

Creating Embedded Linux Solutions

Course Workbook

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About this Workbook

The contents of this workbook are created by Adiuvo Engineering & Training, Ltd.

If you have any questions about the contents, or need assistance, please contact Adam Taylor at adam@adiuvoengineering.com.

Pre-Lab

Creating Multi Processor Solutions

Required Hardware

Ultra96V2

JTAG / USB Pod

Ultra96V2 Power Supply

SD Card with the Ultra96V2 OOB

Downloads and Installations

Step 1 – Download and install the following at least 1 day prior to the workshop. This may take a significant amount of time and drive space.

Watch the video available [here](#) to show how to configure the installation

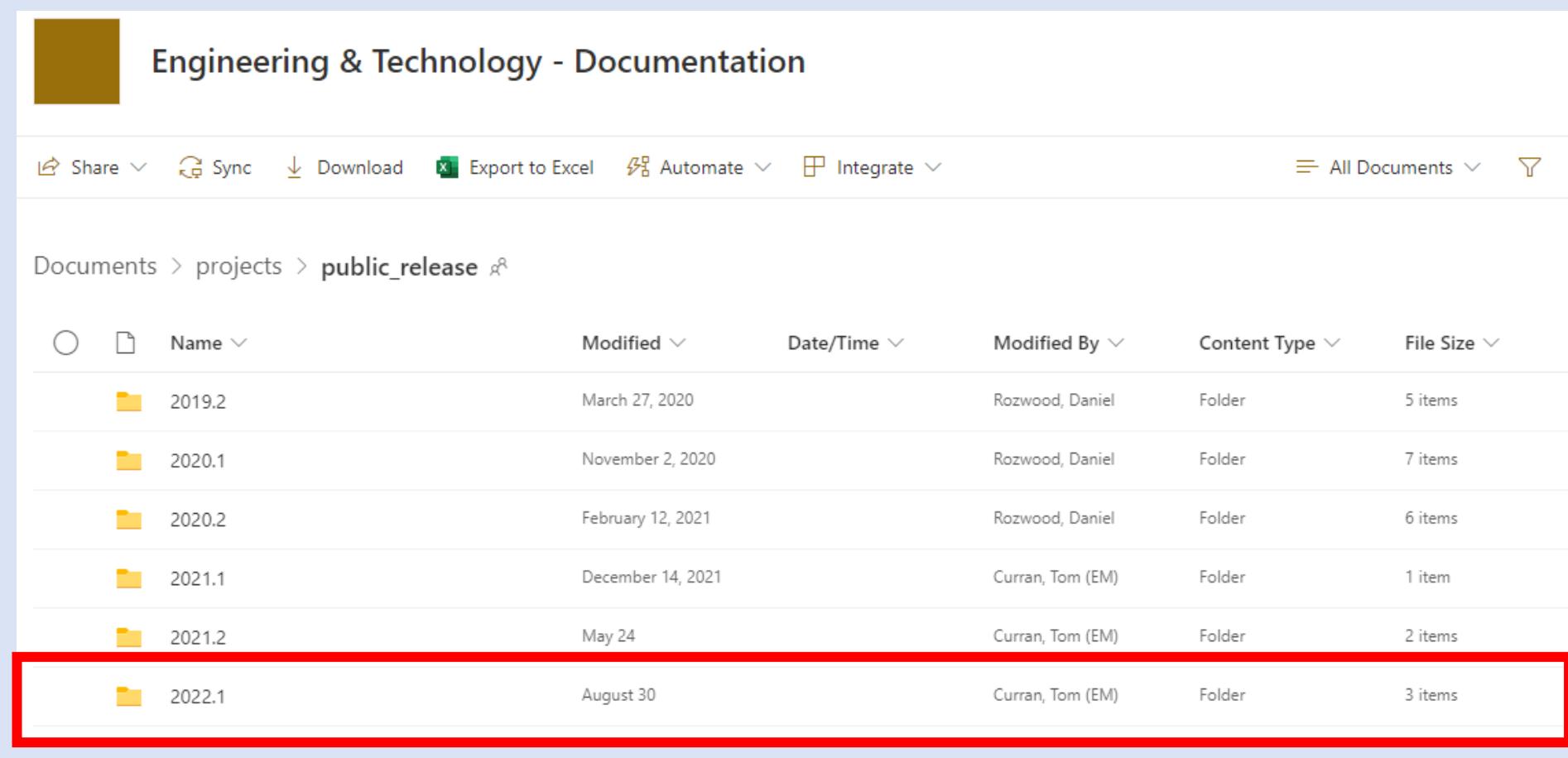
Vitis 2022.1	Download
PetaLinux 2022.1	Download

Lab 3

Creating Embedded Linux Solutions

Lab 3: Creating Embedded Linux Solutions

Step 1 – Click here and select 2022.1

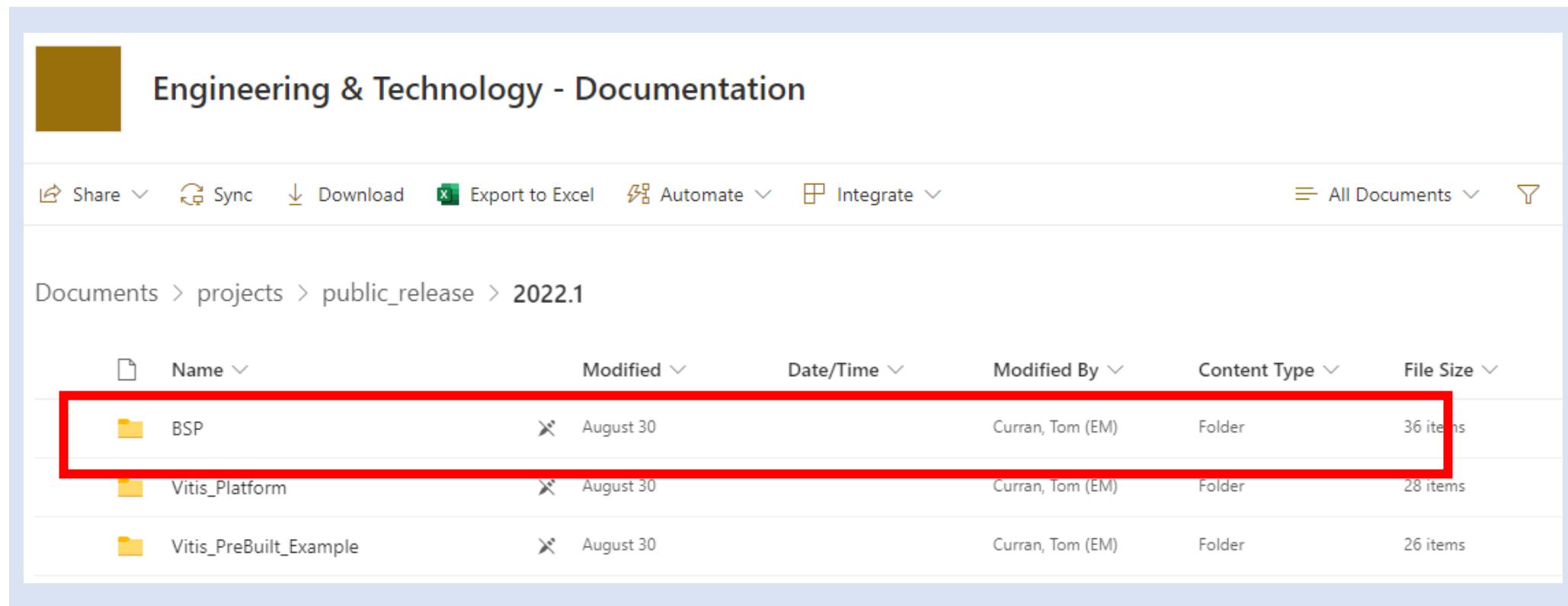


The screenshot shows a SharePoint document library interface titled "Engineering & Technology - Documentation". The navigation path is "Documents > projects > public_release". The list view displays the following data:

Name	Modified	Date/Time	Modified By	Content Type	File Size
2019.2	March 27, 2020		Rozwood, Daniel	Folder	5 items
2020.1	November 2, 2020		Rozwood, Daniel	Folder	7 items
2020.2	February 12, 2021		Rozwood, Daniel	Folder	6 items
2021.1	December 14, 2021		Curran, Tom (EM)	Folder	1 item
2021.2	May 24		Curran, Tom (EM)	Folder	2 items
2022.1	August 30		Curran, Tom (EM)	Folder	3 items

Lab 3: Creating Embedded Linux Solutions

Step 2 – Select BSP



Engineering & Technology - Documentation

Share Sync Download Export to Excel Automate Integrate All Documents

Documents > projects > public_release > 2022.1

Name	Modified	Date/Time	Modified By	Content Type	File Size
BSP	August 30		Curran, Tom (EM)	Folder	36 items
Vitis_Platform	August 30		Curran, Tom (EM)	Folder	28 items
Vitis_PreBuilt_Example	August 30		Curran, Tom (EM)	Folder	26 items

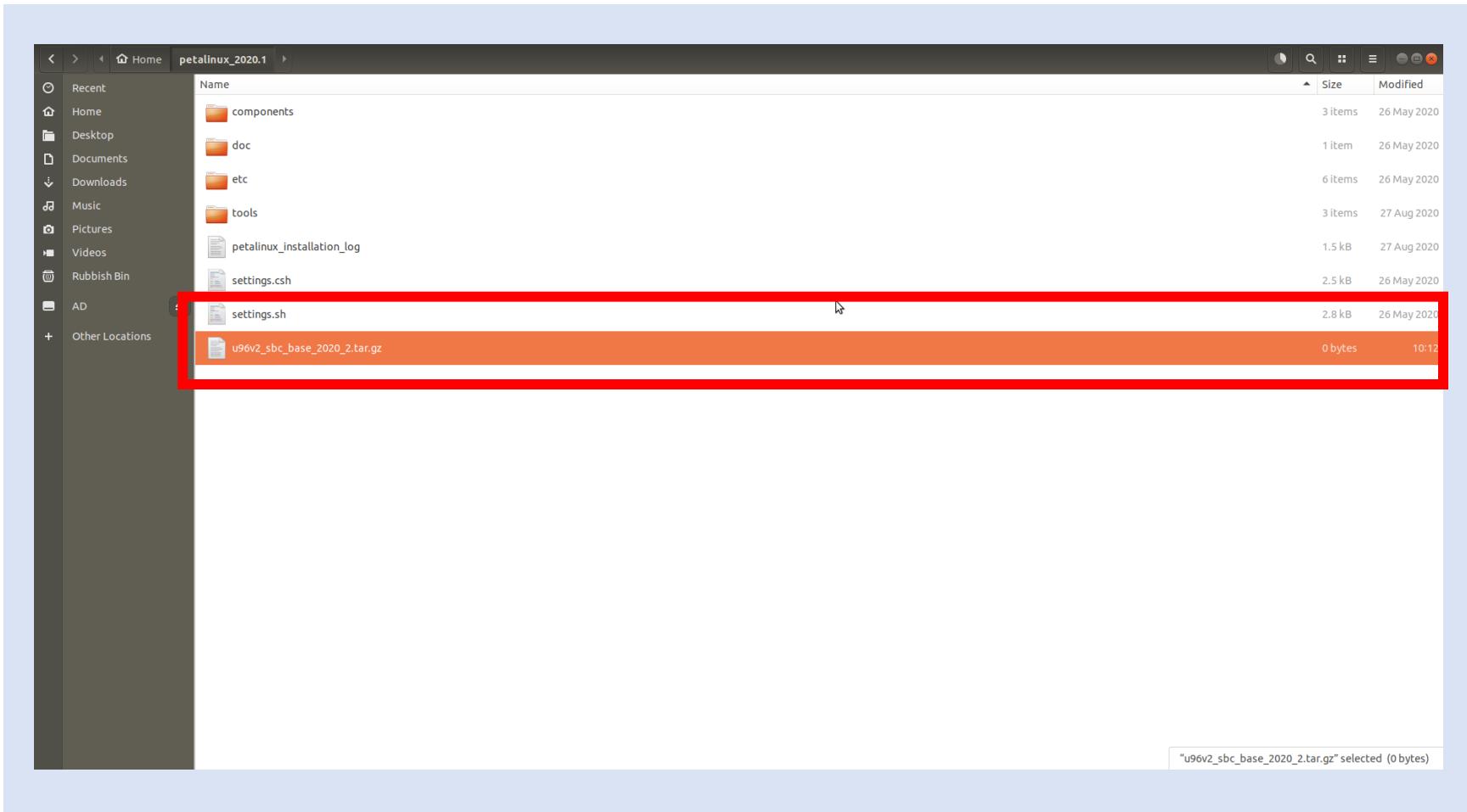
Lab 3: Creating Embedded Linux Solutions

Step 3 – Select and download the Ultra96V2 SBC Base

Documents > projects > public_release > 2022.1 > BSP						
	Name	Modified	Date/Time	Modified By	Content Type	File Size
	pz7010_fmc2_base_2022_1.md5	September 1		bthomson@witekio.com	Document	65 bytes
	pz7010_fmc2_base_2022_1.tar.gz	September 1		bthomson@witekio.com	Document	1.09 GB
	pz7015_fmc2_base_2022_1.bsp	September 1		bthomson@witekio.com	Document	1.10 GB
	pz7015_fmc2_base_2022_1.md5	September 1		bthomson@witekio.com	Document	33 bytes
	pz7015_fmc2_base_2022_1.tar.gz	September 1		bthomson@witekio.com	Document	1.09 GB
	pz7020_fmc2_base_2022_1.bsp	September 1		bthomson@witekio.com	Document	1.10 GB
	pz7020_fmc2_base_2022_1.md5	September 1		bthomson@witekio.com	Document	33 bytes
	pz7020_fmc2_base_2022_1.tar.gz	September 1		bthomson@witekio.com	Document	1.09 GB
	pz7030_fmc2_base_2022_1.bsp	September 1		bthomson@witekio.com	Document	1.10 GB
	pz7030_fmc2_base_2022_1.md5	September 1		bthomson@witekio.com	Document	33 bytes
	pz7030_fmc2_base_2022_1.tar.gz	September 1		bthomson@witekio.com	Document	1.09 GB
	u96v2_sbc_base_2022_1.bsp	September 5		bthomson@witekio.com	Document	4.48 GB
	u96v2_sbc_base_2022_1.md5	September 6		bthomson@witekio.com	Document	33 bytes
	u96v2_sbc_base_2022_1.md5sum	September 6		bthomson@witekio.com	Document	33 bytes
	u96v2_sbc_base_2022_1.tar.gz	September 5		bthomson@witekio.com	Document	4.47 GB

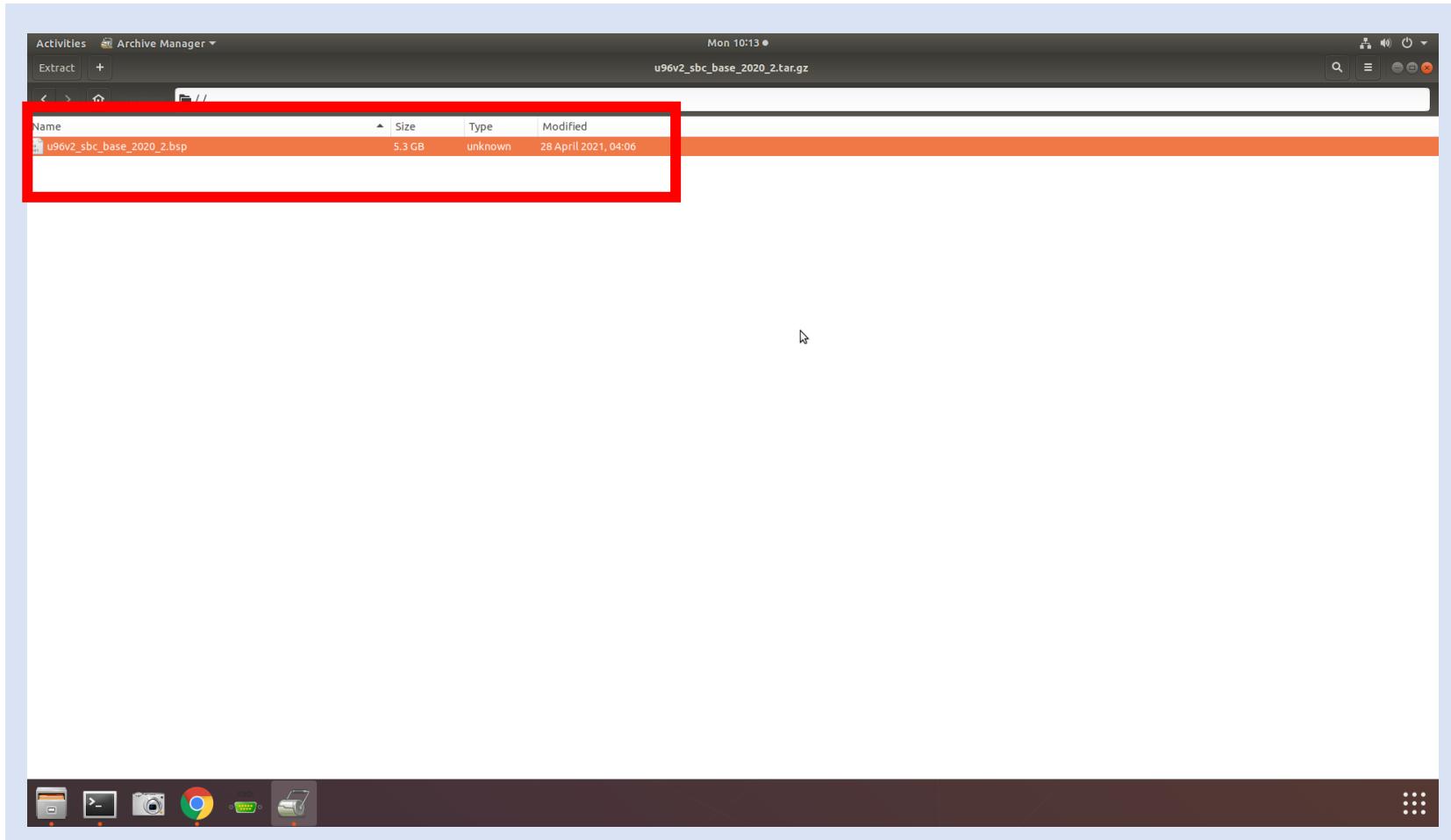
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Step 4 – Double click on the Ultra96V2 tar.gz to open the archive



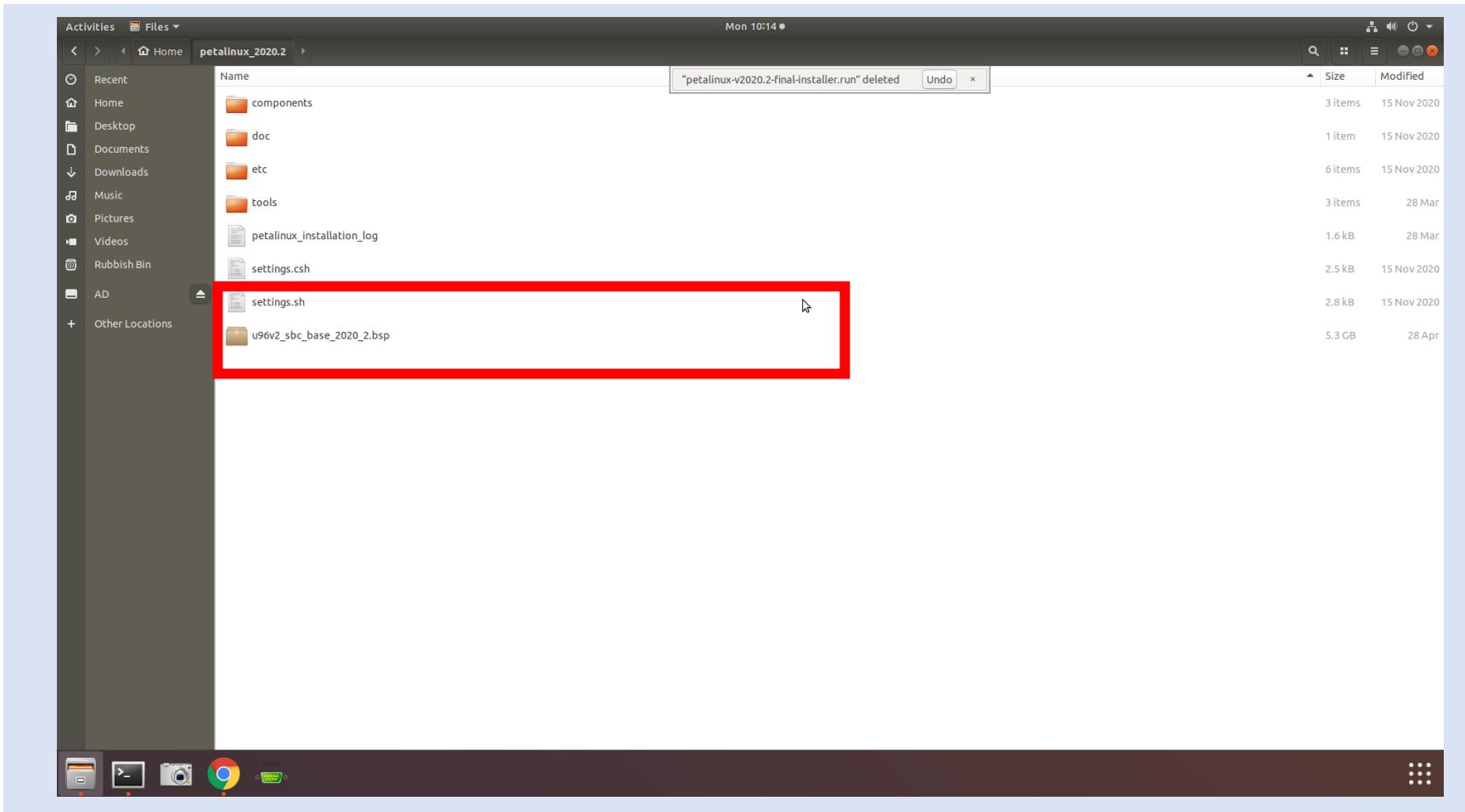
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Step 5 – Extract the BSP to the Petalinux directory



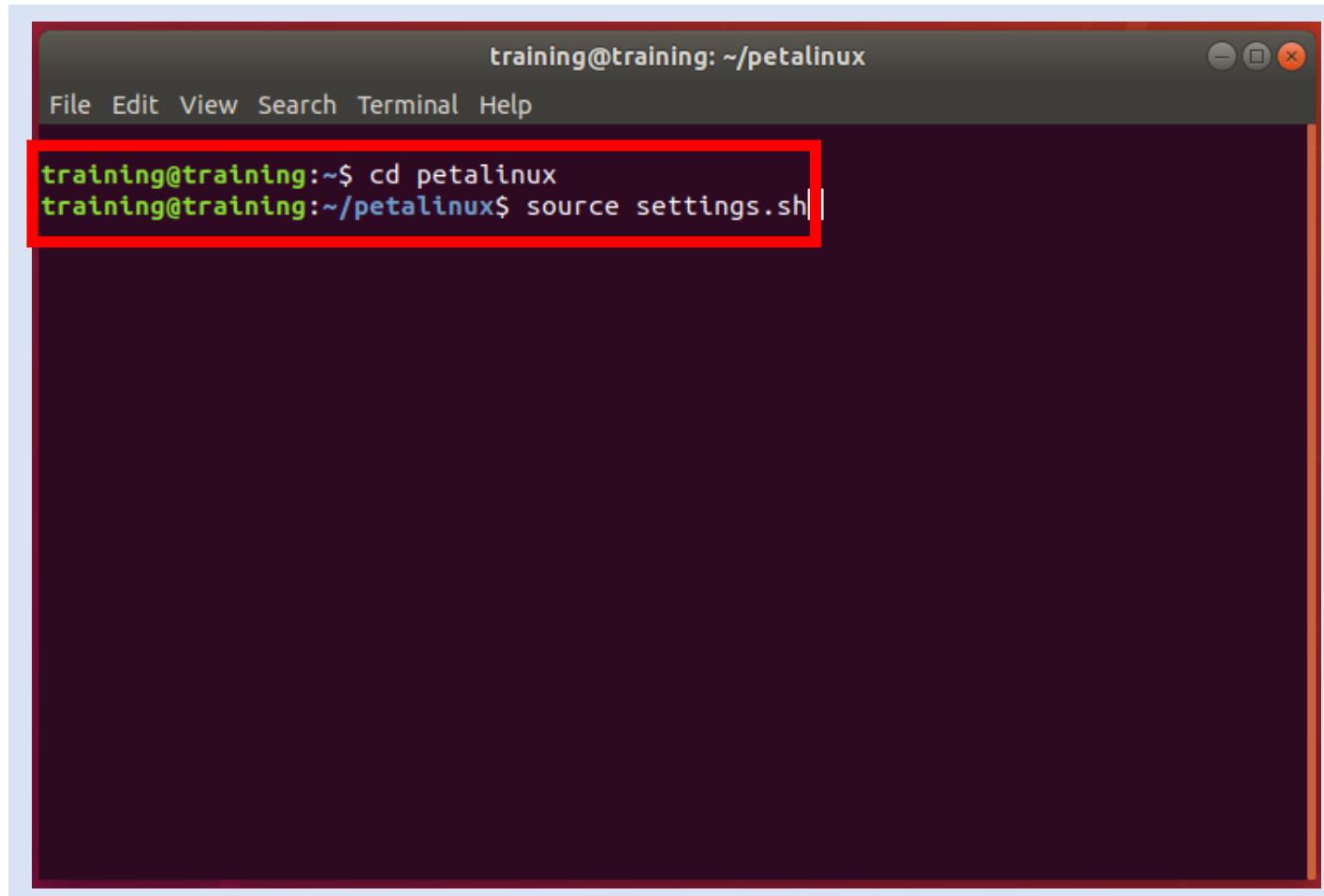
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Step 6 – Delete the compressed file, you should see the BSP in the directory



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Step 7 – In the petalinux directory, run the command *source settings.sh*



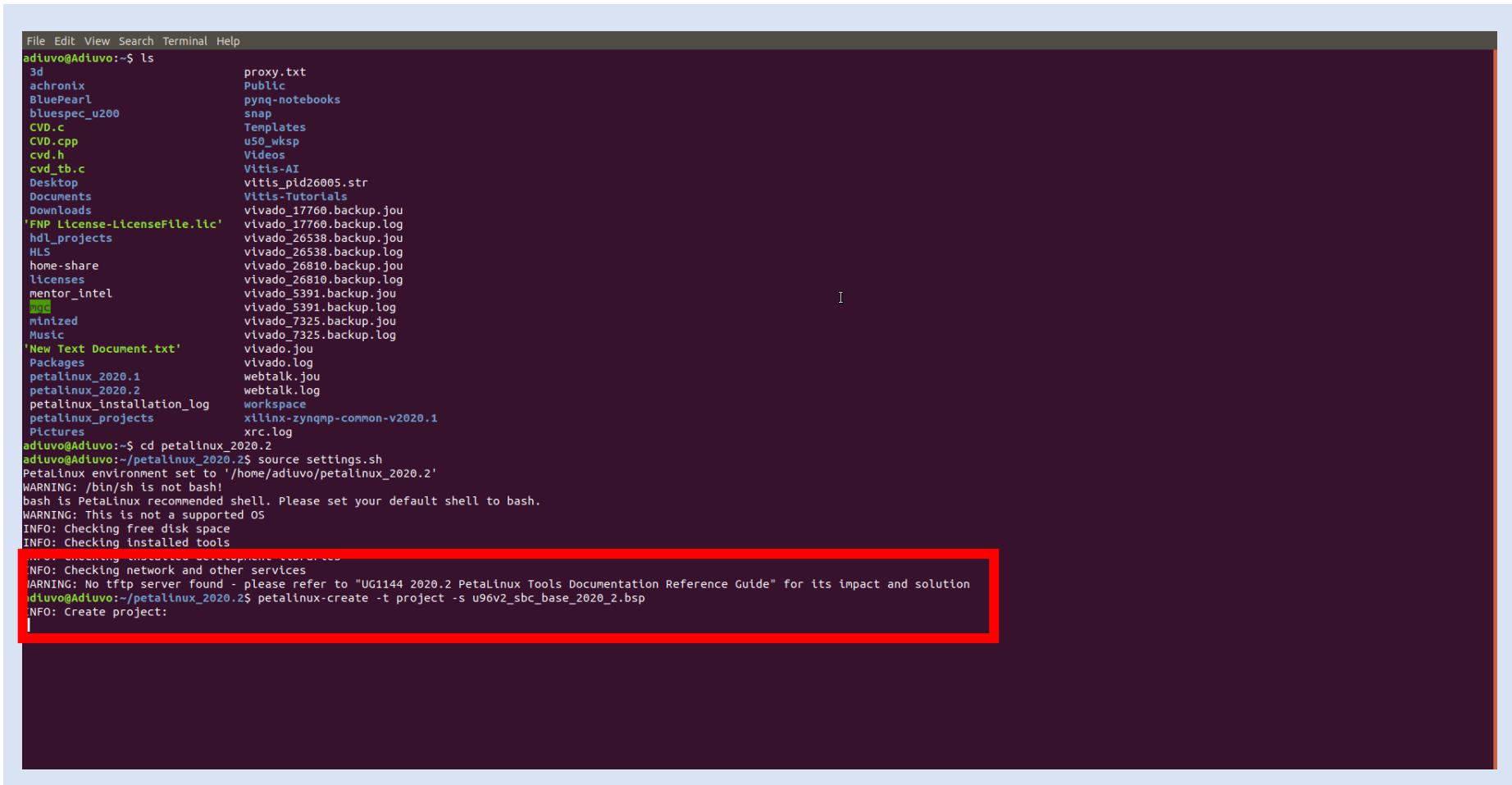
A screenshot of a terminal window titled "training@training: ~/petalinux". The window has a standard Linux-style title bar with icons for minimize, maximize, and close. Below the title bar is a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main terminal area shows two commands in green text:

```
training@training:~$ cd petalinux
training@training:~/petalinux$ source settings.sh
```

The last command, "source settings.sh", is highlighted with a red rectangular box.

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Step 8 – Create a new project, using the command *petalinux-create -t project -s <BSP Name>*

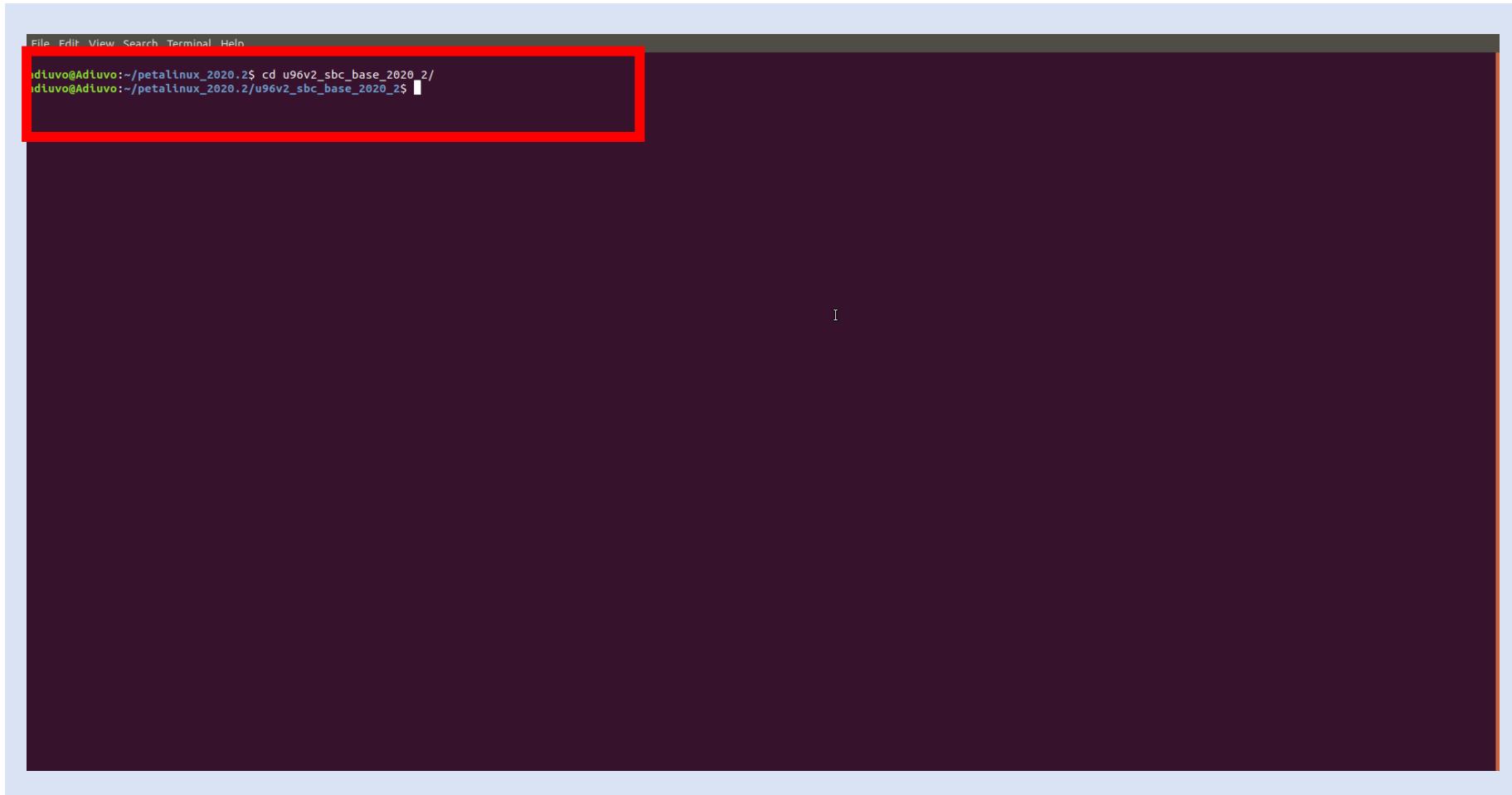


The screenshot shows a terminal window with a dark background and light-colored text. At the top, there's a menu bar with options: File, Edit, View, Search, Terminal, Help. Below the menu, the terminal prompt is "aduovo@Aduovo:~\$". The user runs the command "ls" to list the contents of the home directory, which includes various files and directories related to Petalinux and Vivado. Then, the user changes directory to "petalinux_2020.2" with "cd petalinux_2020.2". Inside this directory, they run "source settings.sh" to set up the Petalinux environment. This step includes several warning messages: "WARNING: /bin/sh is not bash!", "bash is Petalinux recommended shell. Please set your default shell to bash.", "WARNING: This is not a supported OS", and "INFO: Checking free disk space". Finally, the user runs "petalinux-create -t project -s u96v2_sbc_base_2020_2.bsp" to create a new project. The output of this command is highlighted with a red rectangle. It shows "INFO: Create project:" followed by a series of informational and warning messages: "INFO: Checking installed tools", "INFO: Checking network and other services", and "WARNING: No tftp server found - please refer to "UG1144 2020.2 PetaLinux Tools Documentation Reference Guide" for its impact and solution".

```
aduovo@Aduovo:~$ ls
3d           proxy.txt
achronix      Public
BluePearl     pynq-notebooks
bluespec_u200 snap
CVD.c         Templates
CVD.cpp       u50_wksp
cvd.h         Videos
cvd_tb.c     Vitis-AI
Desktop      vitis_pid26005.str
Documents    Vitis-Tutorials
Downloads   vivado_17760.backup.jou
'FNP License-LicenseFile.lic' vivado_17760.backup.log
hdl_projects vivado_26538.backup.jou
HLS          vivado_26538.backup.log
home-share   vivado_26810.backup.jou
licenses     vivado_26810.backup.log
mentor_intel vivado_5391.backup.jou
nrg          vivado_5391.backup.log
mnitized    vivado_7325.backup.jou
Music        vivado_7325.backup.log
'New Text Document.txt' vivado.jou
Packages     vivado.log
petalinux_2020.1 webtalk.jou
petalinux_2020.2 webtalk.log
petalinux_installation_log workspace
petalinux_projects xilinx-zynqmp-common-v2020.1
Pictures     xrc.log
aduovo@Aduovo:~$ cd petalinux_2020.2
aduovo@Aduovo:~/petalinux_2020.2$ source settings.sh
Petalinux environment set to '/home/aduovo/petalinux_2020.2'
WARNING: /bin/sh is not bash!
bash is Petalinux recommended shell. Please set your default shell to bash.
WARNING: This is not a supported OS
INFO: Checking free disk space
INFO: Checking installed tools
INFO: Checking installed development libraries
INFO: Checking network and other services
WARNING: No tftp server found - please refer to "UG1144 2020.2 PetaLinux Tools Documentation Reference Guide" for its impact and solution
aduovo@Aduovo:~/petalinux_2020.2$ petalinux-create -t project -s u96v2_sbc_base_2020_2.bsp
INFO: Create project:
```

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Step 9 – Change Directory into the project directory just created

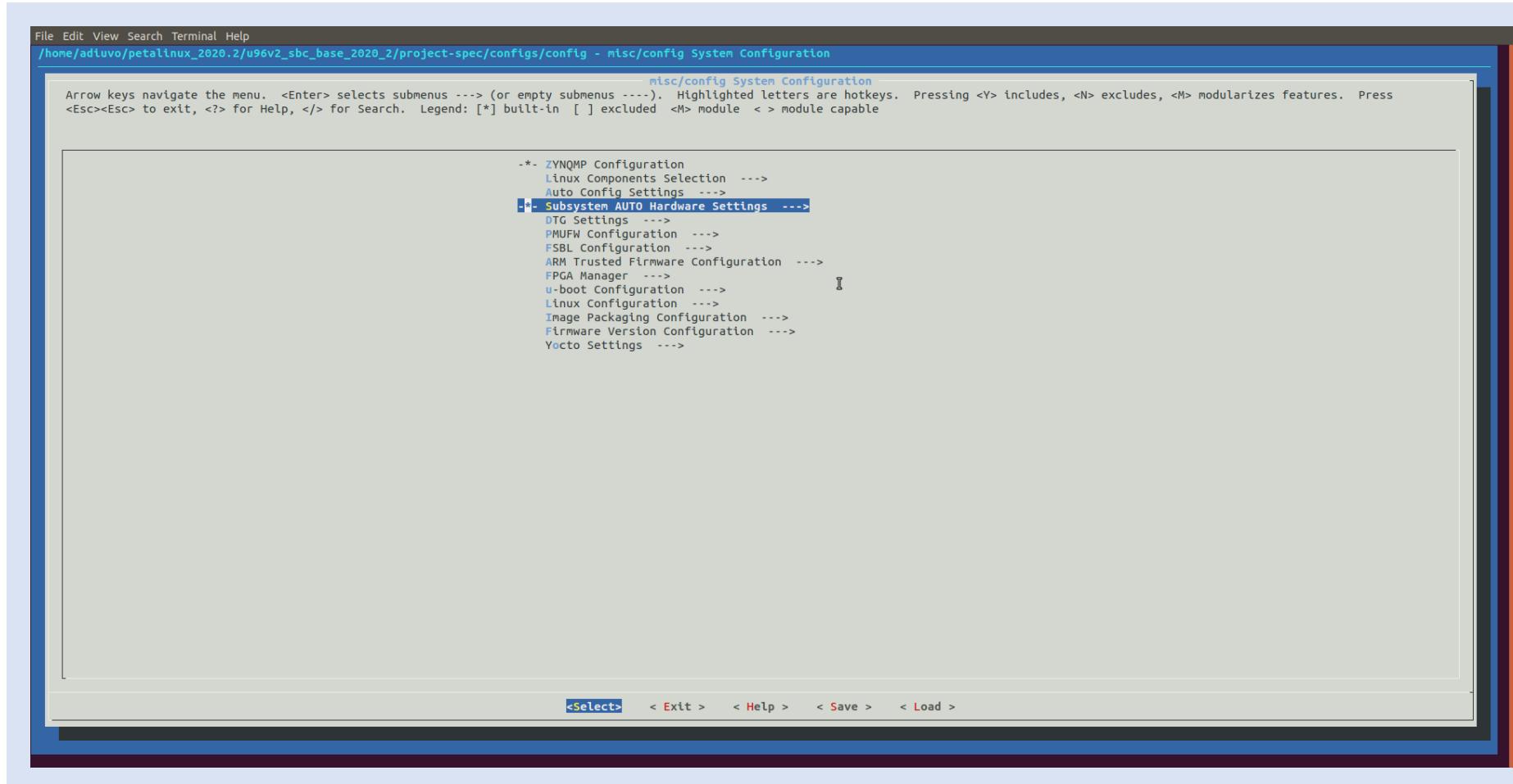


```
File Edit View Search Terminal Help
adiuvo@Adiuvo:~/petalinux_2020.2$ cd u96v2_sbc_base_2020_2/
adiuvo@Adiuvo:~/petalinux_2020.2/u96v2_sbc_base_2020_2$
```

A screenshot of a terminal window titled "Terminal". The window has a dark background and a light blue header bar at the top. In the header bar, there are menu options: File, Edit, View, Search, Terminal, and Help. Below the header, the terminal prompt shows the user's name "adiuvo" followed by the path "Adiuvo:~/petalinux_2020.2\$". The user then enters the command "cd u96v2_sbc_base_2020_2/" and presses Enter. The terminal then displays the path again, followed by a dollar sign and a small black square icon. A red rectangular box highlights the command "cd u96v2_sbc_base_2020_2/".

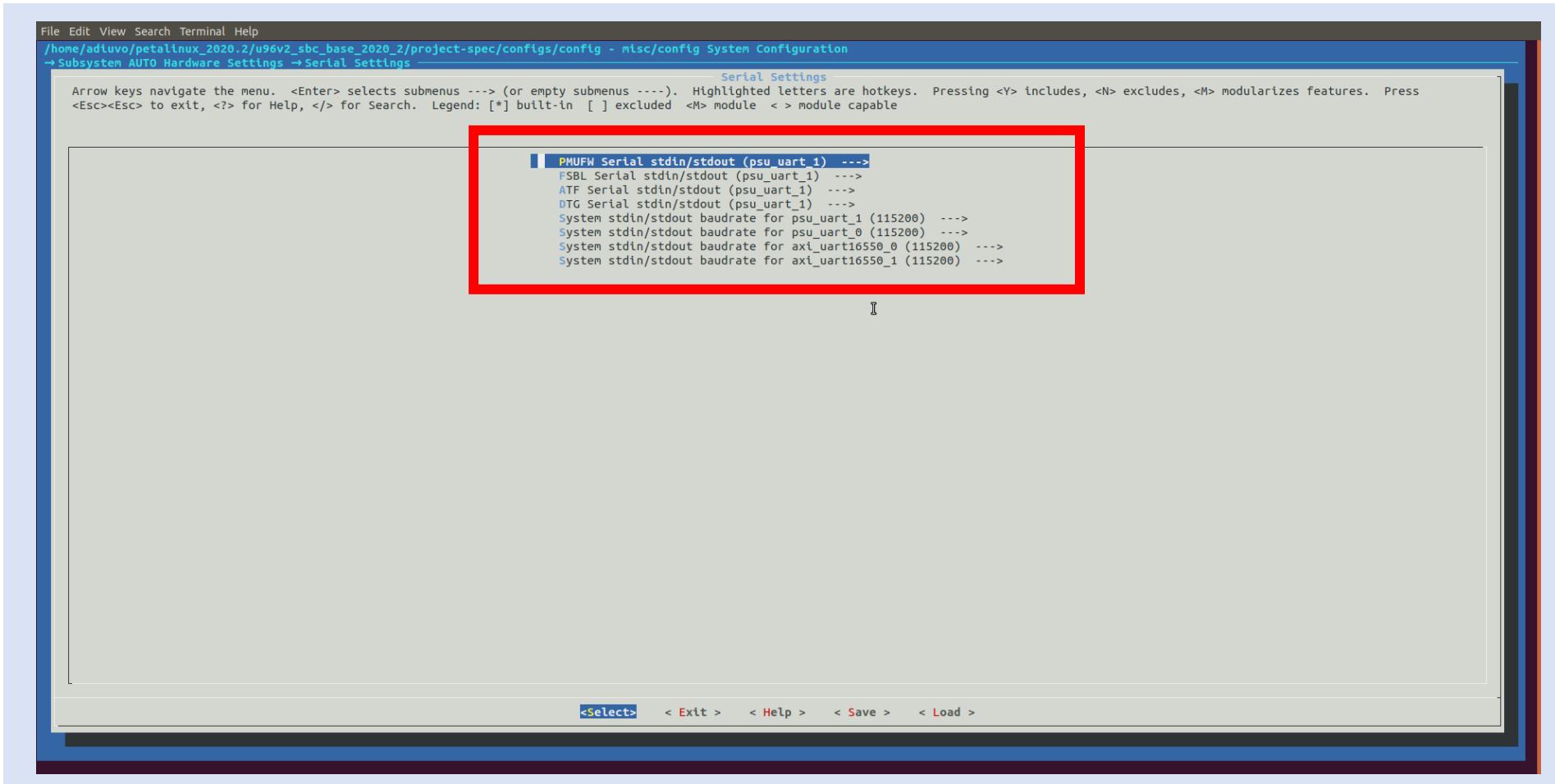
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Step 10 – In the terminal issue the command `petalinux-config` This will open the petalinux project configuration dialog. Scroll down to Subsystem AUTO Hardware Settings press enter



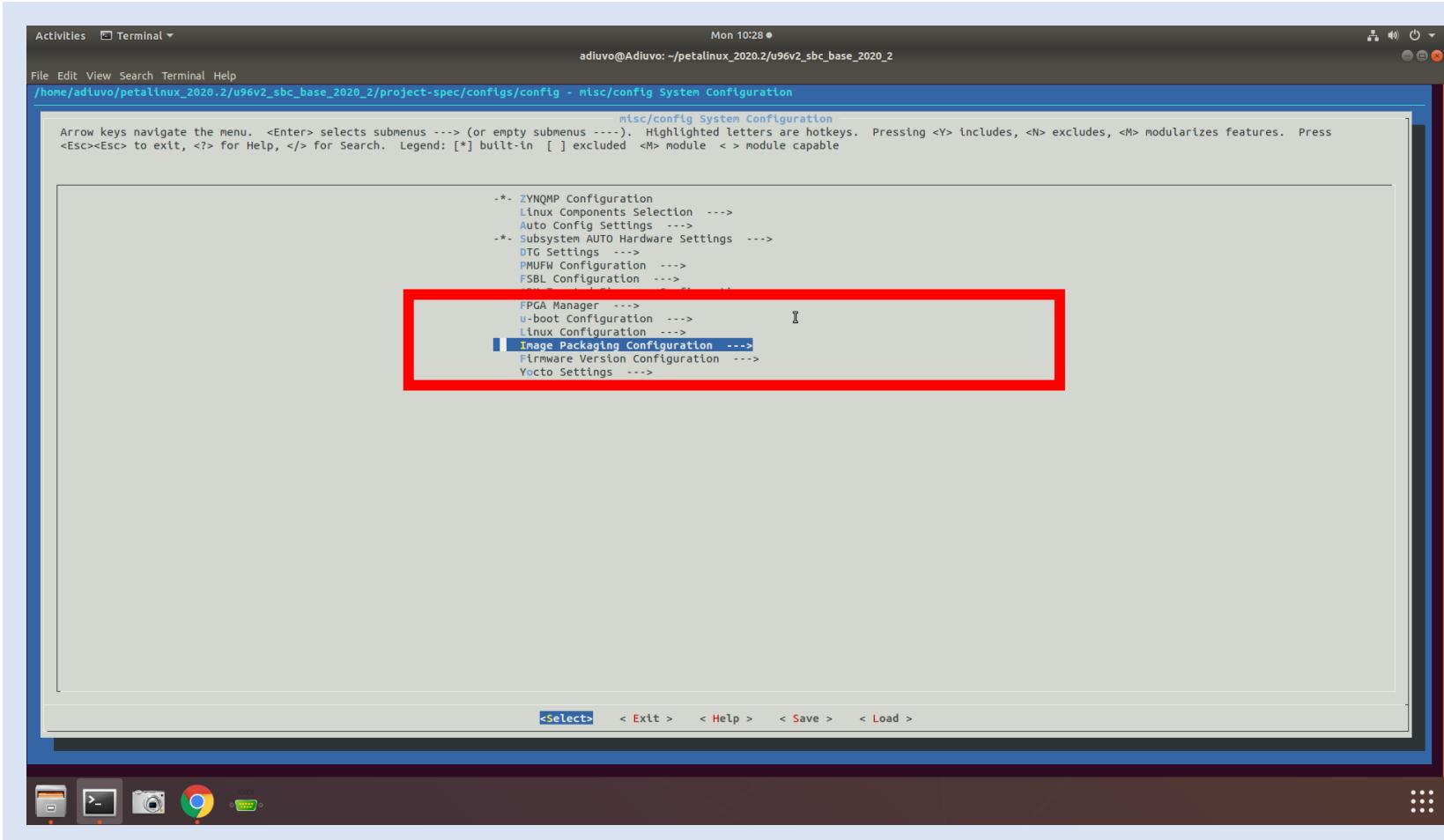
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Step 11 – Select the serial port and check that all of them are PSU_UART1



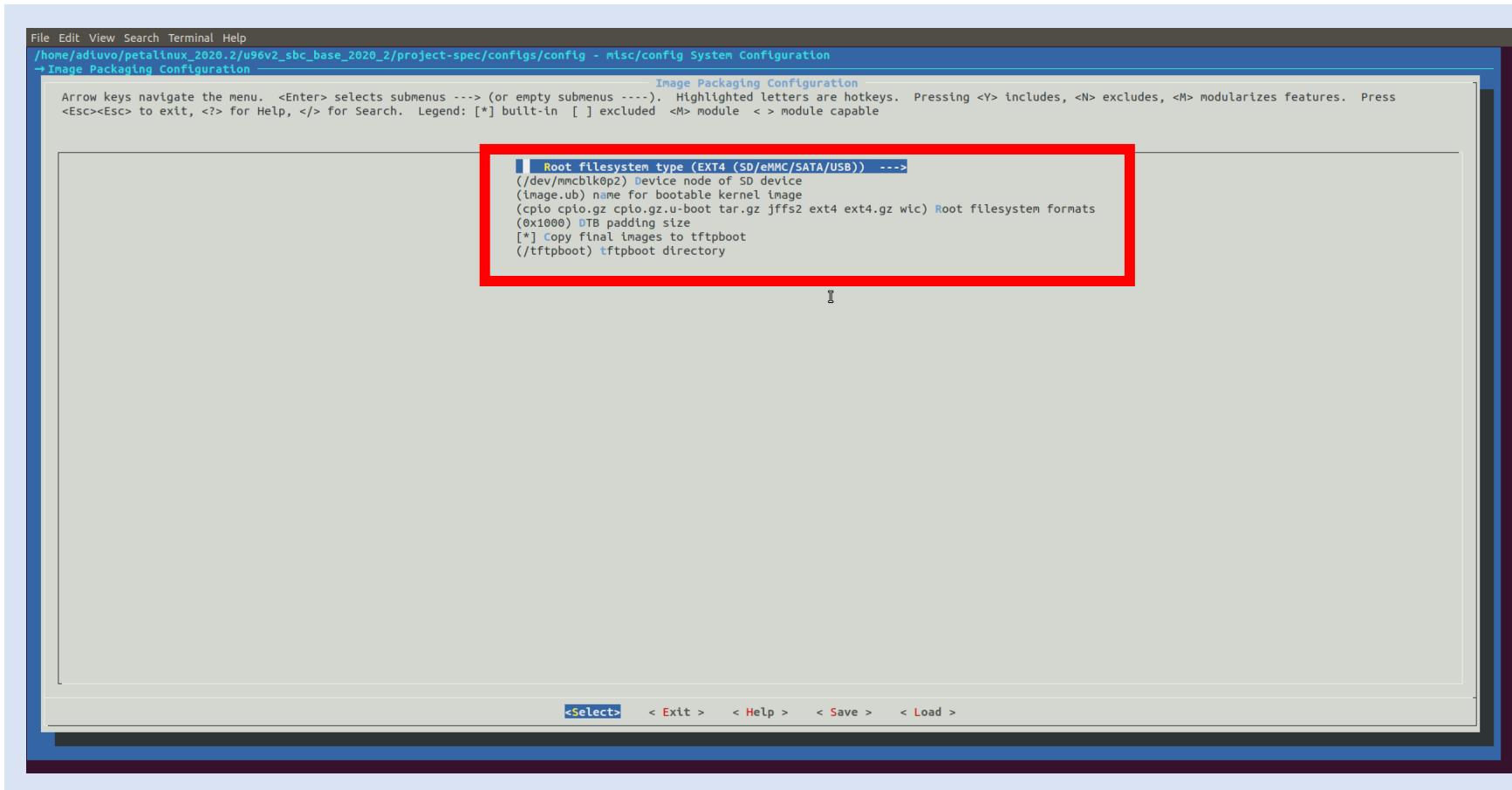
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Step 12 – Navigate back to main and select Image Packaging Configuration



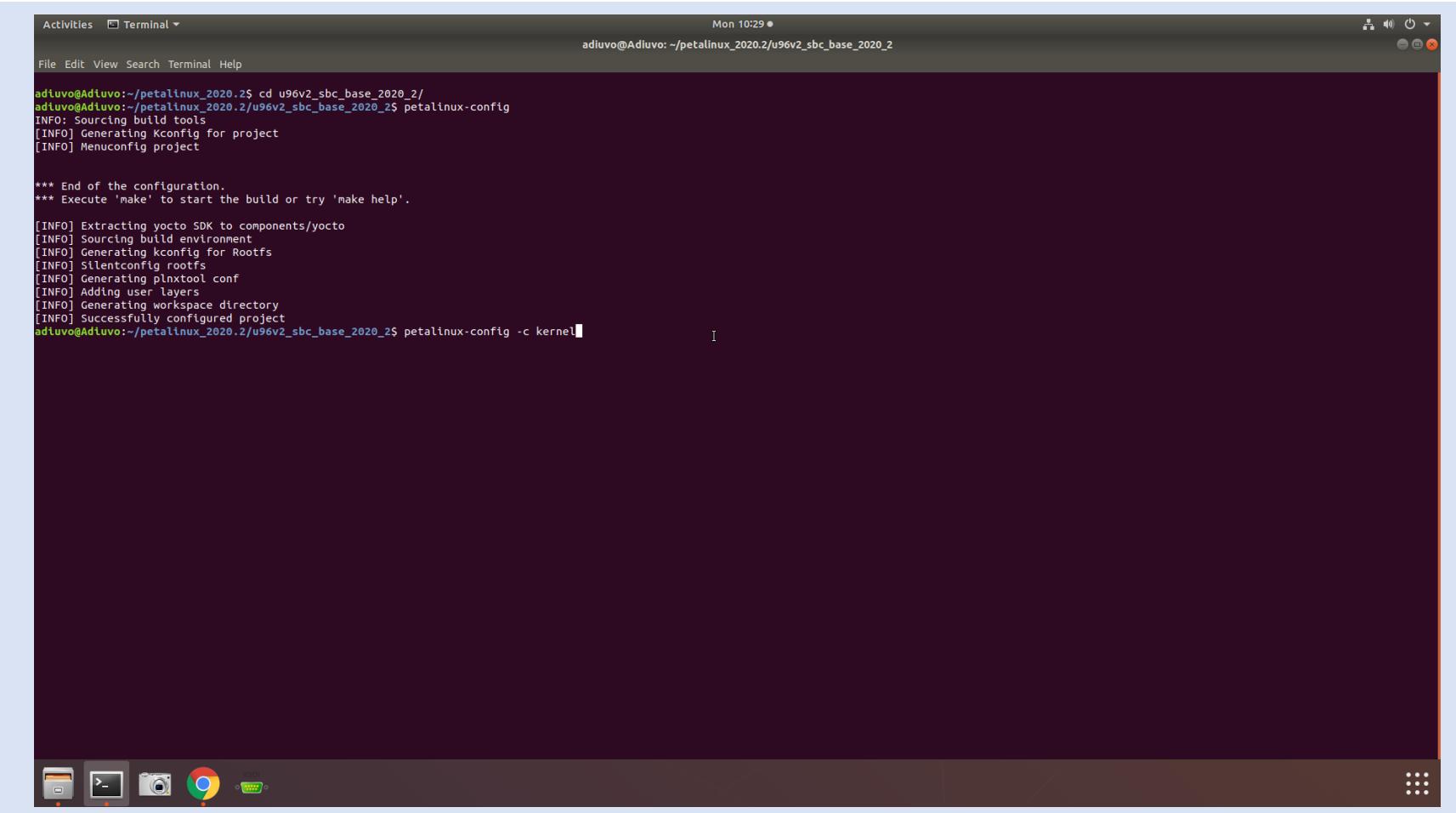
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Step 13 – Notice the SD Card is used to store the Root File System – Exit the menu and do not save any changes.



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Step 14 – Enter the command *petalinux-config –c kernel*



The screenshot shows a terminal window titled "Terminal" with the command "petalinux-config -c kernel" being run. The terminal output shows the configuration process starting with sourcing build tools, generating Kconfig and menuconfig files, extracting the Yocto SDK, and finally successfully configuring the project. The terminal is running on a Linux desktop environment with a dark theme.

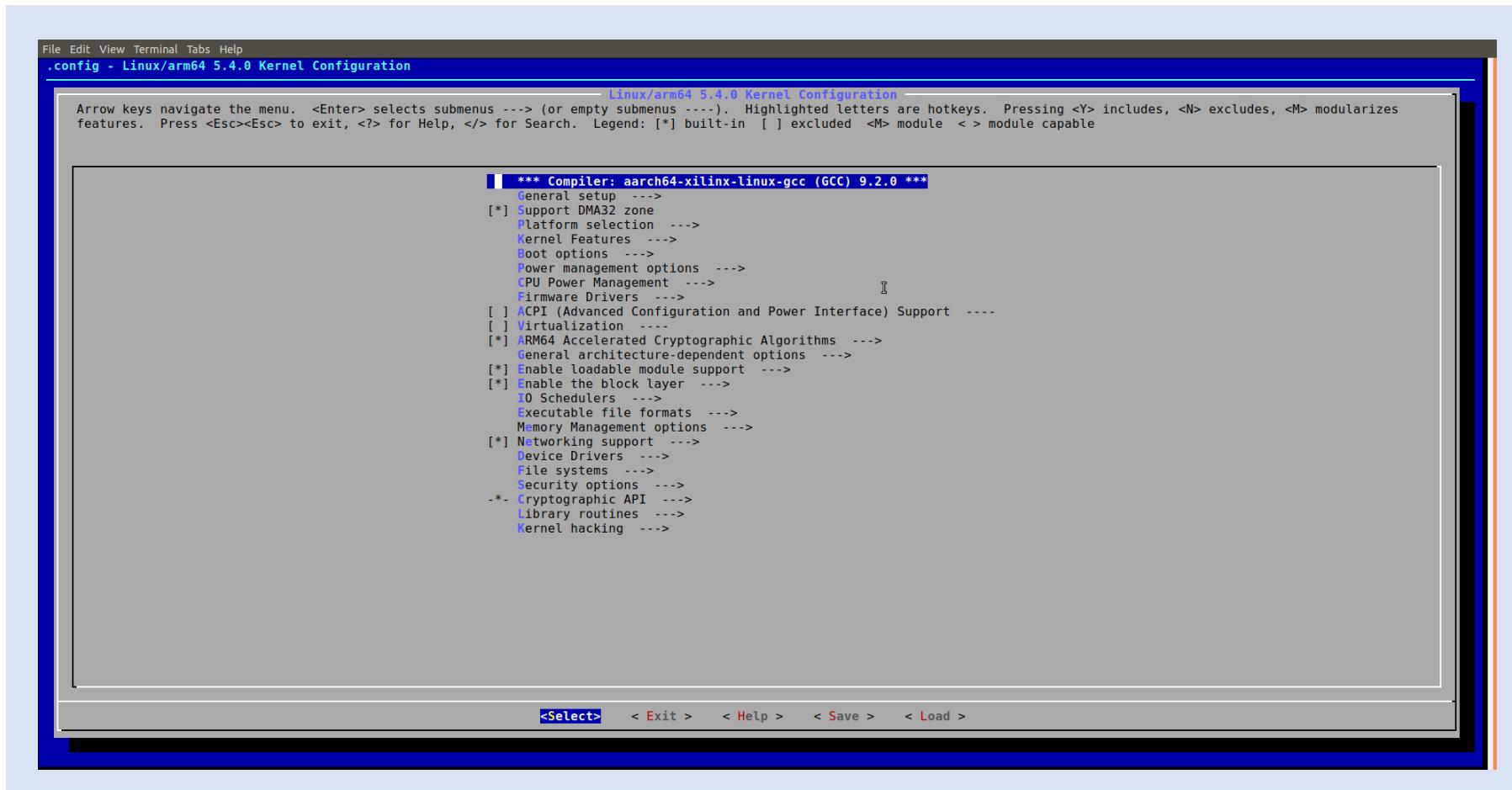
```
Activities Terminal Mon 10:29 ● adiuvvo@Adiuvvo: ~/petalinux_2020.2/u96v2_sbc_base_2020_2
File Edit View Search Terminal Help
adiuvvo@Adiuvvo:~/petalinux_2020.2$ cd u96v2_sbc_base_2020_2/
adiuvvo@Adiuvvo:~/petalinux_2020.2/u96v2_sbc_base_2020_2$ petalinux-config
INFO: Sourcing build tools
[INFO] Generating Kconfig for project
[INFO] Menuconfig project

*** End of the configuration.
*** Execute 'make' to start the build or try 'make help'.

[INFO] Extracting yocto SDK to components/yocto
[INFO] Sourcing build environment
[INFO] Generating kconfig for Rootfs
[INFO] Silentconfig rootfs
[INFO] Generating plnxtool conf
[INFO] Adding user layers
[INFO] Generating workspace directory
[INFO] Successfully configured project
adiuvvo@Adiuvvo:~/petalinux_2020.2/u96v2_sbc_base_2020_2$ petalinux-config -c kernel
```

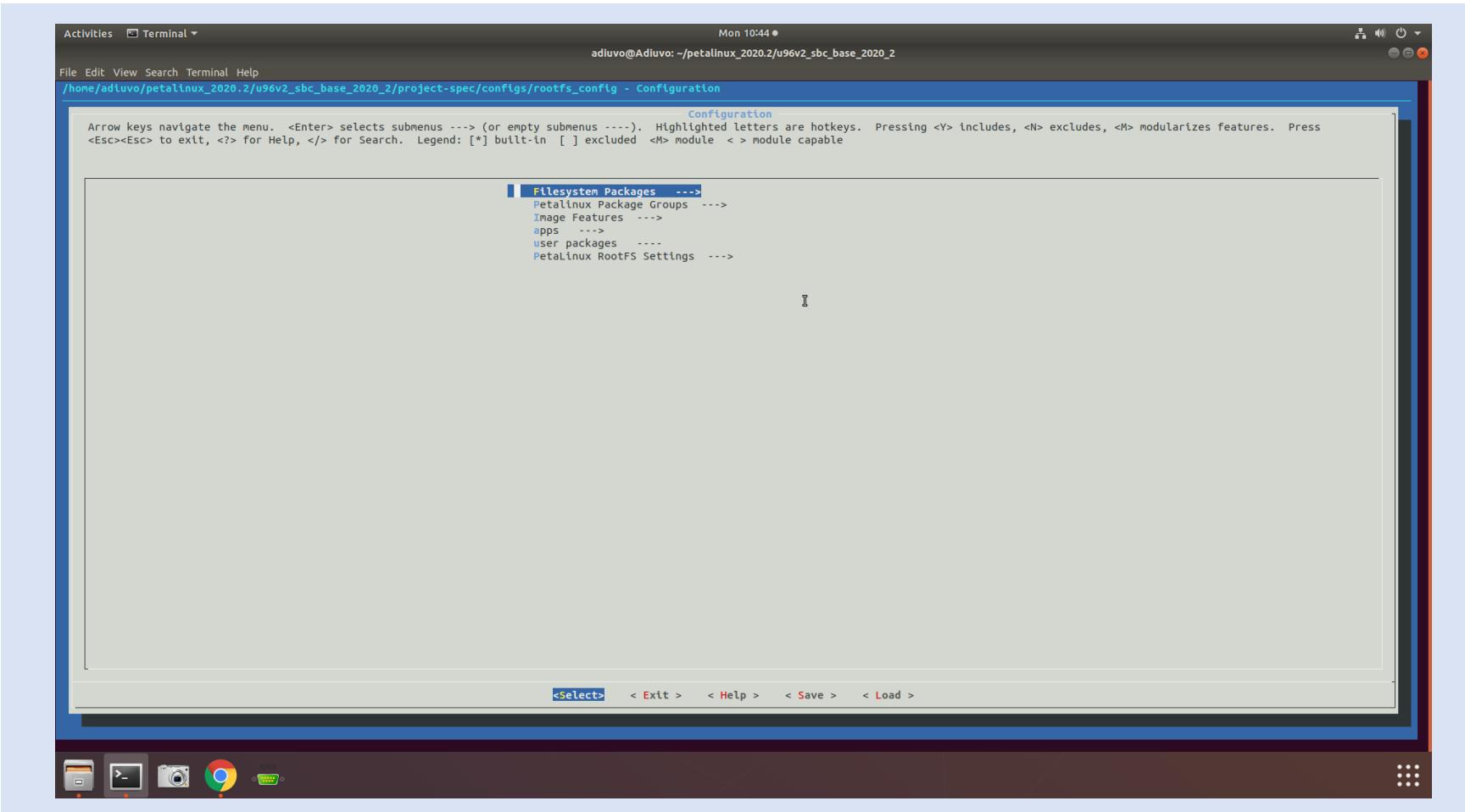
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Step 15 – This is the Kernel Configuration, explore the settings and close the menu without making any changes.



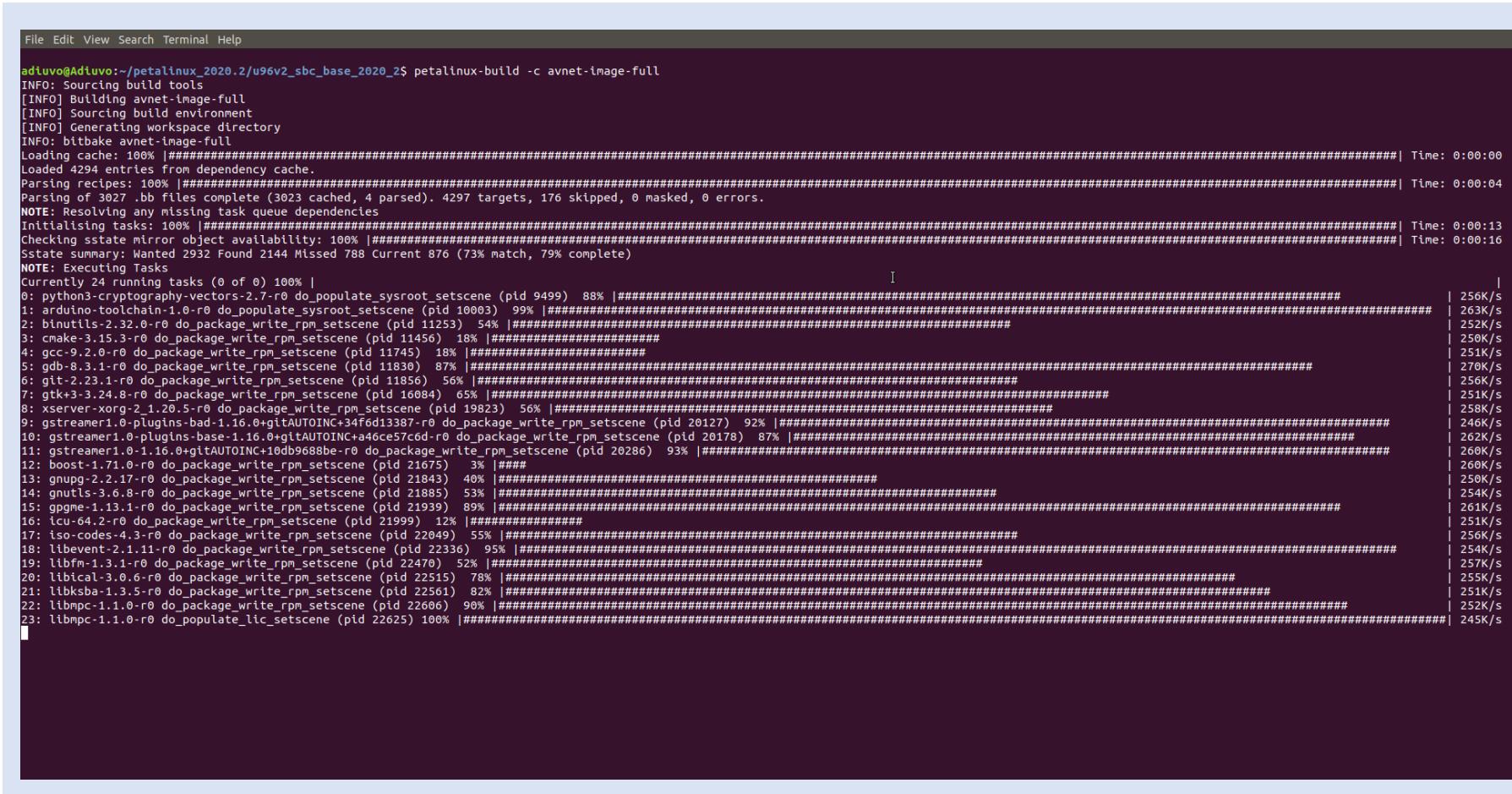
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Step 16 – In the terminal enter the command `petalinux-config -c rootfs` This is the Kernel Configuration, explore the settings and close the menu without making any changes.



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Step 17 – Build the image by typing *petalinux-build -c avnet-image-full*

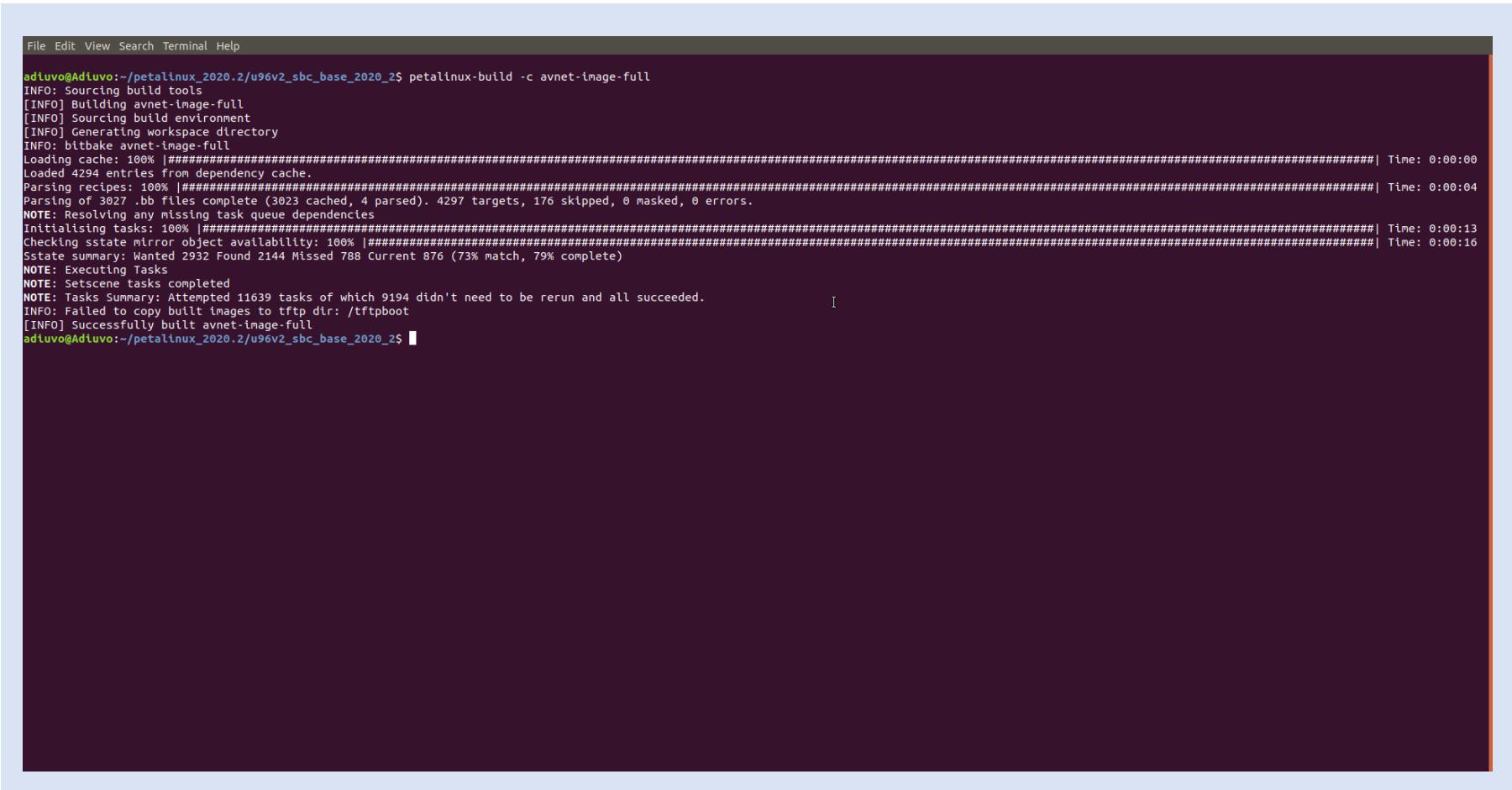


A terminal window showing the output of the command `petalinux-build -c avnet-image-full`. The window has a dark background and light-colored text. The text shows the build process starting with sourcing build tools, generating workspace, and then using bitbake to build the image. It displays the progress of 24 tasks, each with a PID, name, and percentage complete. The tasks include various packages like python3-cryptography, arduino-toolchain, binutils, cmake, gcc, gdb, gtk+, xserver-xorg, gstreamer, boost, gnupg, gnutls, gpgme, lcu, lso-codes, libevent, libfm, libical, libksba, libmpc, and libmpc_lic. The build is progressing at approximately 250K/s.

```
File Edit View Search Terminal Help  
adiuvo@Adiuv0:~/petalinux_2020.2/u96v2_sbc_base_2020_2$ petalinux-build -c avnet-image-full  
INFO: Sourcing build tools  
[INFO] Building avnet-image-full  
[INFO] Sourcing build environment  
[INFO] Generating workspace directory  
INFO: bitbake avnet-image-full  
Loading cache: 100% [#####################################################################] Time: 0:00:00  
Loaded 4294 entries from dependency cache.  
Parsing recipes: 100% [#####################################################################] Time: 0:00:04  
Parsing of 3827 .bb files complete (3023 cached, 4 parsed). 4297 targets, 176 skipped, 0 masked, 0 errors.  
NOTE: Resolving any missing task queue dependencies  
Initialising tasks: 100% [#####################################################################] Time: 0:00:13  
Checking sstate mirror object availability: 100% [#####################################################################] Time: 0:00:16  
Sstate summary: Wanted 2932 Found 2144 Missed 788 Current 876 (73% match, 79% complete)  
NOTE: Executing Tasks  
Currently 24 running tasks (0 of 0) 100% |  
0: python3-cryptography-vectors-2.7-r0 do_populate_sysroot_setscene (pid 9499) 88% [#####
1: arduino-toolchain-1.0-r0 do_populate_sysroot_setscene (pid 10003) 99% [#####
2: binutils-2.32.0-r0 do_package_write_rpm_setscene (pid 11253) 54% [#####
3: cmake-3.15.3-r0 do_package_write_rpm_setscene (pid 11456) 18% [#####
4: gcc-9.2.0-r0 do_package_write_rpm_setscene (pid 11745) 18% [#####
5: gdb-8.3.1-r0 do_package_write_rpm_setscene (pid 11830) 87% [#####
6: gtk+-2.23.1-r0 do_package_write_rpm_setscene (pid 11856) 56% [#####
7: gtk+-3.24.8-r0 do_package_write_rpm_setscene (pid 16084) 65% [#####
8: xserver-xorg-2.1.20.5-r0 do_package_write_rpm_setscene (pid 19823) 56% [#####
9: gstreamer1.0-plugins-bad-1.16.0+gitAUTOINC+34f6d13387-r0 do_package_write_rpm_setscene (pid 20127) 92% [#####
10: gstreamer1.0-plugins-base-1.16.0+gitAUTOINC+a46ce57c6d-r0 do_package_write_rpm_setscene (pid 20178) 87% [#####
11: gstreamer1.0-1.16.0+gitAUTOINC+10db9688be-r0 do_package_write_rpm_setscene (pid 20286) 93% [#####
12: boost-1.71.0-r0 do_package_write_rpm_setscene (pid 21675) 3% [#####
13: gnupg-2.2.17-r0 do_package_write_rpm_setscene (pid 21843) 40% [#####
14: gnutls-3.6.8-r0 do_package_write_rpm_setscene (pid 21885) 53% [#####
15: gpgme-1.13.1-r0 do_package_write_rpm_setscene (pid 21939) 89% [#####
16: lcu-64.2-r0 do_package_write_rpm_setscene (pid 21999) 12% [#####
17: lso-codes-4.3-r0 do_package_write_rpm_setscene (pid 22049) 55% [#####
18: libevent-2.1.11-r0 do_package_write_rpm_setscene (pid 22336) 95% [#####
19: libfm-1.3.1-r0 do_package_write_rpm_setscene (pid 22470) 52% [#####
20: libical-3.0.6-r0 do_package_write_rpm_setscene (pid 22515) 78% [#####
21: libksba-1.3.5-r0 do_package_write_rpm_setscene (pid 22561) 82% [#####
22: libmpc-1.1.0-r0 do_package_write_rpm_setscene (pid 22606) 90% [#####
23: libmpc-1.1.0-r0 do_populate_lic_setscene (pid 22625) 100% [#####
| 250K/s  
| 263K/s  
| 252K/s  
| 250K/s  
| 251K/s  
| 270K/s  
| 256K/s  
| 251K/s  
| 258K/s  
| 246K/s  
| 262K/s  
| 260K/s  
| 260K/s  
| 250K/s  
| 254K/s  
| 261K/s  
| 251K/s  
| 256K/s  
| 254K/s  
| 257K/s  
| 255K/s  
| 251K/s  
| 252K/s  
| 245K/s
```

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Step 18 – Wait for the image to complete its build.

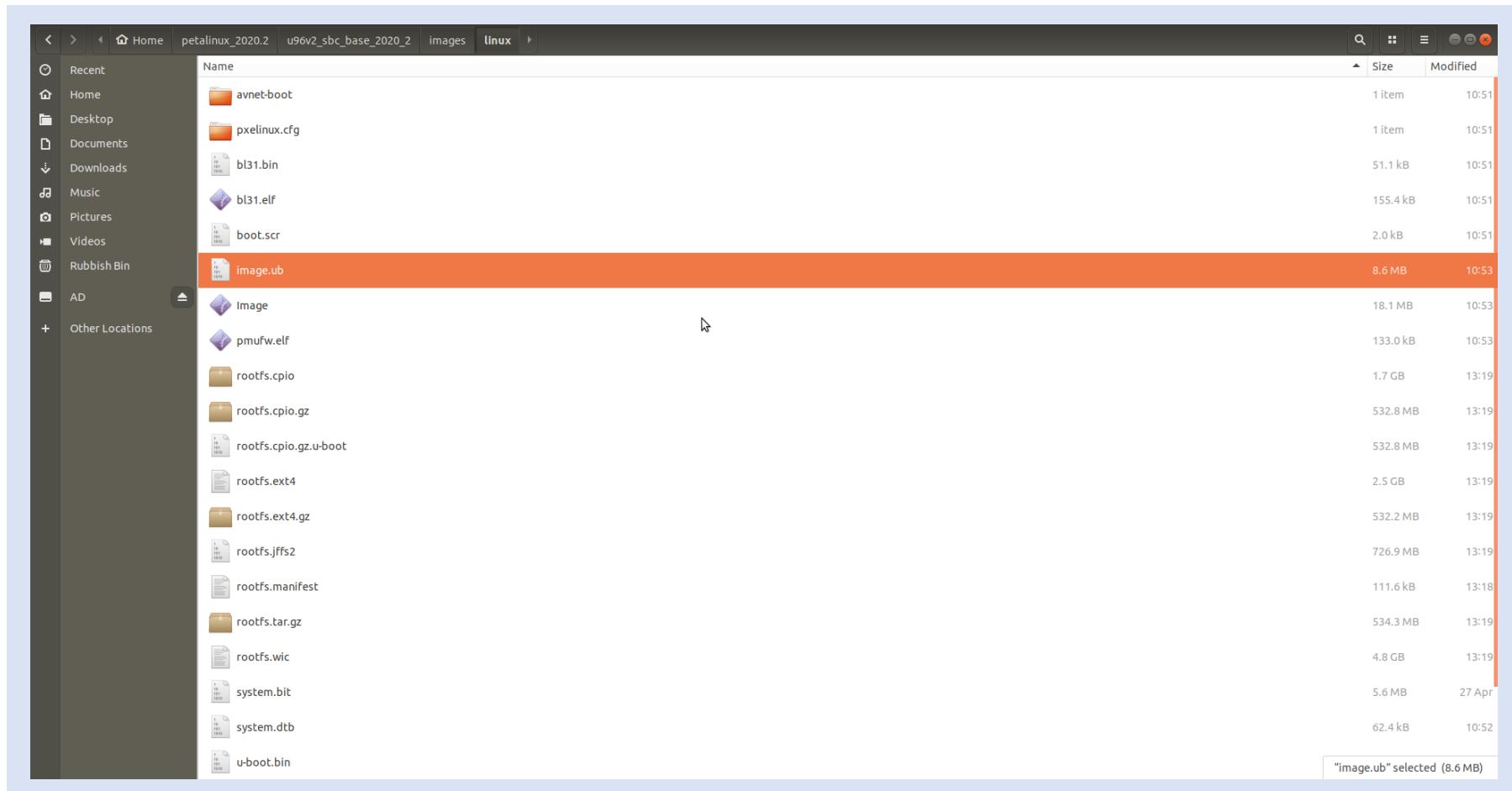


A terminal window showing the output of a `petalinux-build -c avnet-image-full` command. The window has a dark background and a light blue header bar with the title "Terminal". The terminal shows the progress of the build process, including sourcing build tools, generating workspace, and bitbaking the image. It also shows the successful completion of tasks and the creation of a `tftpboot` directory.

```
File Edit View Search Terminal Help  
adiuvo@Adiuvo:~/petalinux_2020.2/u96v2_sbc_base_2020_2$ petalinux-build -c avnet-image-full  
INFO: Sourcing build tools  
[INFO] Building avnet-image-full  
[INFO] Sourcing build environment  
[INFO] Generating workspace directory  
INFO: bitbake avnet-image-full  
Loading cache: 100% [#####################################################################] Time: 0:00:00  
Loaded 4294 entries from dependency cache  
Parsing recipes: 100% [#####################################################################] Time: 0:00:04  
Parsing of 3027 .bb files complete (3023 Cached, 4 parsed). 4297 targets, 176 skipped, 0 masked, 0 errors.  
NOTE: Resolving any missing task queue dependencies  
Initialising tasks: 100% [#####################################################################] Time: 0:00:13  
Checking sstate mirror object availability: 100% [#####################################################################] Time: 0:00:16  
Sstate summary: Wanted 2932 Found 2144 Missed 788 Current 876 (73% match, 79% complete)  
NOTE: Executing Tasks  
NOTE: Setscene tasks completed  
NOTE: Tasks Summary: Attempted 11639 tasks of which 9194 didn't need to be rerun and all succeeded.  
INFO: Failed to copy built images to tftp dir: /tftpboot  
[INFO] Successfully built avnet-image-full  
adiuvo@Adiuvo:~/petalinux_2020.2/u96v2_sbc_base_2020_2$
```

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Step 19 – From the <project>/images/linux directory copy image.ub to the SD Card boot partition



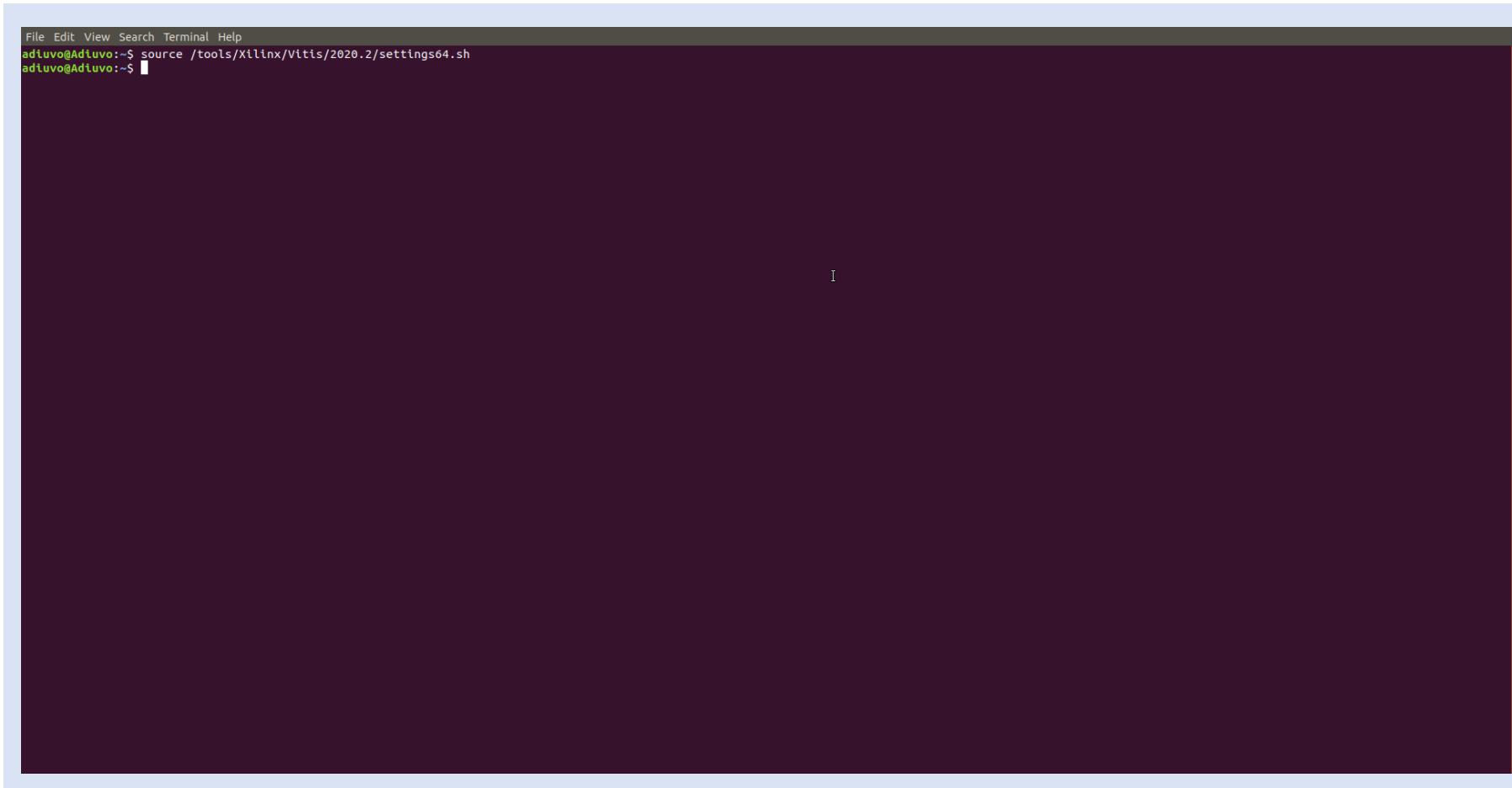
Lab 3: Creating Embedded Linux Solutions

Step 20 – Insert the SD Card into the Ultra96V2 and connect the JTAG pod, connect a USB from the USB connector on the front to your development machine and power on



Lab 3: Creating Embedded Linux Solutions

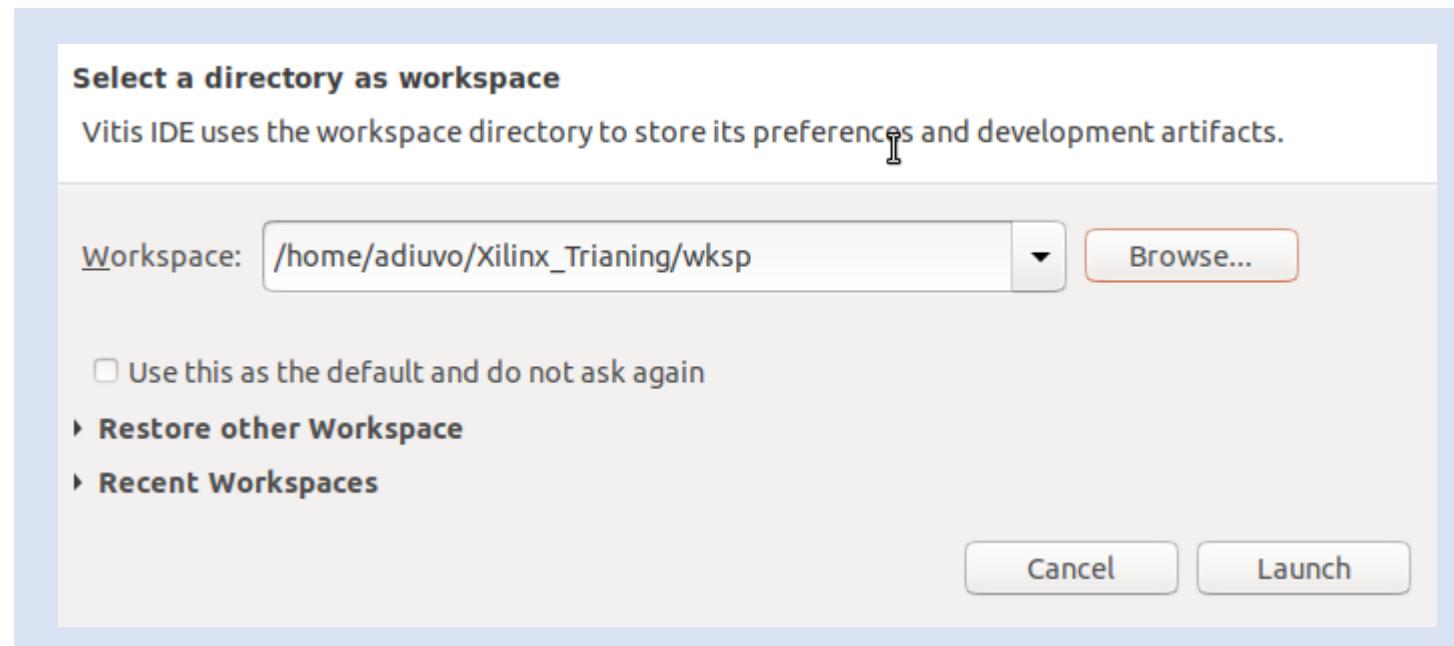
Step 21 – On the linux development machine / virtual machine. Open a terminal and type
Source */opt/tools/Xilinx/Vitis/2022.1/settings64.sh* This assumes installation path is /opt/



```
File Edit View Search Terminal Help
adiuvo@Adieuvo:~$ source /opt/tools/Xilinx/Vitis/2022.1/settings64.sh
adiuvo@Adieuvo:~$ █
```

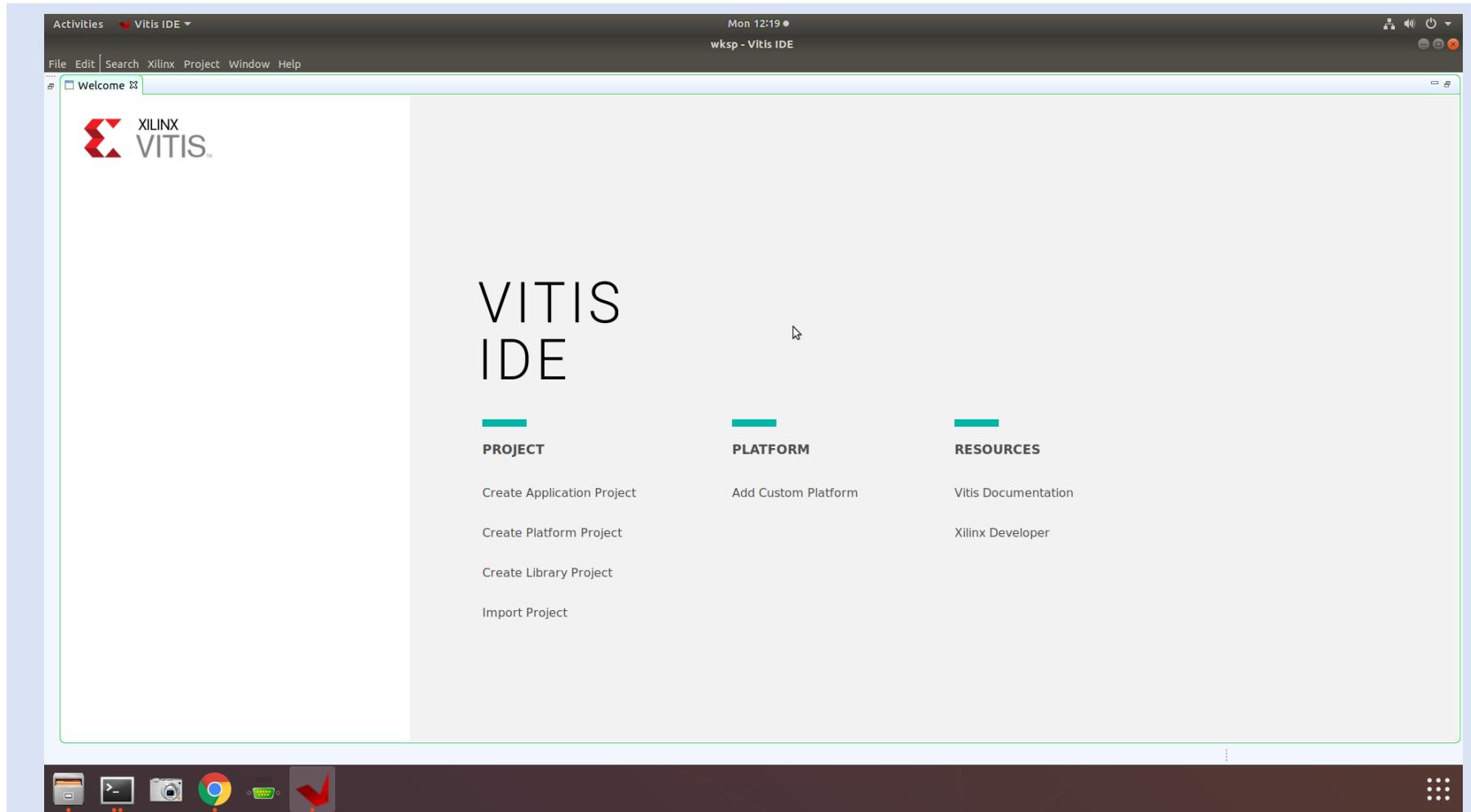
Lab 3: Creating Embedded Linux Solutions

Step 22 – Vitis will start and ask for the workspace, create a new directory using browse to store the projects.



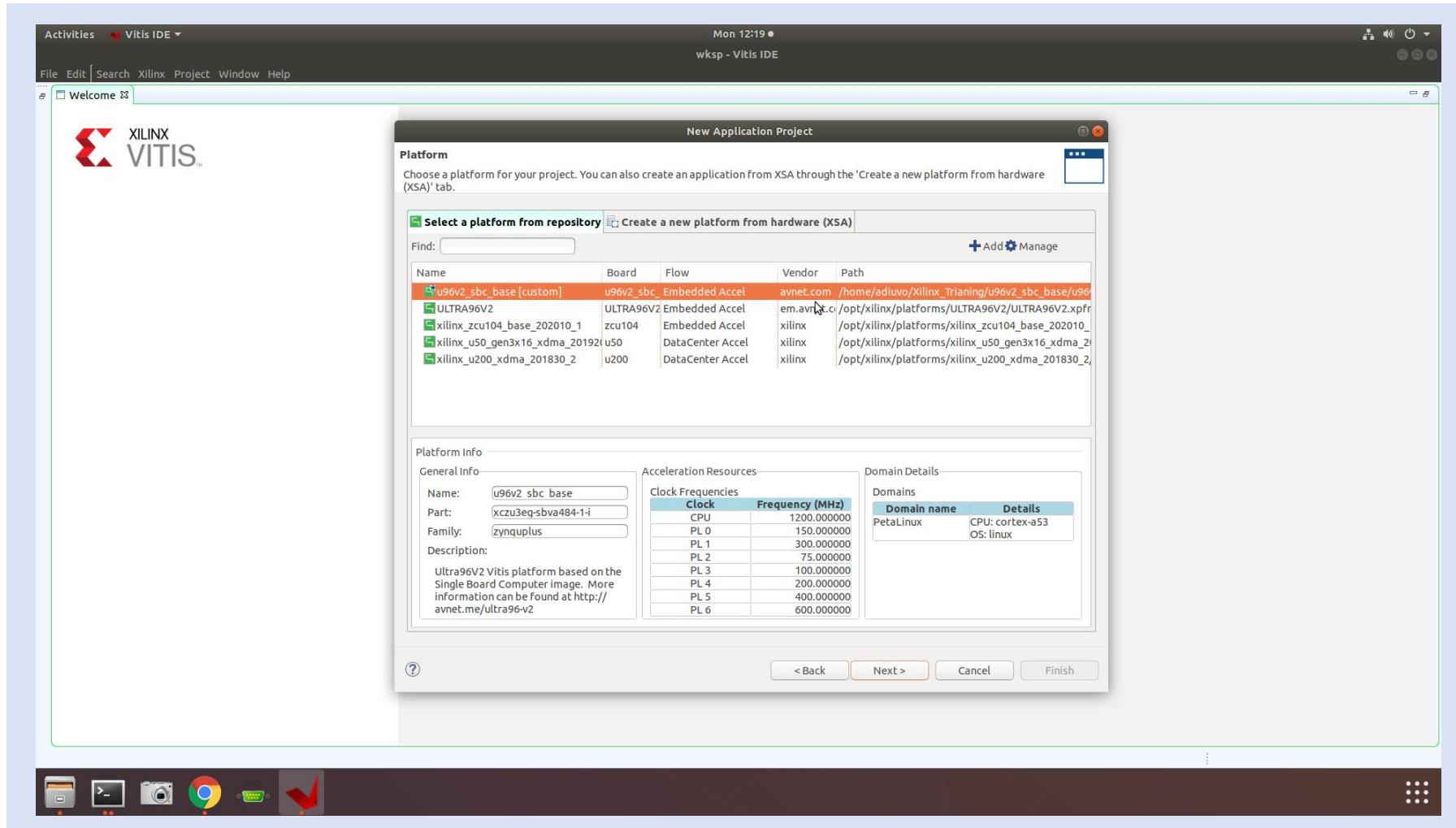
Lab 3: Creating Embedded Linux Solutions

Step 23 – Select Create Application Project



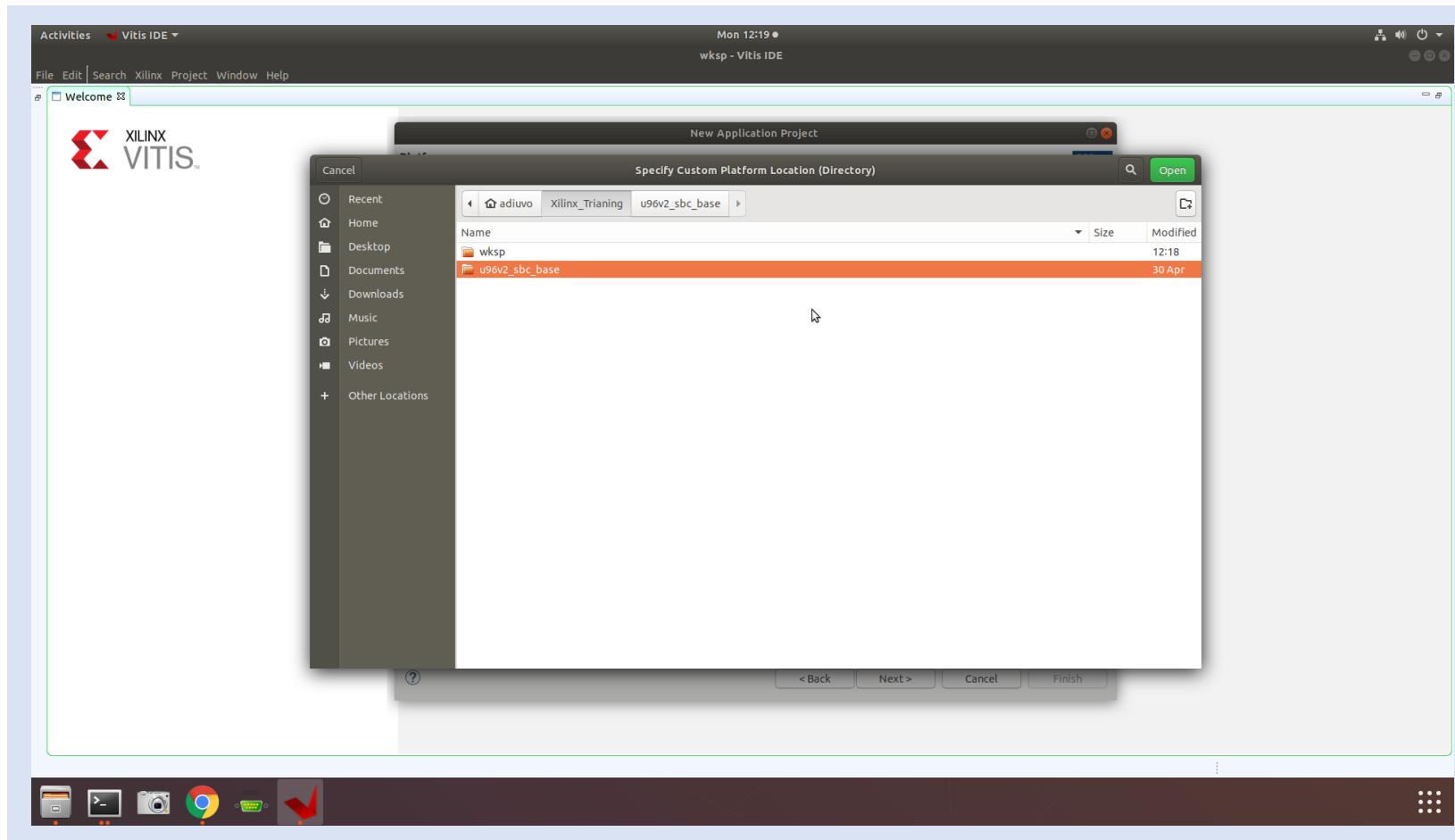
Lab 3: Creating Embedded Linux Solutions

Step 24 – On the Platform page select + Add and point it to the extracted U96 we downloaded earlier



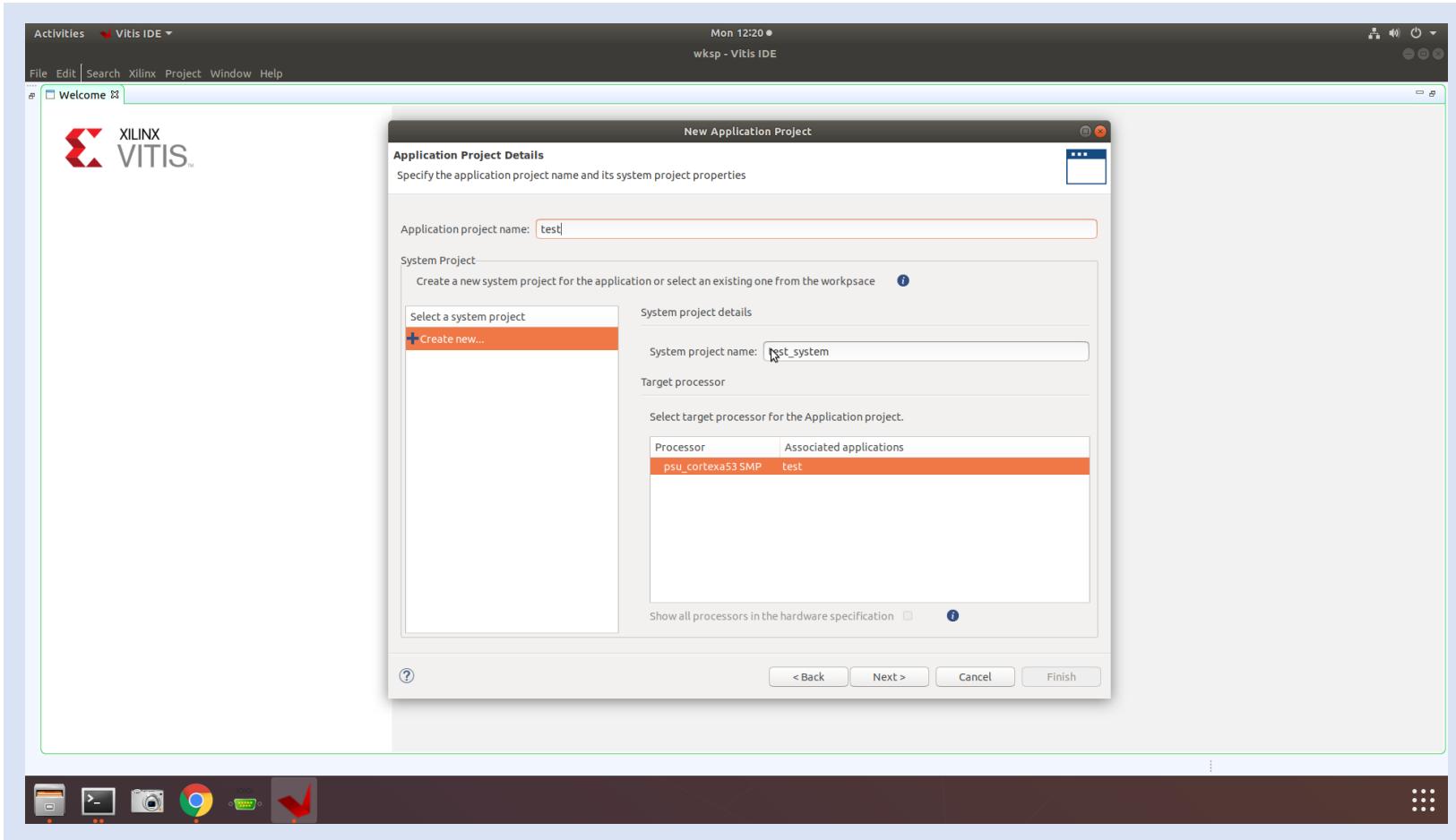
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Step 25 – Select the Top-Level directory of the Ultra96V2 Platform – Select that for use click next



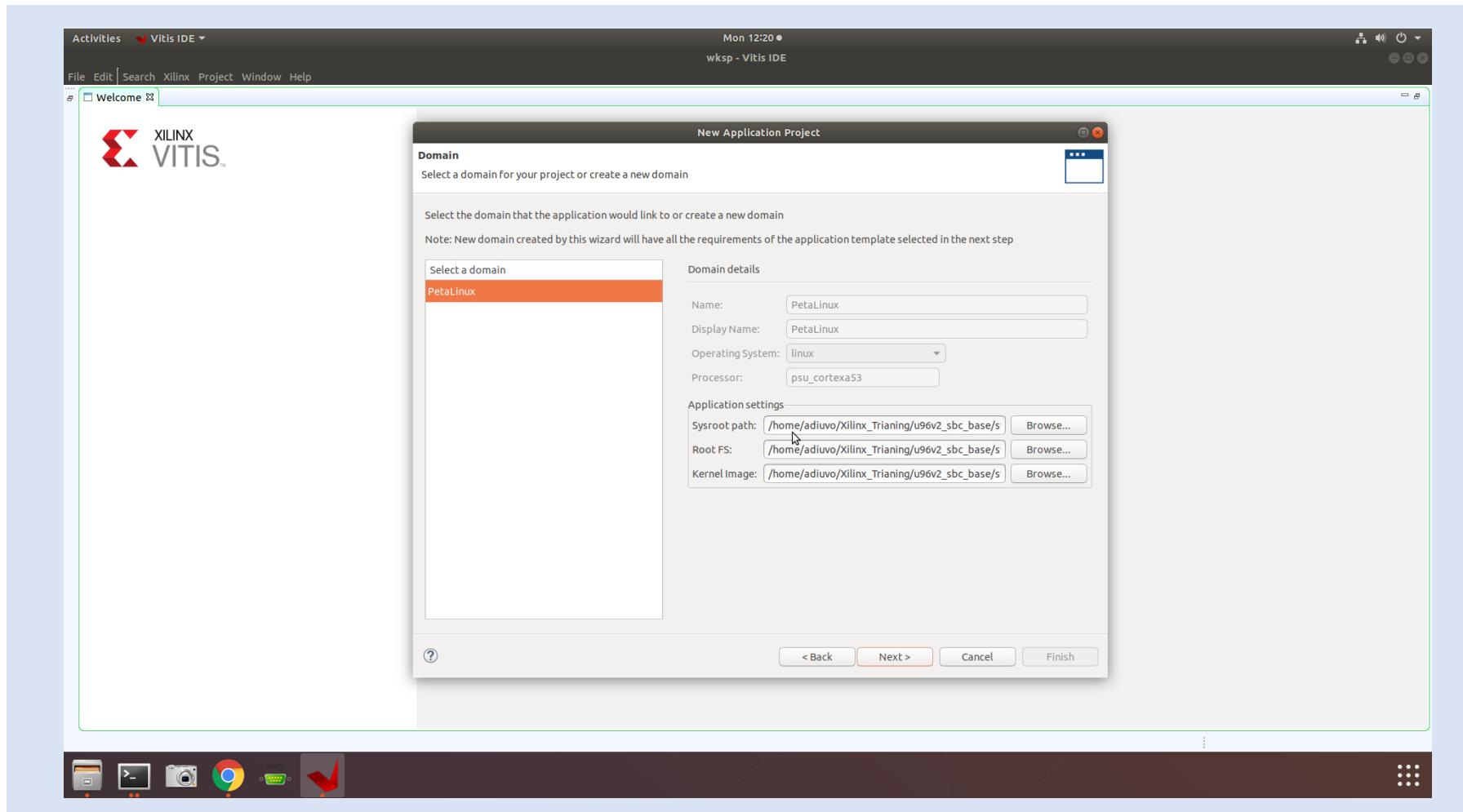
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Step 26 – Enter a name for the project



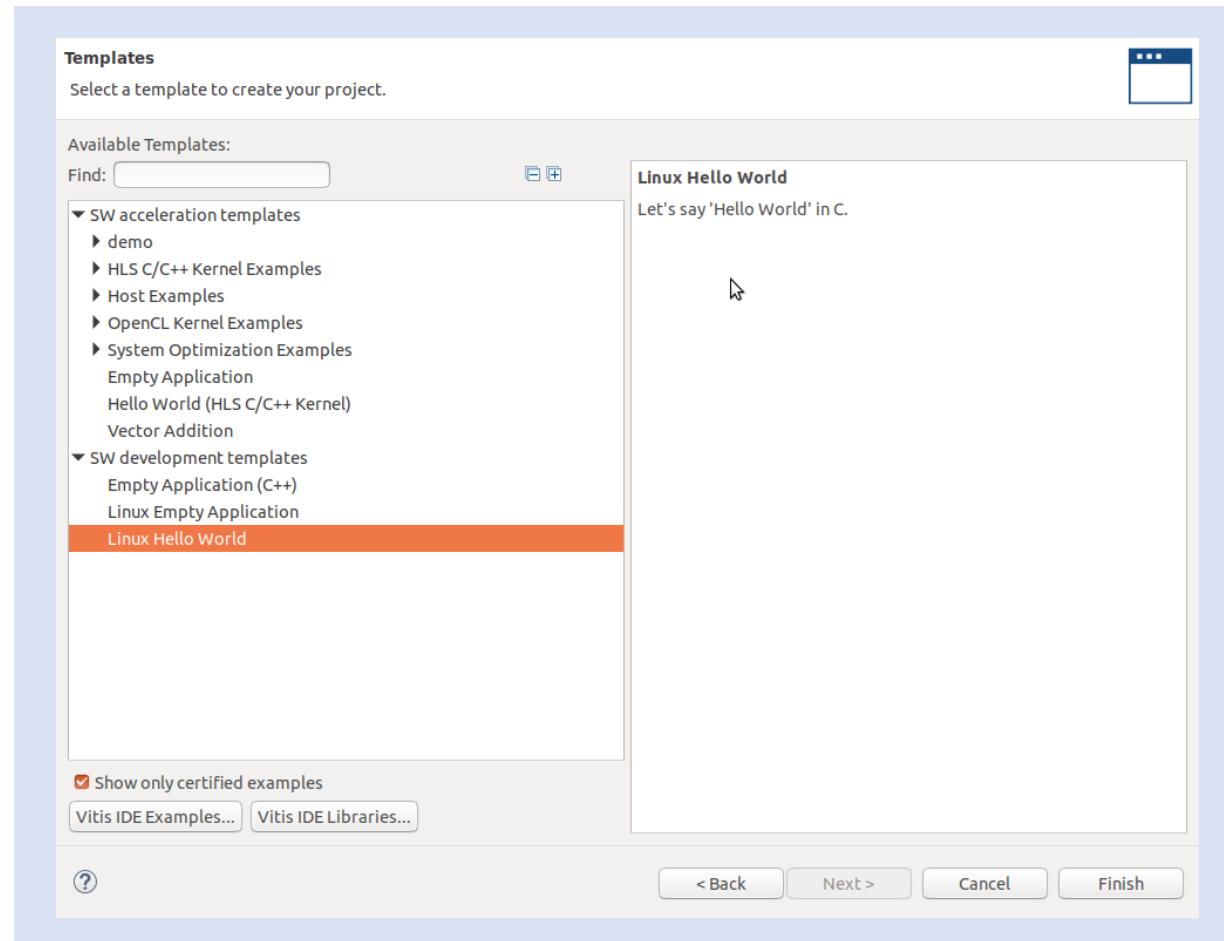
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Step 27 – Click Next on the Domain page



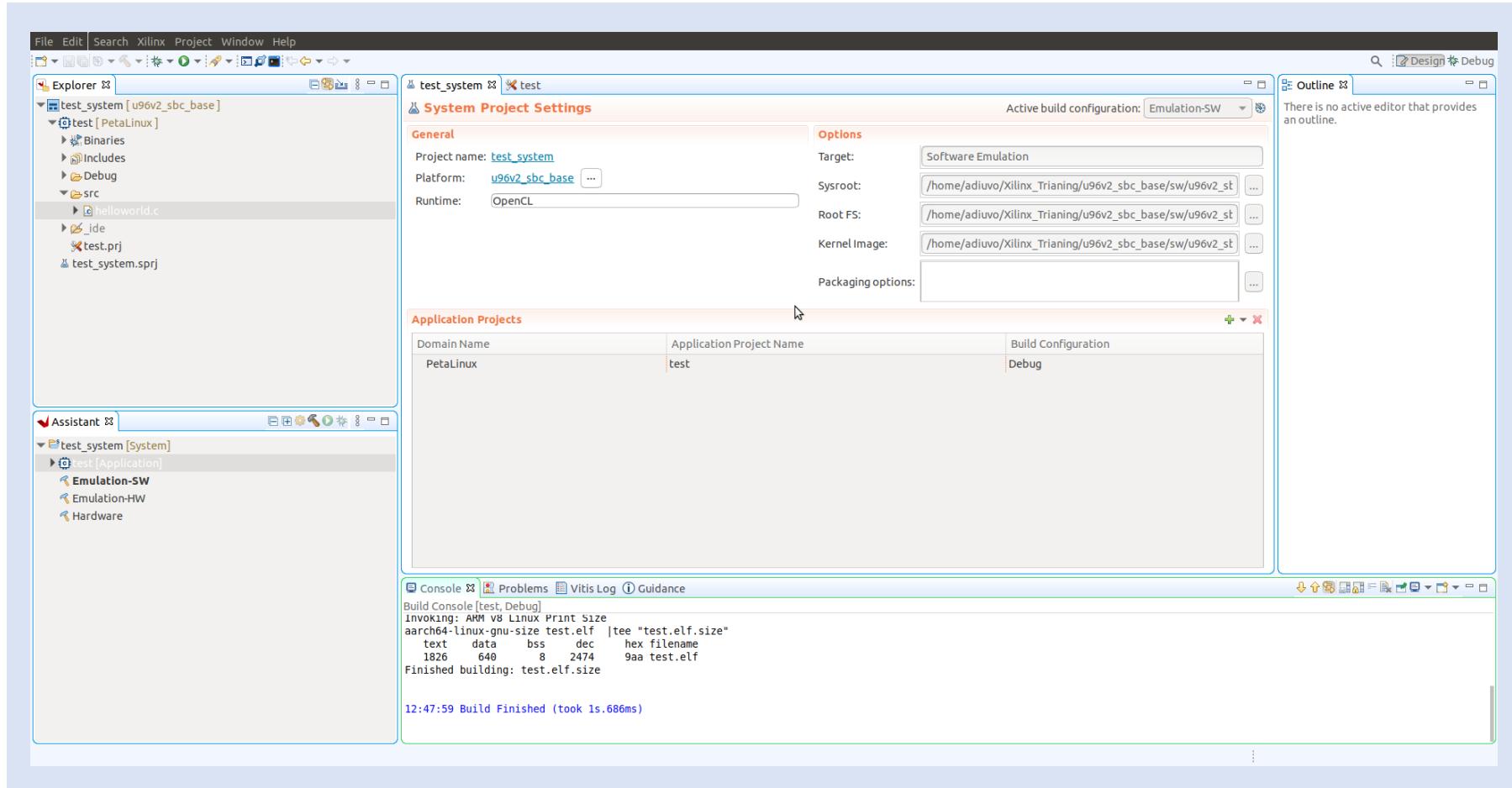
Lab 3: Creating Embedded Linux Solutions

Step 28 – Select the Linux Hello World application and click finish



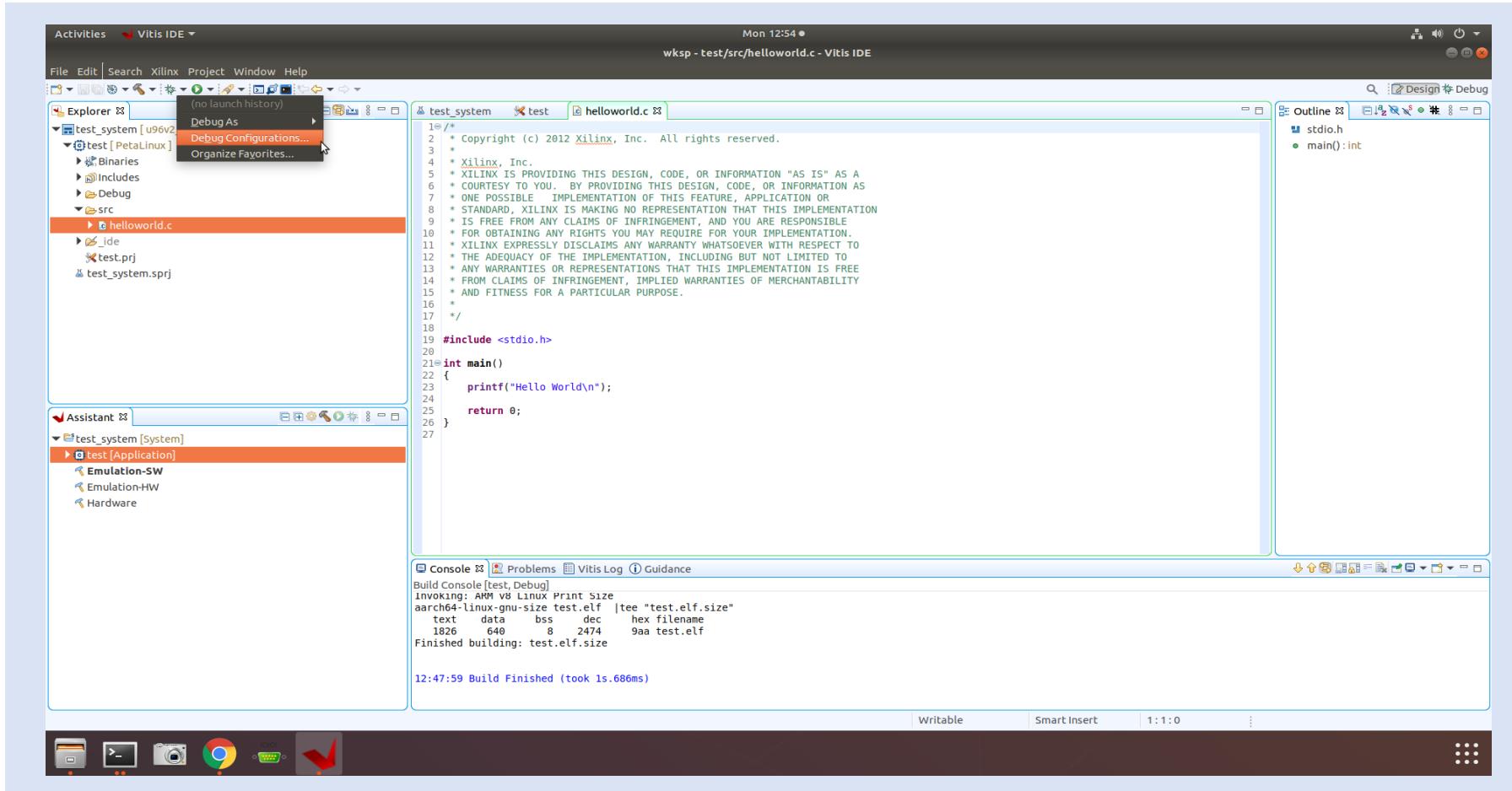
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Step 29 – Click on the Hammer to build the application



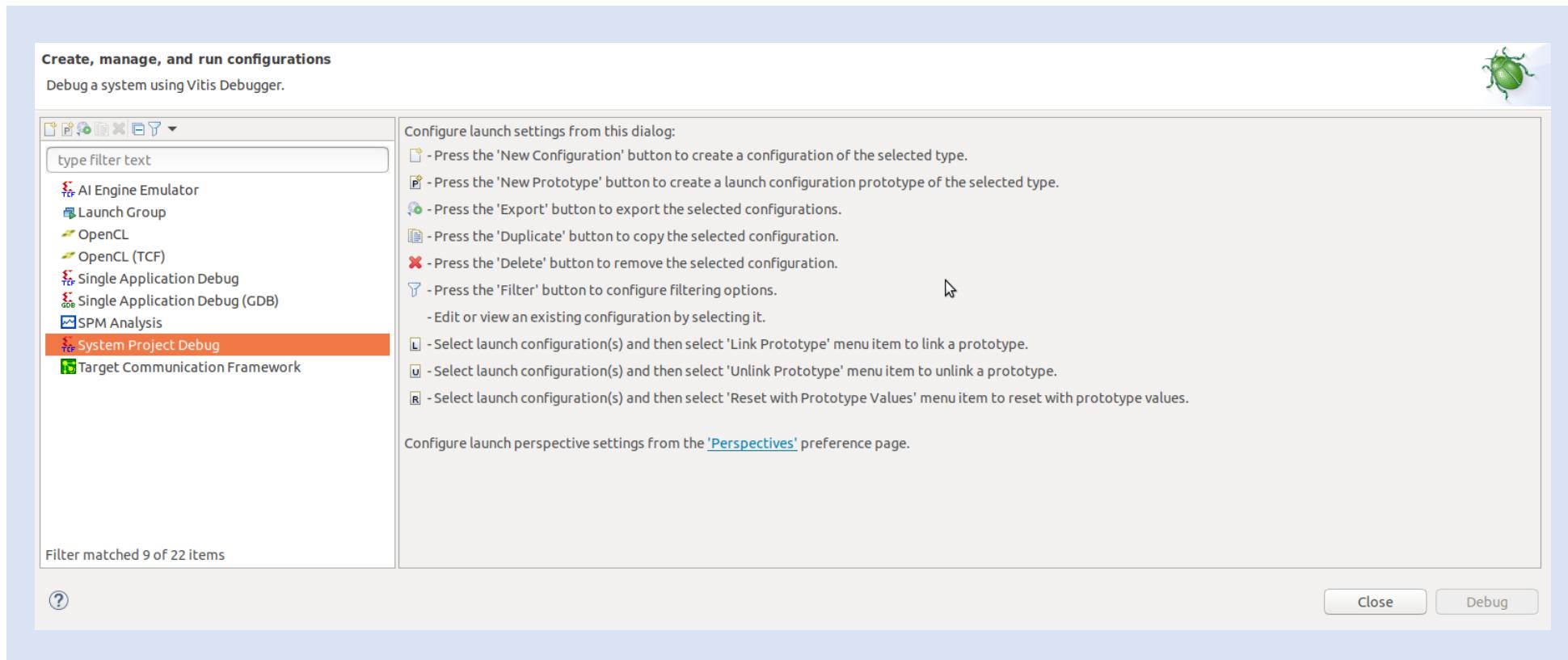
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Step 30 – Select the arrow by the green debug icon and select debug configuration



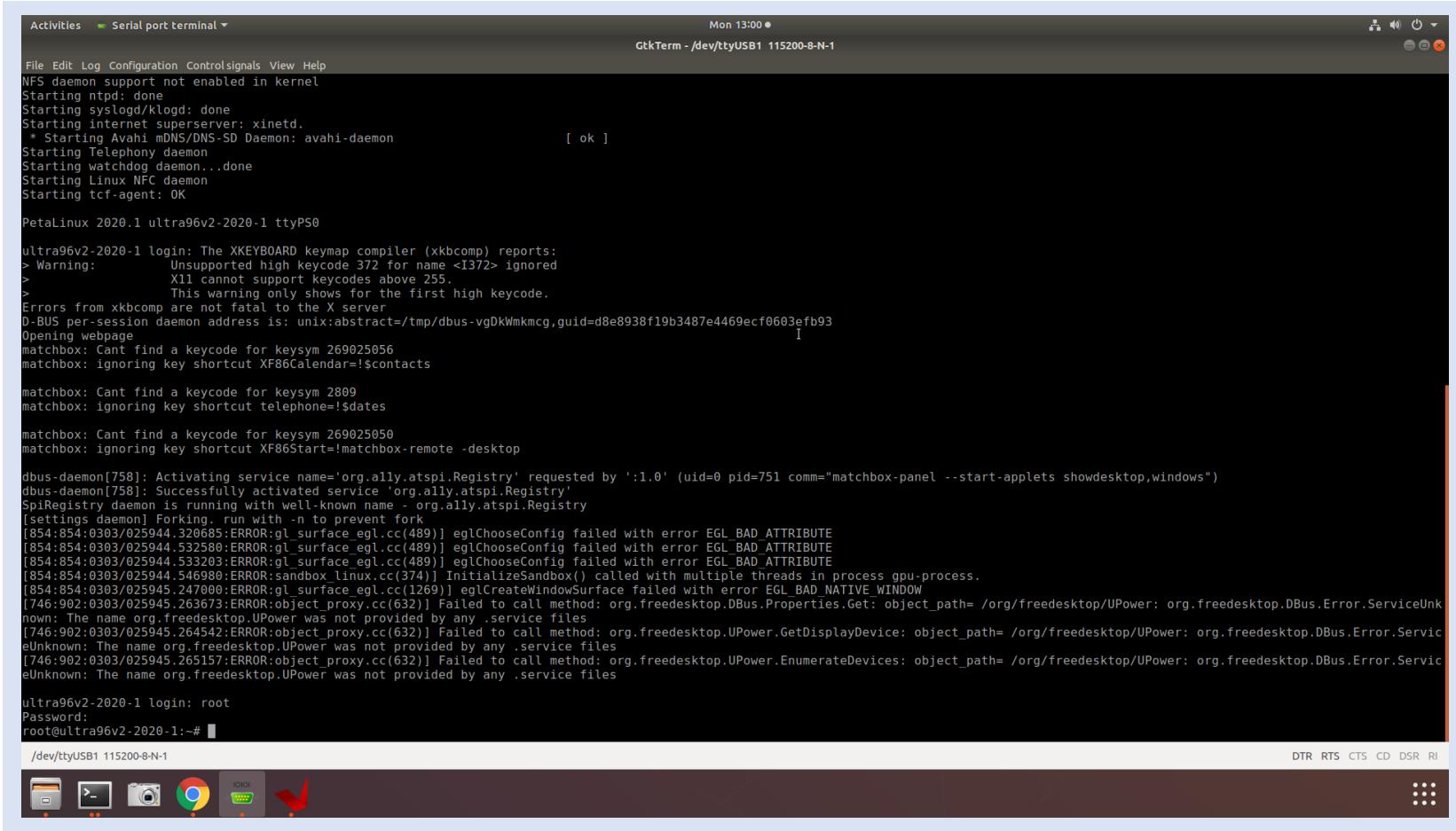
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Step 31 – Select System Project Debug and click new



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Step 32 – In the Terminal window (115200,1,N,8) log in password and username are root



The screenshot shows a terminal window titled "Serial port terminal" running on a PetaLinux 2020.1 system. The window displays a log of system boot-up, including the starting of various daemons like ntpd, klogd, and avahi-daemon. It also shows the configuration of a keyboard keymap compiler (xkbcomp) and the activation of a service for a matchbox panel. Finally, it shows a successful root login from the serial port.

```
Activities Serial port terminal Mon 13:00 • GtkTerm - /dev/ttyUSB1 115200-8-N-1
File Edit Log Configuration Controlsignals View Help
NFS daemon support not enabled in kernel
Starting ntpd: done
Starting syslogd/klogd: done
Starting internet superserver: xinetd.
 * Starting Avahi mDNS/DNS-SD Daemon: avahi-daemon [ ok ]
Starting Telephony daemon
Starting watchdog daemon...done
Starting Linux NFC daemon
Starting tcf-agent: OK

PetaLinux 2020.1 ultra96v2-2020-1 ttyPS0

ultra96v2-2020-1 login: The XKEYBOARD keymap compiler (xkbcomp) reports:
> Warning:      Unsupported high keycode 372 for name <I372> ignored
>           X11 cannot support keycodes above 255.
>           This warning only shows for the first high keycode.
Errors from xkbcomp are not fatal to the X server
D-BUS per-session daemon address is: unix:abstract=/tmp/dbus-vgDkWmkmcg,guid=d8e8938f19b3487e4469ecf0603efb93
Opening webpage
matchbox: Cant find a keycode for keysym 269025056
matchbox: ignoring key shortcut XF86Calendar=!$contacts

matchbox: Cant find a keycode for keysym 2809
matchbox: ignoring key shortcut telephone=!$dates

matchbox: Cant find a keycode for keysym 269025050
matchbox: ignoring key shortcut XF86Start=!matchbox-remote -desktop

dbus-daemon[758]: Activating service name='org.ally.atspi.Registry' requested by ':1.0' (uid=0 pid=751 comm="matchbox-panel --start-applets showdesktop,window")
dbus-daemon[758]: Successfully activated service 'org.ally.atspi.Registry'
SpiRegistry daemon is running with well-known name org.ally.atspi.Registry
[settings daemon] Forking. run with -n to prevent fork
[854:854:0303/025944.320685:ERROR:gl_surface_e gl.cc(489)] eglChooseConfig failed with error EGL_BAD_ATTRIBUTE
[854:854:0303/025944.532580:ERROR:gl_surface_e gl.cc(489)] eglChooseConfig failed with error EGL_BAD_ATTRIBUTE
[854:854:0303/025944.533203:ERROR:gl_surface_e gl.cc(489)] eglChooseConfig failed with error EGL_BAD_ATTRIBUTE
[854:854:0303/025944.546980:ERROR:sandbox_linux.cc(374)] InitializeSandbox() called with multiple threads in process gpu-process.
[854:854:0303/025945.247900:ERROR:gl_surface_e gl.cc(1269)] eglCreateWindowSurface failed with error EGL_BAD_NATIVE_WINDOW
[746:902:0303/025945.263673:ERROR:object_proxy.cc(632)] Failed to call method: org.freedesktop.UPower.Properties.Get: object_path= /org/freedesktop/UPower: org.freedesktop.DBus.Error.ServiceUnknown: The name org.freedesktop.UPower was not provided by any .service files
[746:902:0303/025945.264542:ERROR:object_proxy.cc(632)] Failed to call method: org.freedesktop.UPower.GetDisplayDevice: object_path= /org/freedesktop/UPower: org.freedesktop.DBus.Error.ServiceUnknown: The name org.freedesktop.UPower was not provided by any .service files
[746:902:0303/025945.265157:ERROR:object_proxy.cc(632)] Failed to call method: org.freedesktop.UPower.EnumerateDevices: object_path= /org/freedesktop/UPower: org.freedesktop.DBus.Error.ServiceUnknown: The name org.freedesktop.UPower was not provided by any .service files

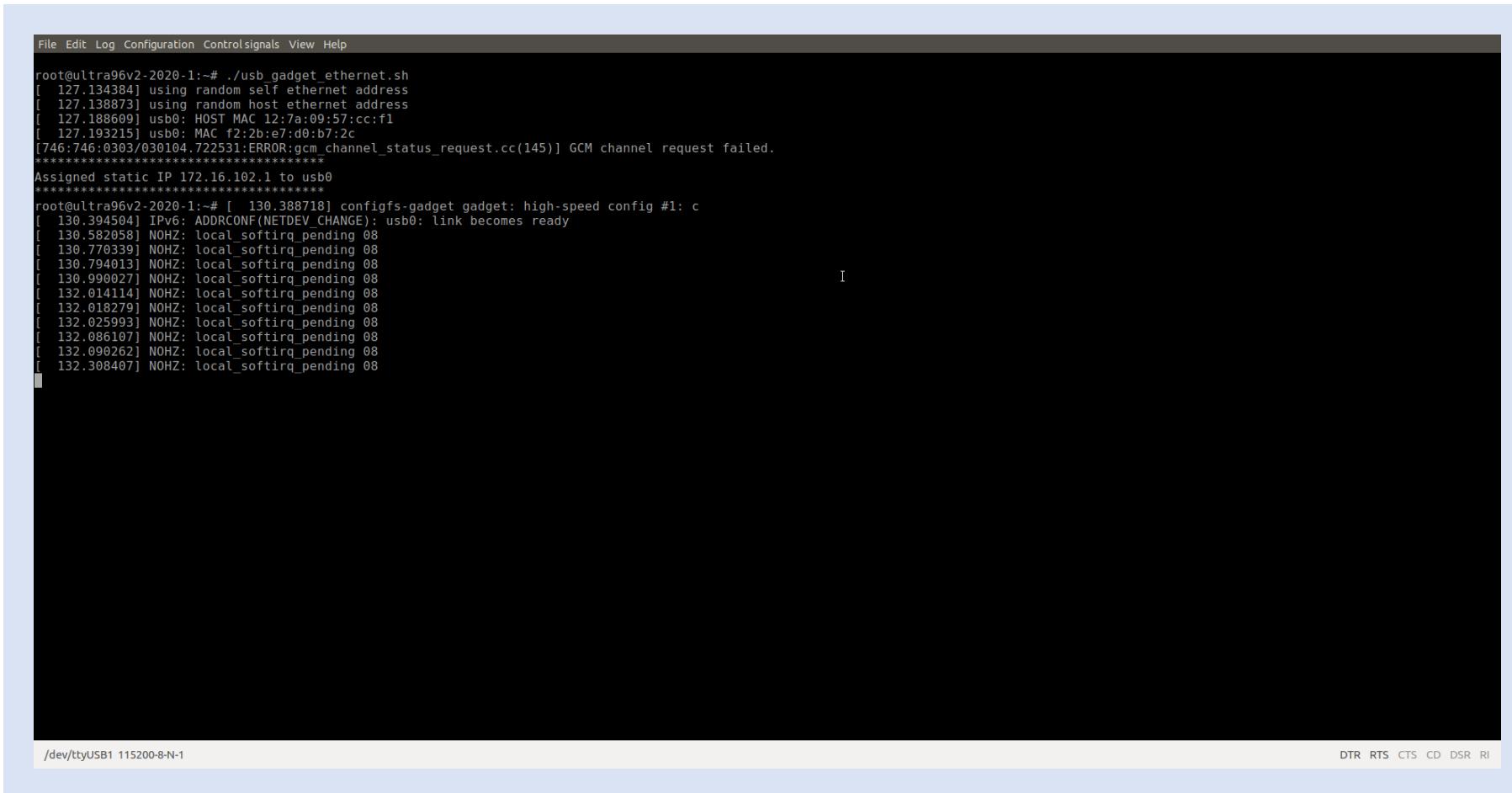
ultra96v2-2020-1 login: root
Password:
root@ultra96v2-2020-1:~#
```

DTR RTS CTS CD DSR RI
/dev/ttyUSB1 115200-8-N-1

The terminal window includes a toolbar at the bottom with icons for file operations (copy, paste, save, etc.) and a red power button icon.

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Step 33 – Enter the command `./usb_gadget_ethernet.sh` you may need to use VI to edit IP address to align with your network. By default, it is 192.168.3.1

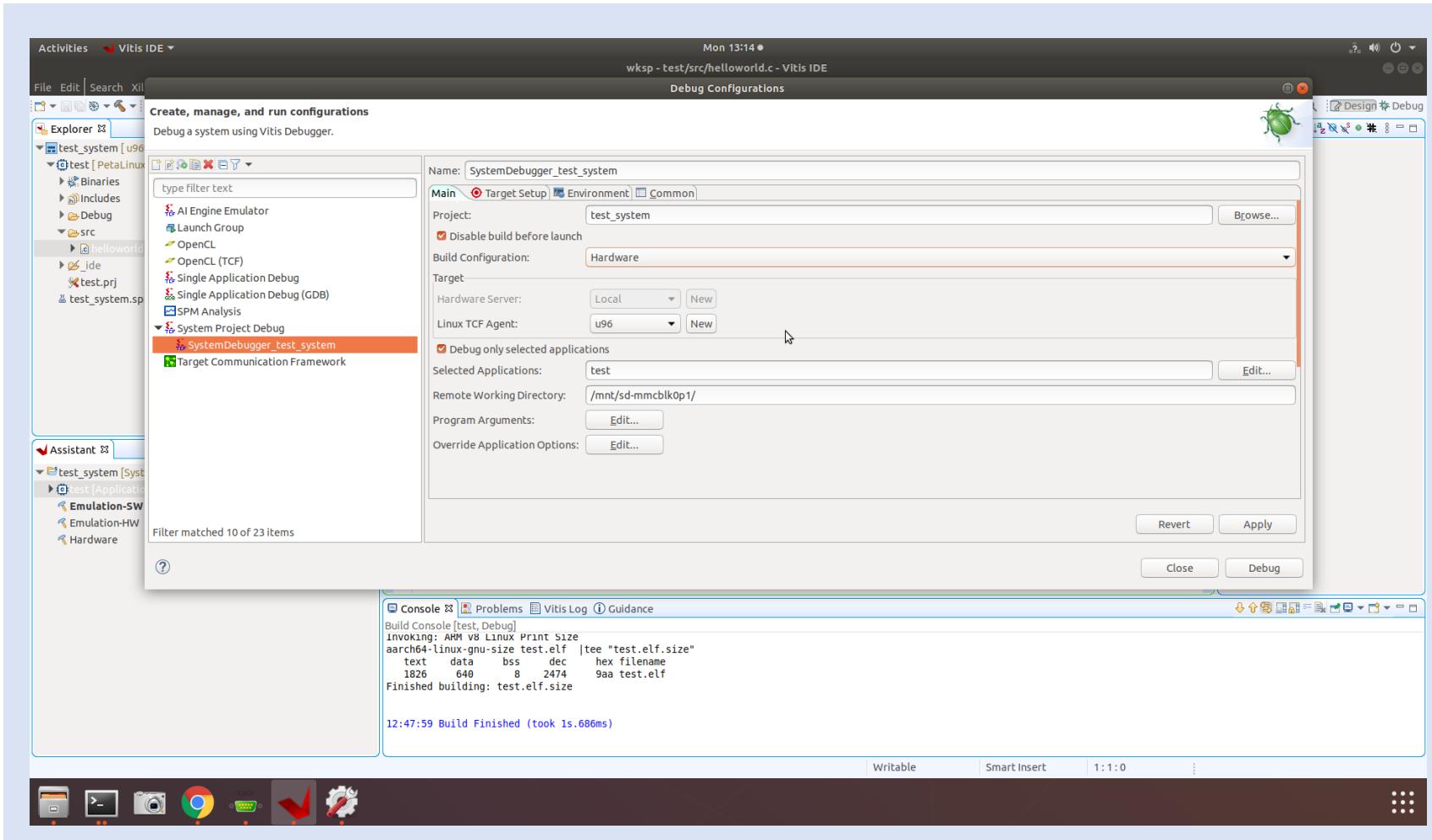


```
File Edit Log Configuration Controlsignals View Help
root@ultra96v2-2020-1:~# ./usb_gadget_ethernet.sh
[ 127.134384] using random self ethernet address
[ 127.138873] using random host ethernet address
[ 127.188609] usb0: HOST MAC 12:7a:09:57:cc:f1
[ 127.193215] usb0: MAC f2:2b:e7:d0:b7:2c
[746:746:0303/030104.722531:ERROR:gcm_channel_status_request.cc(145)] GCM channel request failed.
*****
Assigned static IP 172.16.102.1 to usb0
*****
root@ultra96v2-2020-1:~# [ 130.388718] configfs-gadget gadget: high-speed config #1: c
[ 130.394504] IPv6: ADDRCONF(NETDEV_CHANGE): usb0: link becomes ready
[ 130.582058] NOHZ: local_softirq_pending 08
[ 130.770339] NOHZ: local_softirq_pending 08
[ 130.794013] NOHZ: local_softirq_pending 08
[ 130.990027] NOHZ: local_softirq_pending 08
[ 132.014114] NOHZ: local_softirq_pending 08
[ 132.018279] NOHZ: local_softirq_pending 08
[ 132.025993] NOHZ: local_softirq_pending 08
[ 132.086107] NOHZ: local_softirq_pending 08
[ 132.090262] NOHZ: local_softirq_pending 08
[ 132.308407] NOHZ: local_softirq_pending 08
I

/dev/ttyUSB1 115200-8-N-1
DTR RTS CTS CD DSR RI
```

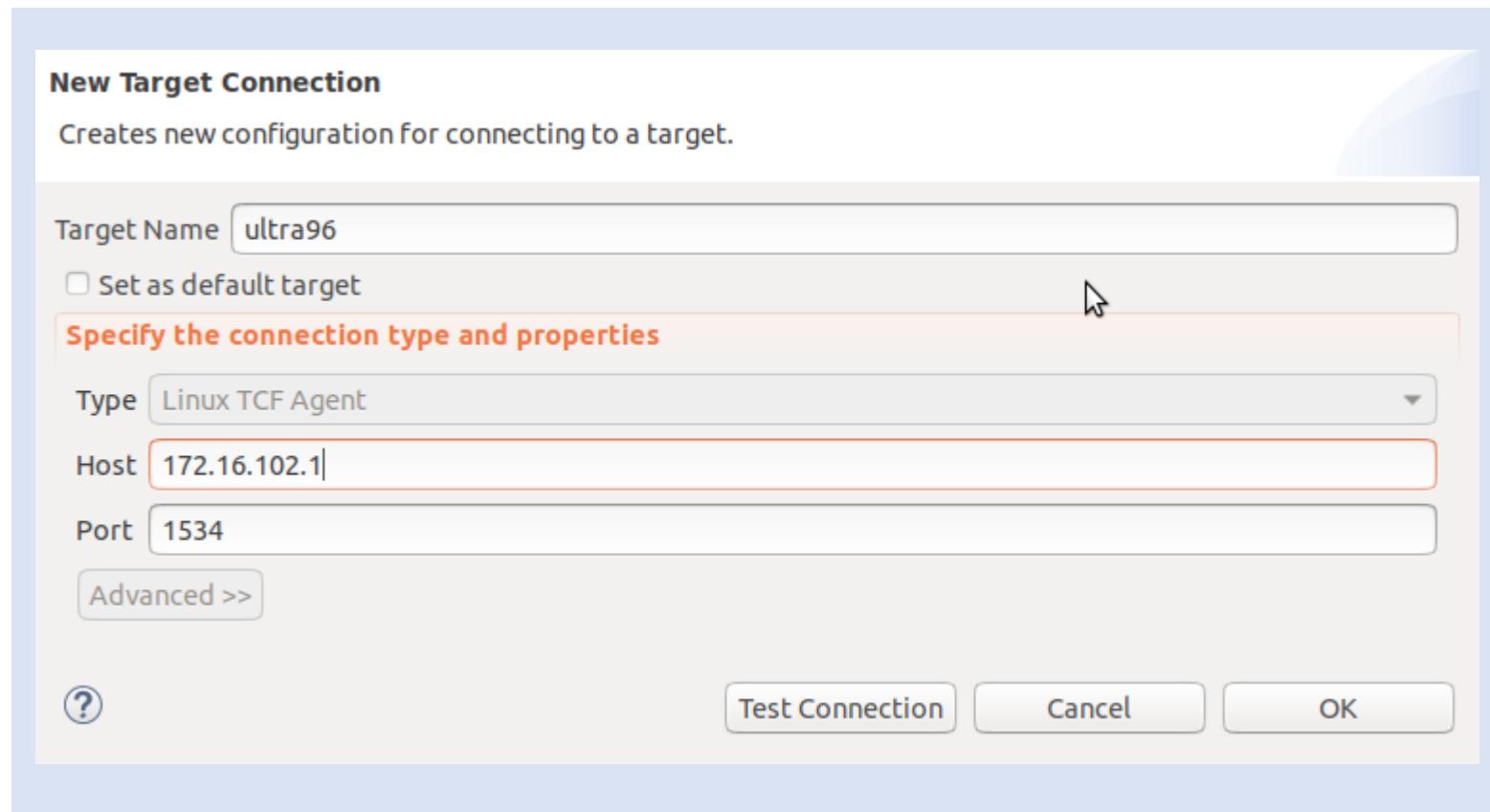
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Step 34 – Change the build configuration to Hardware and for Linux TCF Agent select new



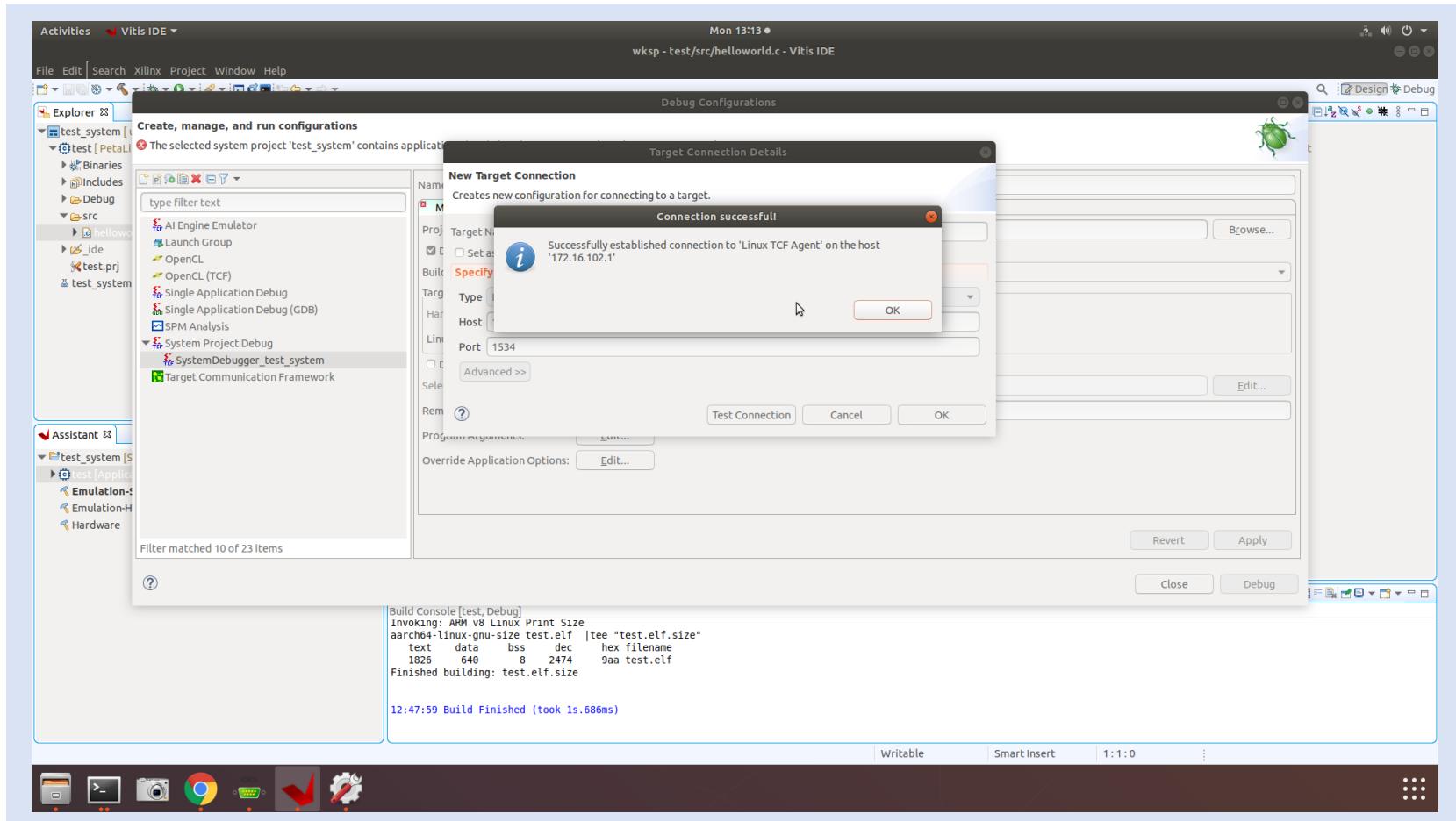
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Step 35 – Enter a name, and enter the USB Gadget Ethernet IP address – Click test connection to verify the board can be seen.



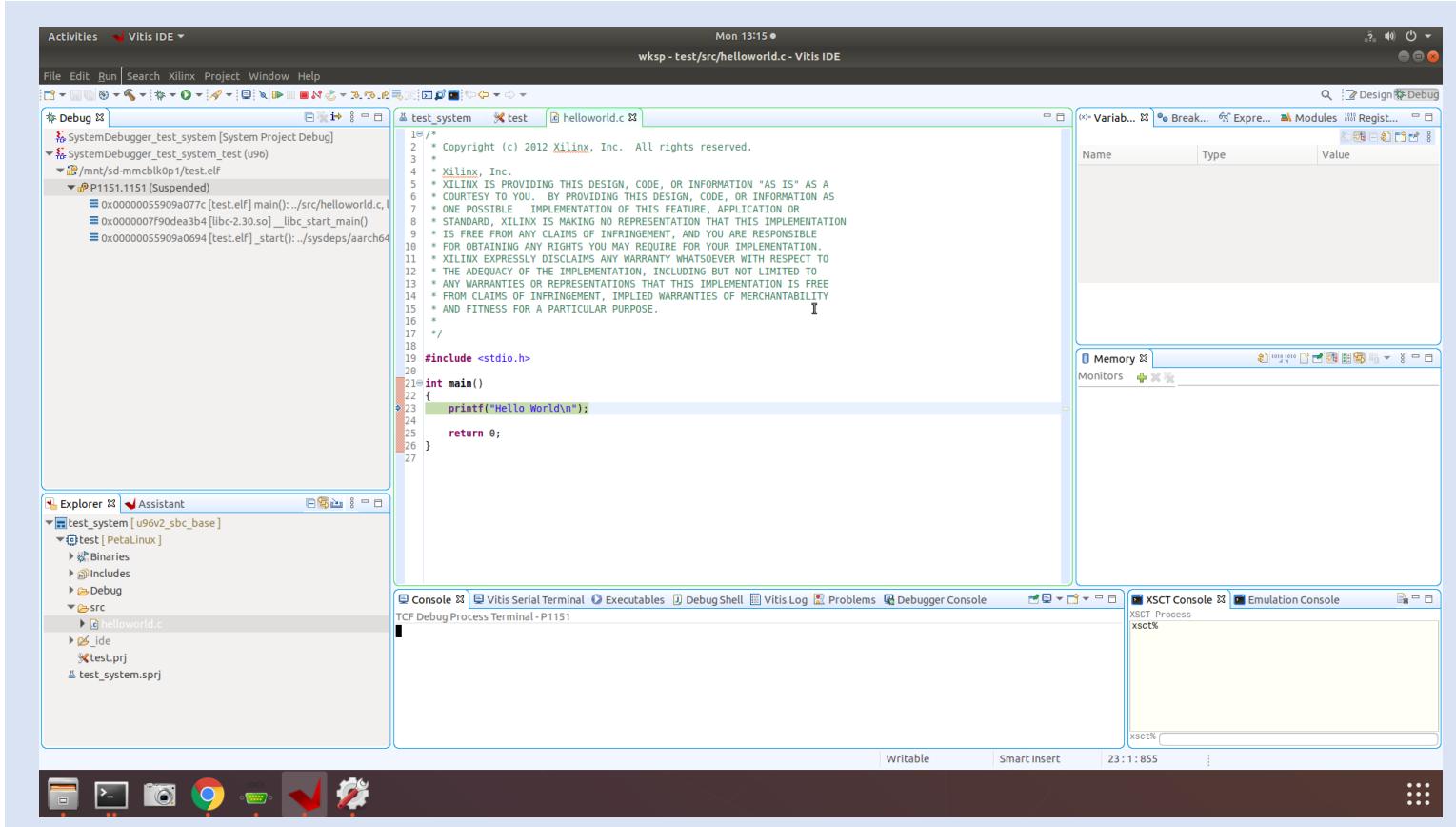
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Step 36 – Click OK when the connection is successful, click OK on the target connection and then click debug



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Step 37 – The application will be downloaded to the target and paused for execution, press the run button



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Step 38 – Click on the run button and you will see the hello world appear in the console.

