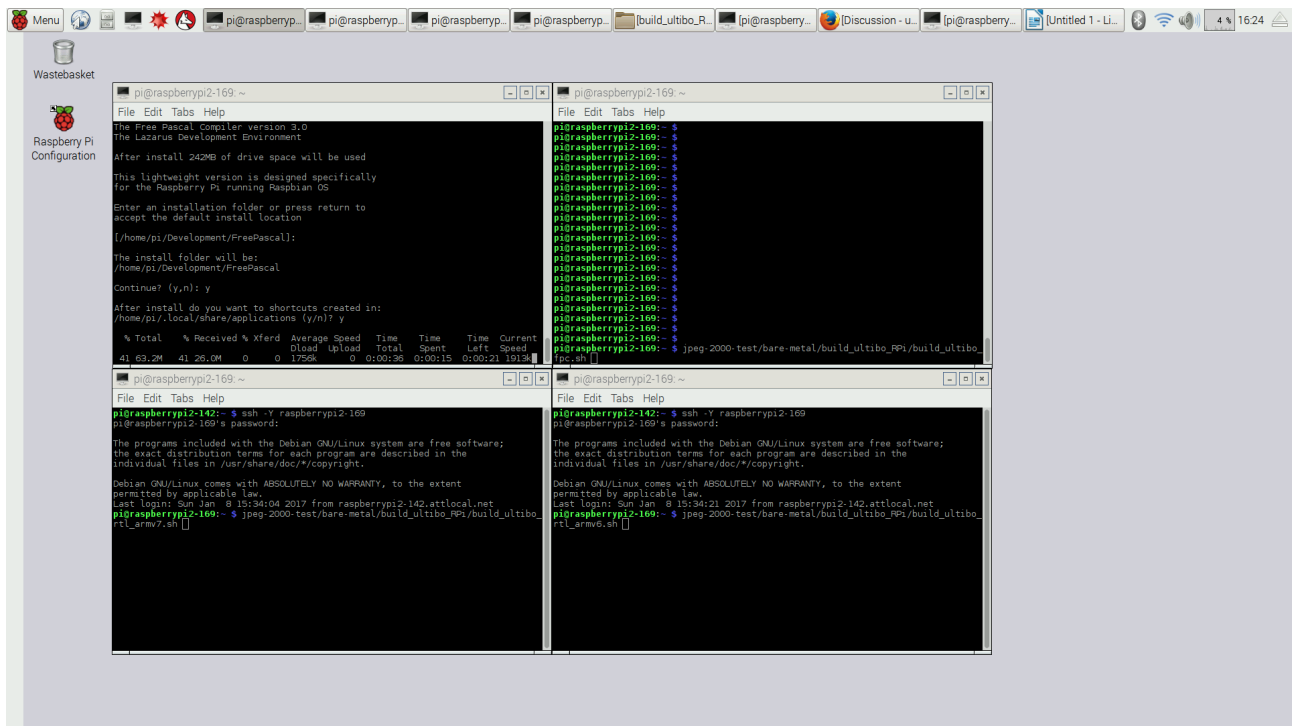
E



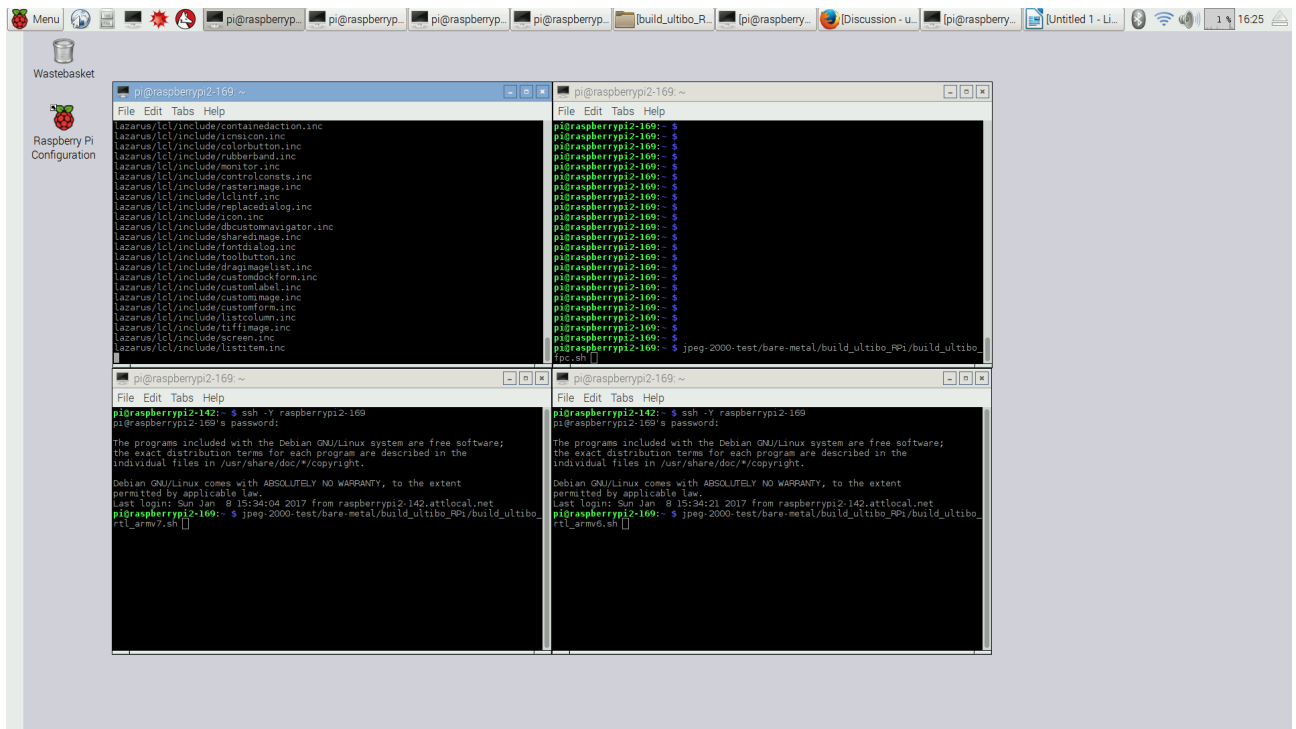
F



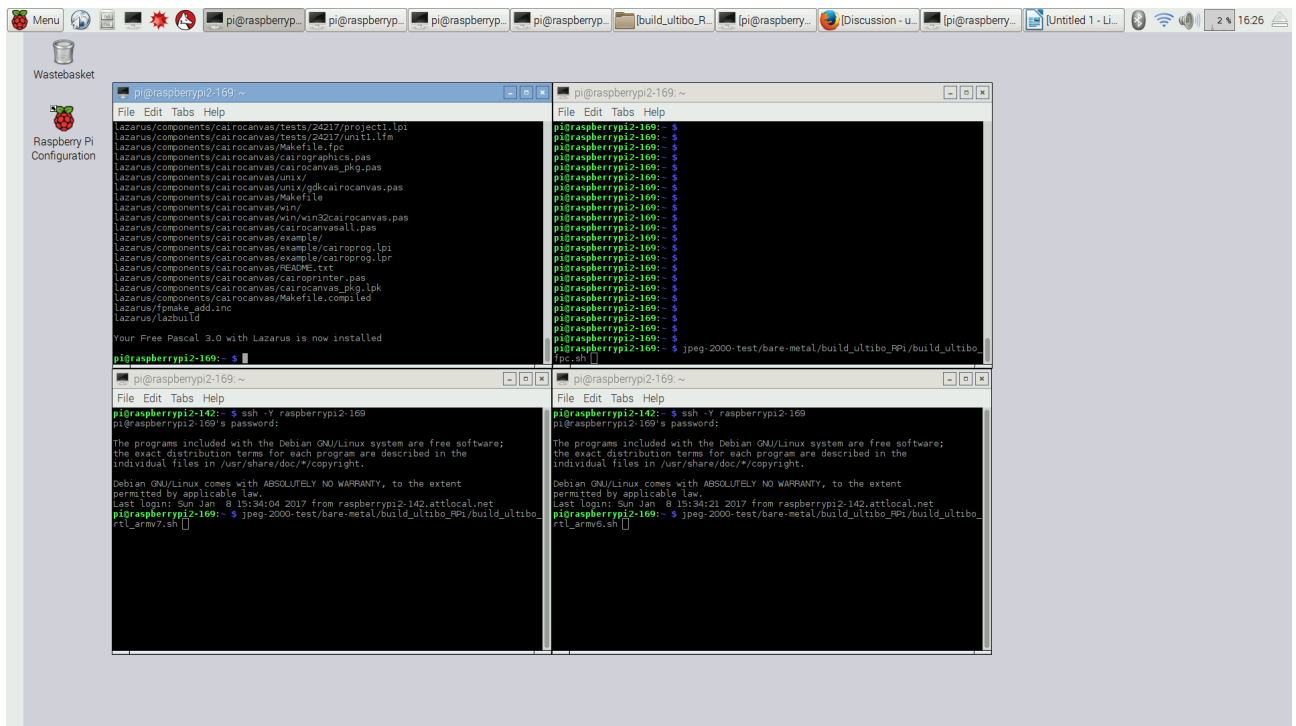
G



H



I

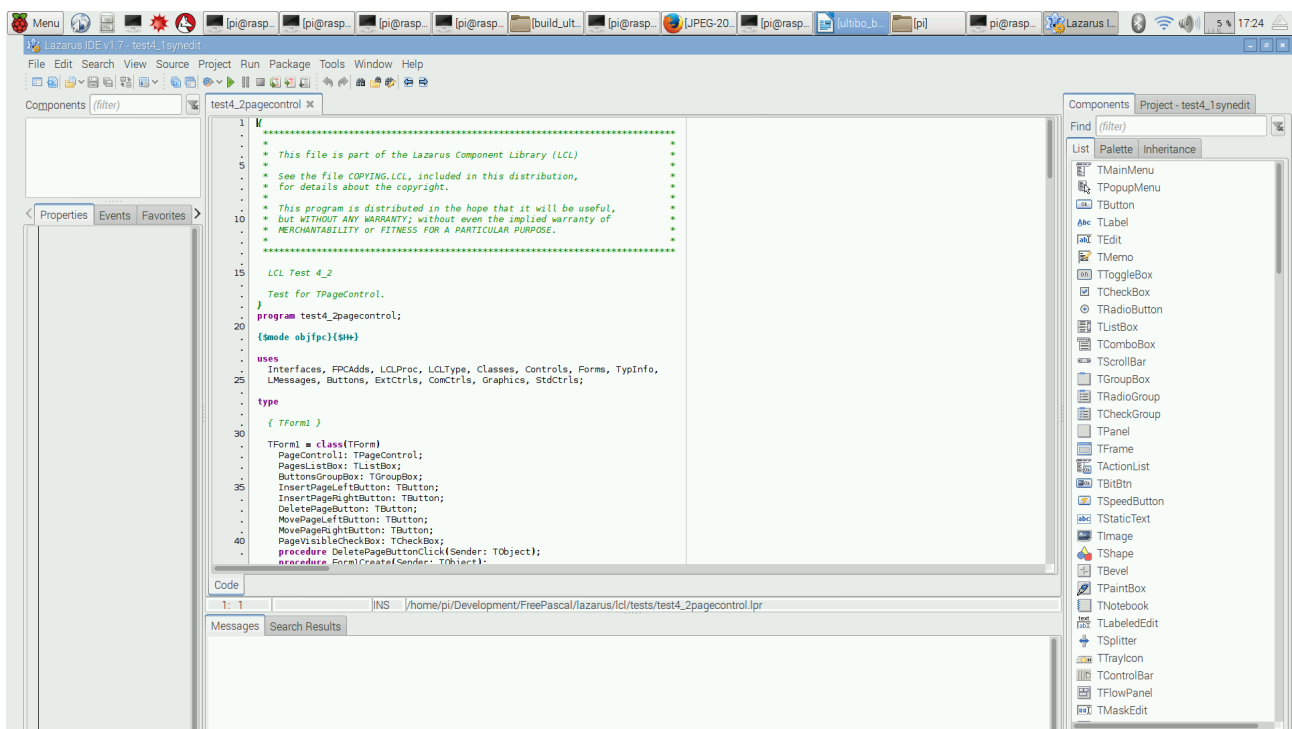


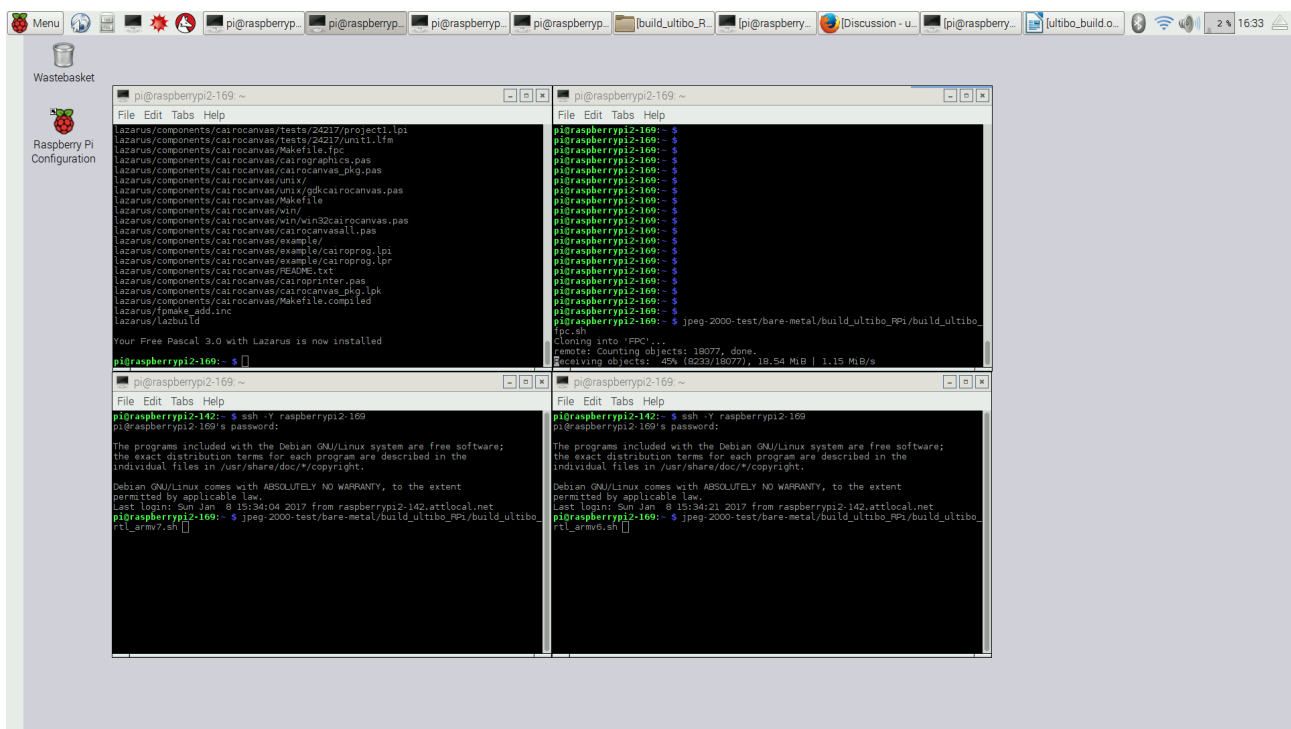
When the first shell, in the upper left hand corner, returns to the prompt the sources of fpc 3.0 and Lazarus have been downloaded and compiled. The 3.0 version of fpc will be used to compile the Ultibo Edition which is 3.1.1. This version is located at Development/FreePascal/fpc freepascal.desktop lazarus lazarus.desktop.

pi@raspberrypi2-142:~/Development/FreePascal/lazarus \$./startlazarus

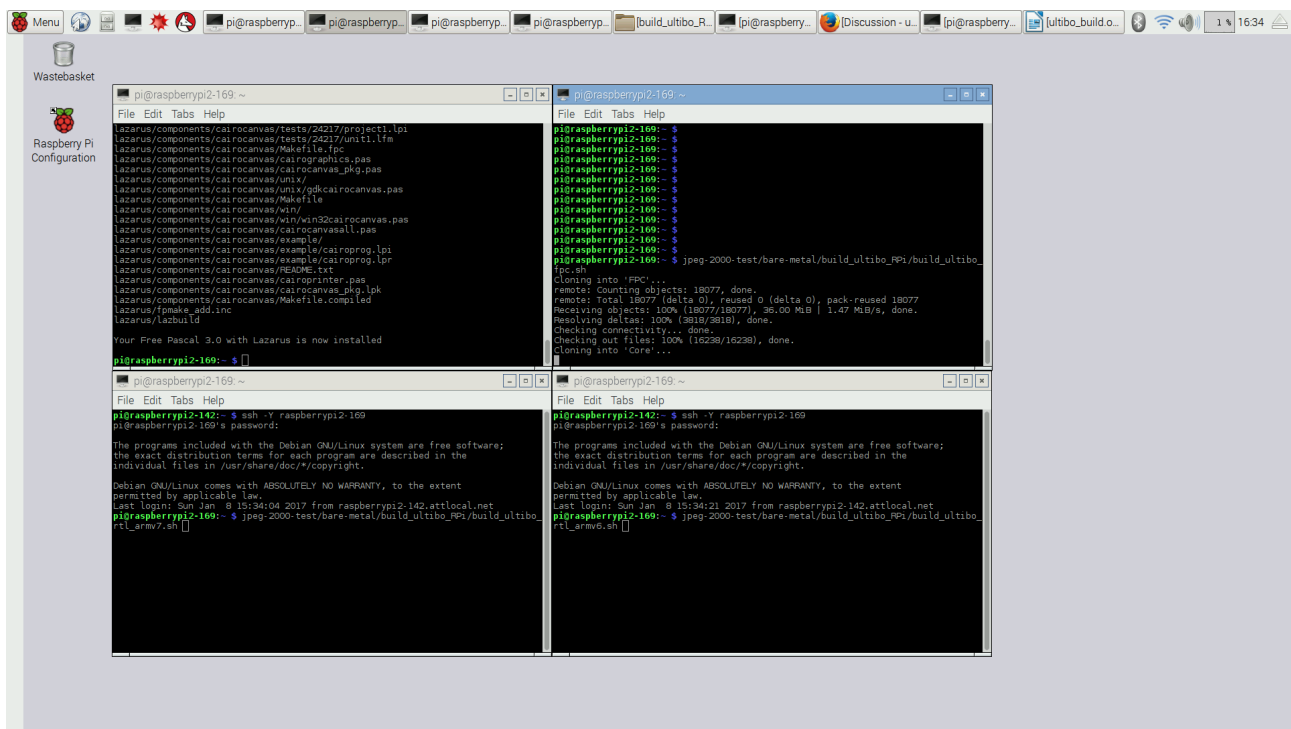


This is Lazarus with the first example opened.

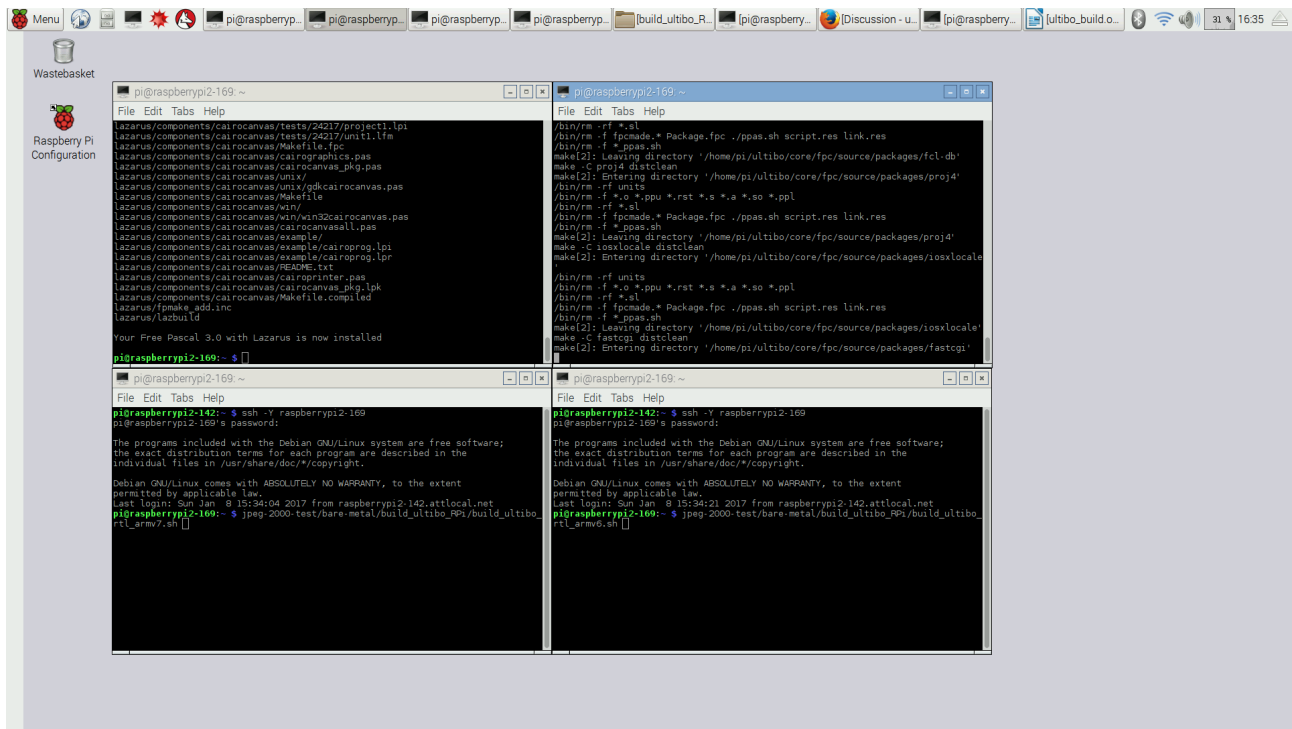




K



L



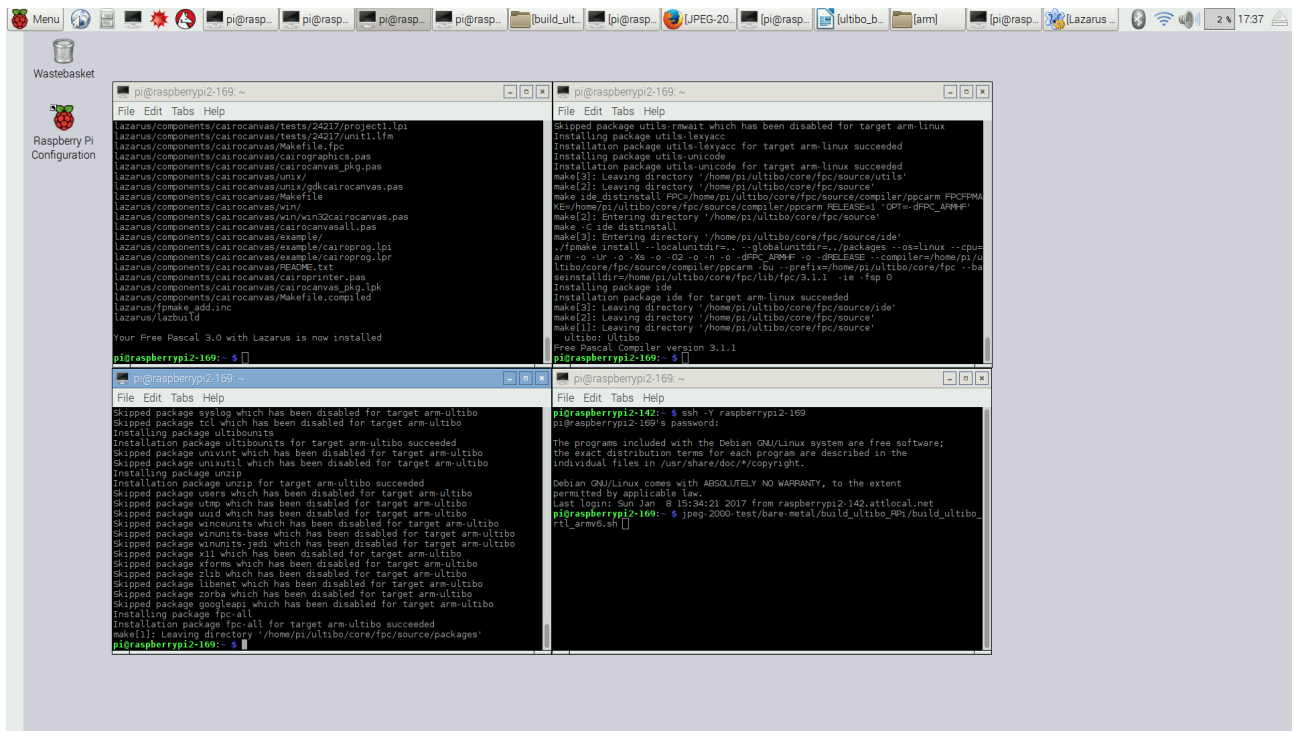
M

In the upper right hand window many applications are being compiled for fpc 3.1.1.

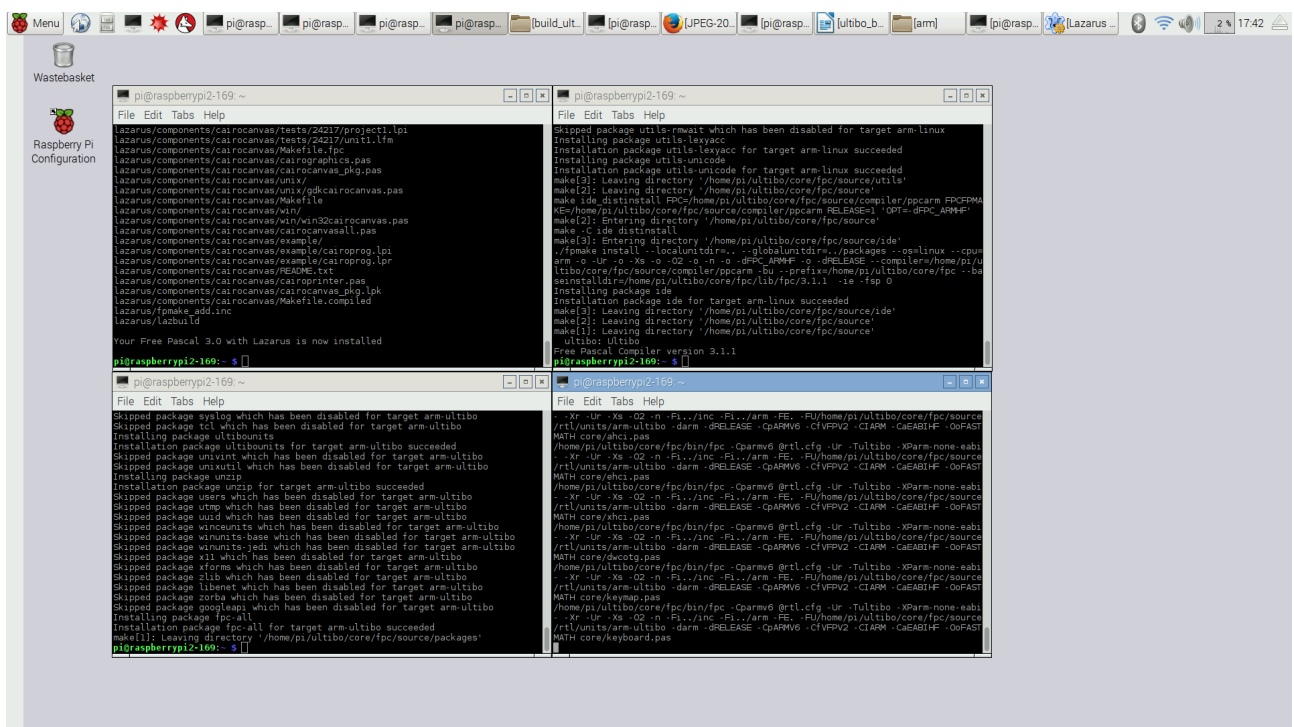
ls lib/fpc/3.1.1/units/arm-linux/

```
a52      fcl-registry hermes      ncurses  rtl-extra
aspell   fcl-res      httpd22  newt      rtl-objpas
bfd      fcl-sdo      httpd24  numlib    rtl-unicode
bzip2    fcl-sound  ibase    odbc      sdl
cairo    fcl-stl    iconvenc oggvorbis sqlite
cdrom    fcl-web    imagemagick openal    svgalib
chm      fcl-xml    imlib    opengl    symbolic
dblib    fftw      jni      opengles  syslog
dbus     fpgtk     ldap     openssl   tcl
dts      fpindexer libcurl  oracle    unzip
fastcgi  fpmkunit  libenet  pasjpeg   users
fcl-async fppkg    libgd    paszlib   utils-lexyacc
fcl-base fv        libmicrohttpd pcap      utmp
fcl-db   gdbint   libpng   postgres  uuid
fcl-extra gdbm    libsee   proj4     x11
fcl-fpcunit ggi      libtar   ptc       xforms
fcl-image gmp      libvlc   pthreads  zlib
fcl-js   gnome1   libxml2  pxmlib    zorba
fcl-json googleapi lua      regexpr
fcl-net  gtk1     mad      rsvg
fcl-passrc gtk2     modplug  rtl
fcl-process hash     mysql    rtl-console
```

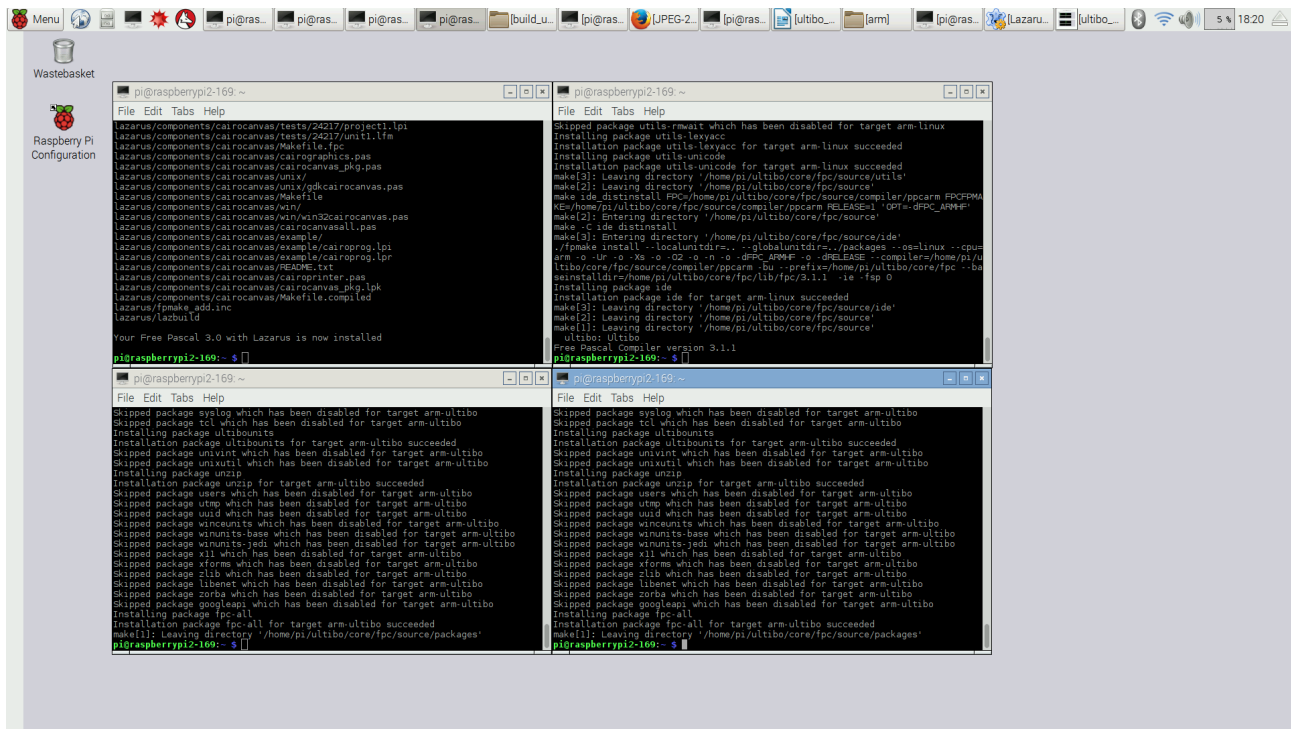
Ultibo for the ARMv7 is compiled in the lower left hand window. ARMv7 is the processor for the RPi2B & RPi3B.



Ultibo for the ARMv6 is compiled in the lower right hand window. ARMv6 is the processor of the RPiA/B/A+/B+ and Zero use the ARMv6.



ARM6v



Now the configurations files need to added to the /home/pi/ultibo/fpc/bin/ foldered.

```
pi@raspberrypi2-169:~ $ cp jpeg-2000-test/bare-metal/build_ultibo_RPi/rpi*.cfg
ultibo/core/fpc/bin
```

```
mkdir test_ultibo
```

```
cd test_ultibo
```

```
git clone https://github.com/ultibohub/Demo.git
```

cd Demo

```
export PATH=/home/pi/ultibo/core/fpc/bin:$PATH
```

```
fpc -B -Tultibo -Parm -CpARMV6 -WpRPIB @/home/pi/ultibo/core/fpc/bin/rpi.cfg -O2
UltiboDemoRPI.lpr
```

Free Pascal Compiler version 3.1.1 [2017/01/08] for arm

Copyright (c) 1993-2015 by Florian Klaempfl and others

Target OS: Ultibo

Compiling UltiboDemoRPi.lpr

Compiling DemoMain.pas

Assembling demomain

Assembling ultibodemorpi

Linking UltiboDemoRpi

1765 lines compiled, 4.0 sec, 2598596 bytes code, 81824 bytes data

```
fpc -B -TuItibo -Parm -CpARMV7A -WpRPI2B @/home/pi/ultibo/core/fpc/bin/rpi2.cfg
-O2 UltiboDemoRPI2.lpr
```

```
Free Pascal Compiler version 3.1.1 [2017/01/08] for arm
Copyright (c) 1993-2015 by Florian Klaempfl and others
Target OS: Ultibo
```

```
Compiling UltiboDemoRpi2.lpr
Compiling DemoMain.pas
Assembling demomain
Assembling ultibodemorpi2
Linking UltiboDemoRpi2
1765 lines compiled, 4.8 sec, 2612452 bytes code, 84472 bytes data
```

```
fpc -B -Tultibo -Parm -CpARMV7A -WpRPI3B @/home/pi/ultibo/core/fpc/bin/rpi3.cfg -O2
UltiboDemoRpi3.lpr
Free Pascal Compiler version 3.1.1 [2017/01/08] for arm
Copyright (c) 1993-2015 by Florian Klaempfl and others
Target OS: Ultibo
Compiling UltiboDemoRpi3.lpr
Compiling DemoMain.pas
Assembling demomain
Assembling ultibodemorpi3
Linking UltiboDemoRpi3
1766 lines compiled, 4.9 sec, 2609932 bytes code, 84440 bytes data
```