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

These the first steps to upgrading a RPi3 to a RPi4 project for Ultibo

05/14/20

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

This project as Rpi3 used uTFTP.pas to transfer the kernel7.img to Ultibo system.

The installer script is found at "https://raw.githubusercontent.com/ultibohub/Tools/master/Installer/Core/Linux/ultiboinstaller.sh".

Note: Be sure and copy the raw from GitHub into a file ultiboinstaller.sh.

-rwxr-xr-x 1 devel devel 26813 May 15 06:48 ultiboinstaller.sh
md5sum ultiboinstaller.sh
85dc58dff3bdcd0de510d69b0456ea60 ultiboinstaller.sh

./
Linux installer for Free Pascal and Lazarus (Ultibo edition)

This installation will download the sources for:
  Ultibo core
  Ultibo examples
  Free Pascal (Ultibo edition)
  Lazarus IDE (Ultibo edition)

Then it will build all of the above, this will take several
minutes to complete depending on the speed of your system.

The installation will not interfere with any existing
development environments including other installations
of Free Pascal and Lazarus.

Continue (y/n)?

Do you want to build and install the Lazarus IDE (y/n)?

Free Pascal and Lazarus (Ultibo edition) prerequisites

Installing and building Free Pascal requires several tools
from the build essentials package including make, ld and as
as well as the unzip utility.

These can be installed on Debian based distributions using:

sudo apt-get install build-essential unzip

Lazarus IDE requires the GTK2 and X11 dev packages which
can be installed on Debian based distributions by using:

sudo apt-get install libgtk2.0-dev libcairo2-dev \
  libpango1.0-dev libgdk-pixbuf2.0-dev libatk1.0-dev \

libghc-x11-dev

Cross compiling Ultibo applications from Linux requires the
arm-none-eabi build of the binutils package, this can be
installed on Debian based distributions using:

sudo apt-get install binutils-arm-none-eabi

Press return to check for these prerequisites

Enter an installation folder or press return to
accept the default install location

[/home/devel/ultibo/core]:

The install folder will be:
/home/devel/ultibo/core

Continue? (y,n):

After install do you want a shortcut created in:
/home/devel/.local/share/applications (y/n)?

Do you want to build the Hello World examples (y/n)?

This project uses several C files in addition to Pascal files

disp_mat.c master.c   mythread.c svd.c
error.c   mul_mat.c pnmio.c   trans_mat.c

There is buildlib.sh that compiles into libsvd.a

devel@mypi3-20:~/Ultibo_Projects/th_svd/RPi4 $ ./buildlib.sh
Compiling example ultibo_th_svd

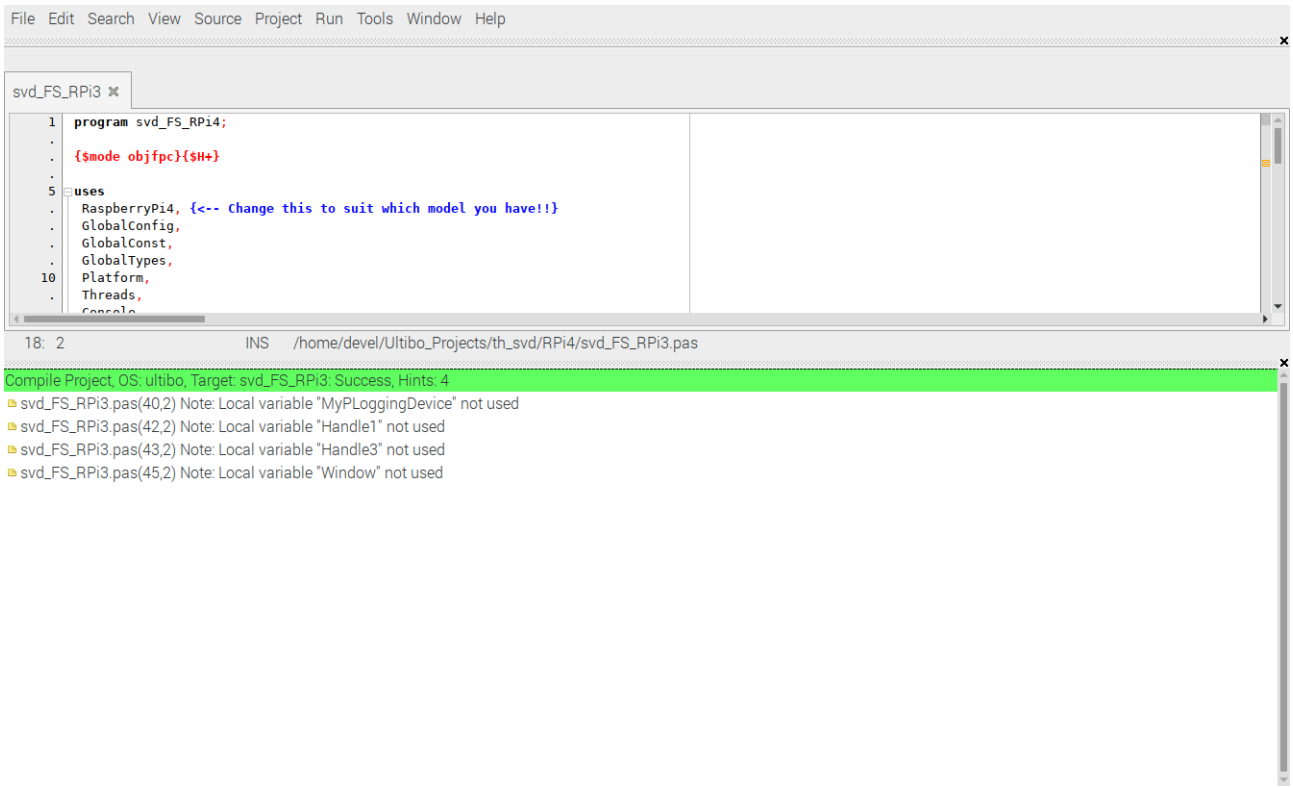
```
#!/bin/bash
#export PATH=/home/devel/ultibo/core/fpc/bin:$PATH
rm -f *.o
rm -f libsvd.a

arm-none-eabi-gcc -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -
mfloat-abi=hard -c svd.c -o svd.o
arm-none-eabi-gcc -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -
mfloat-abi=hard -c disp_mat.c -o disp_mat.o
arm-none-eabi-gcc -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -
mfloat-abi=hard -c trans_mat.c -o trans_mat.o
arm-none-eabi-gcc -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -
mfloat-abi=hard -c mul_mat.c -o mul_mat.o
arm-none-eabi-gcc -D_POSIX_THREADS -lpthread -I../include -O3 -mabi=aapcs -marm -
march=armv7-a -mfpu=vfpv3-d16 -mfloat-abi=hard -c mythread.c -o mythread.o
```

arm-none-eabi-gcc -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -mfloat-abi=hard -c pnmio.c -o pnmio.o
arm-none-eabi-gcc -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -mfloat-abi=hard -c error.c -o error.o

echo "Compiling example ultibo_th_svd "
arm-none-eabi-gcc -DUltibo -D_POSIX_THREADS -lpthread -I../include -O3 -mabi=aapcs -marm -march=armv7-a -mfpu=vfpv3-d16 -mfloat-abi=hard -c master.c -o ultibo_th_svd.o

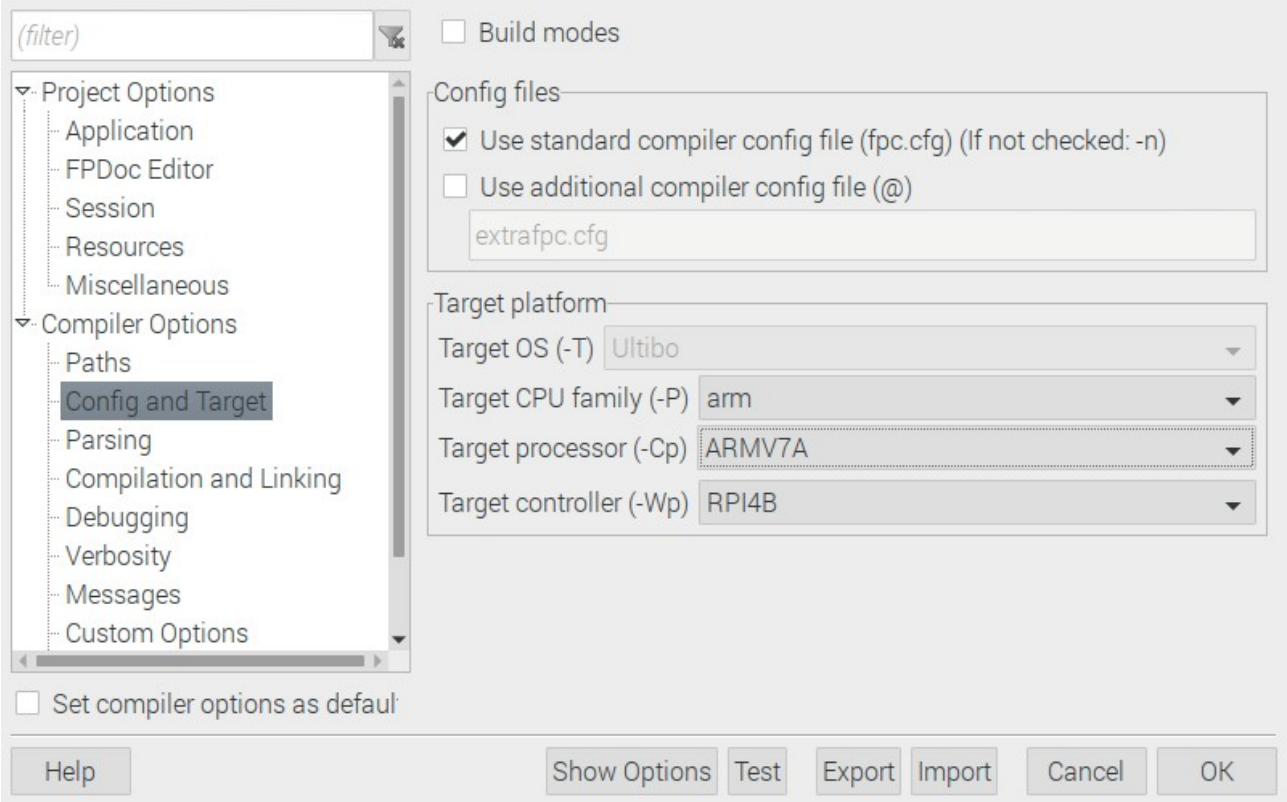
#gcc test_svd.c svd.o disp_mat.o -lm -o test_svd
arm-none-eabi-ar rcs libsvd.a *.o
arm-none-eabi-ar -t libsvd.a > libsvd_obj.txt
#fpc -vi -B -Tultibo -Parm -CpARMV7A -WpRPI3B @/home/devel/ultibo/core/fpc/bin/RPI3.CFG -O4 svd_FS_Rpi3.lpr

The objects in libsvd.a are found in listed in the file libsvd_obj.txt
disp_mat.o
error.o
mul_mat.o
mythread.o
pnmio.o
svd.o
trans_mat.o
ultibo_th_svd.o



Depressing the Run/Compile creates the kernel7l.img.
-rwxr-xr-x 1 devel devel 3067936 May 15 09:24 kernel7l.img

project options



Depressing the Run/Compile creates the kernel7l.img