PetaLinux Installation Tutorial for Linux [Ubuntu or CentOS or RedHat]

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1. Download PetaLinux tools from link below

https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/embedded-design-tools.html

Download PetaLinux Installer of the required version, we are downloading and installing PetaLinux 2018.2 (TAR/GZIp -6.15 GB) file from above link. In our case [PetaLinux version 2018.2], this will download file called 'petalinux-v2018.2-final-installer.run'.

2. PetaLinux 2018.2 supports the following OS

- Red Hat Enterprise Workstation/Server 7.2, 7.3, 7.4 (64-bit)
- CentOS 7.2, 7.3, 7.4(64-bit)
- Ubuntu Linux 16.04.3 (64-bit)

Minimum Workstation Requirement for PetaLinux tools:

- 8 GB RAM(recommended minimum for Xilinx tools)
- 2 GHz CPU clock or equivalent(minimum of 8 cores)
- 100GB free HDD space

You can also install older versions according to your requirements and hardware support.
For in-depth installation requirements refer to Userguide-1144

3. Packages required

PetaLinux requires a number of standard development tools and libraries to be installed on your Linux host workstation. This libraries and tools have to be installed on your system:

```
dos2unix, ip, gawk, gcc, g++(gcc-c++), xvfb, git, make, netstat,
ncurses devel, tftp server, zlib devel(also, install 32-bit of this
version), openssl devel, flex, bison, libselinux, gnupg, wget,
diffstat, chrpath, socat, xterm, autoconf, libtool, tar, unzip,
texinfo, zlib1g-dev, gcc-multilib, build-essential, libsdl1.2-dev,
libglib2.0-dev, SDL-devel, glibc-devel, 32-bit glibc, glib2-devel,
automake, screen, pax, gzip, libstdc++
```

Note: For specific versions of these packages according to your Host system you can also refer to UserGuide-1144 Page Number 9.

For installing above packages, copy and paste following command on your terminal, it will work well:

```
sudo dpkg --add-architecture i386
```

after this,

```
sudo apt-install chrpath socat texinfo gcc-multilib
libsdl1.2-dev xinetd tofrodos iproute
gawk gcc git-core make net-tools ncurses-dev
libcurses5-dev zlib1g-dev flex bison lib32z1
lib32ncurses5 lib32stdc++6 libselinux1 xvfb autoconf
libtool libbz2-1.0 xinetd tftpd tftp
lib32stdc++6 libgtk2.0-0:i386 libfontconfig1:i386
libx11-6:i386 libxext6:i386 libxrender1:i386
libsm6:i386 libssl-dev libqtgui4:i386
```

Note: while running above commend if you dont get installed all packages, then you can do install every command individually as

`sudo apt-install chrpath` ***or*** `sudo apt-install socat` ***or*** `sudo apt-install texinfo` ***etc.***

If you get any confusion on installing packages of PetaLinux then you can follow this link: [Petalinux Installation on Ubuntu 16.04/18.04]
You can check if these packages are installed in your system and install the missing ones before you run PetaLinux installer or PetaLinux will show you the missing packages during installation which you have install before proceeding the installation.

4. Configure TFTP

For a successful installation, we need to configure tftp:

```
$ sudo nano /etc/xinetd.d/tftp
```

```
service tftp
    {
    protocol = udp
    port = 69
    socket_type = dgram
    wait = yes
    user = nobody
    server = /usr/sbin/in.tftpd
    server_args = /tftpboot
    disable = no
    }
```

Create a directory `/tftpboot`(this should match whatever you gave in server_args.)

```
$sudo mkdir /tftpboot
$sudo chmod -R 777 /tftpboot
$sudo chown -R nobody /tftpboot
```

Restart tftp service

```
$sudo /etc/init.d/xinetd stop
$sudo /etc/init.d/xinetd start
```

Change `/bin/sh` to bash

```
$sudo dpkg-reconfigure dash
# --> Select Yes
```

5. Run PetaLinux Tools installer for Ubuntu or CentOS

- After you have downloaded the file 'petalinux-v2018.2-final-installer.run' you can execute command
- Without any options, the PetaLinux Tools are installed into the current working directory. Alternatively, an installation path may be specified.
  For example: To install PetaLinux Tools under /opt/pkg/petalinux:

```
$ mkdir -p /opt/pkg/petalinux

$ chmod 755 /opt/pkg/petalinux

$ ./petalinux-v2018.2-final-installer.run /opt/pkg/petalinux
```

This installs the PetaLinux Tools into /opt/pkg/petalinux directory.

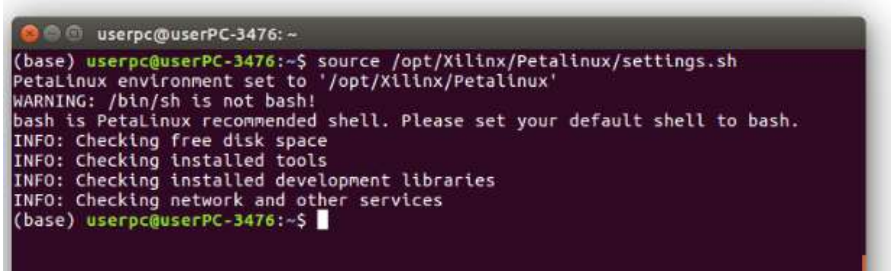
Press '**ENTER**' to see the licenses, **q** to quit reading the licenses, and **y + ENTER** to accept the licenses. The installation should last for about 15-30 mins.
Every time you want to use PetaLinux tools, remember to source the "settings" script to have the right environment variables:

```
$source $HOME/.opt/petalinux/settings.sh
```

If this don't work then for opening PetaLinux, use following command

```
$ source $HOME/.opt/petalinux/settings.sh
```

Now you can see this type of window on terminal [taken from Ubuntu]



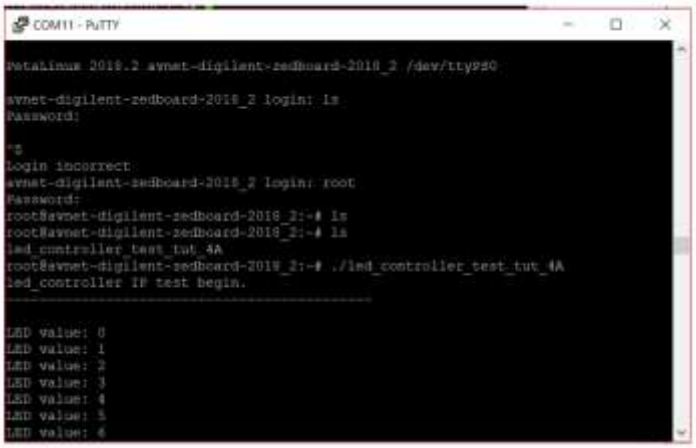
So, this is all what you need to do for installing Petalinux on Your Linux System!!!

6. **Now you can proceed with PetaLinux Development Project: For creating projects on PetaLinux please visit:**

   https://logictronix.com/our-resources/petalinux-development/

   or here is step-by-step tutorial for

   Petalinux Led Controller Tutorial with ZedBoard FPGA



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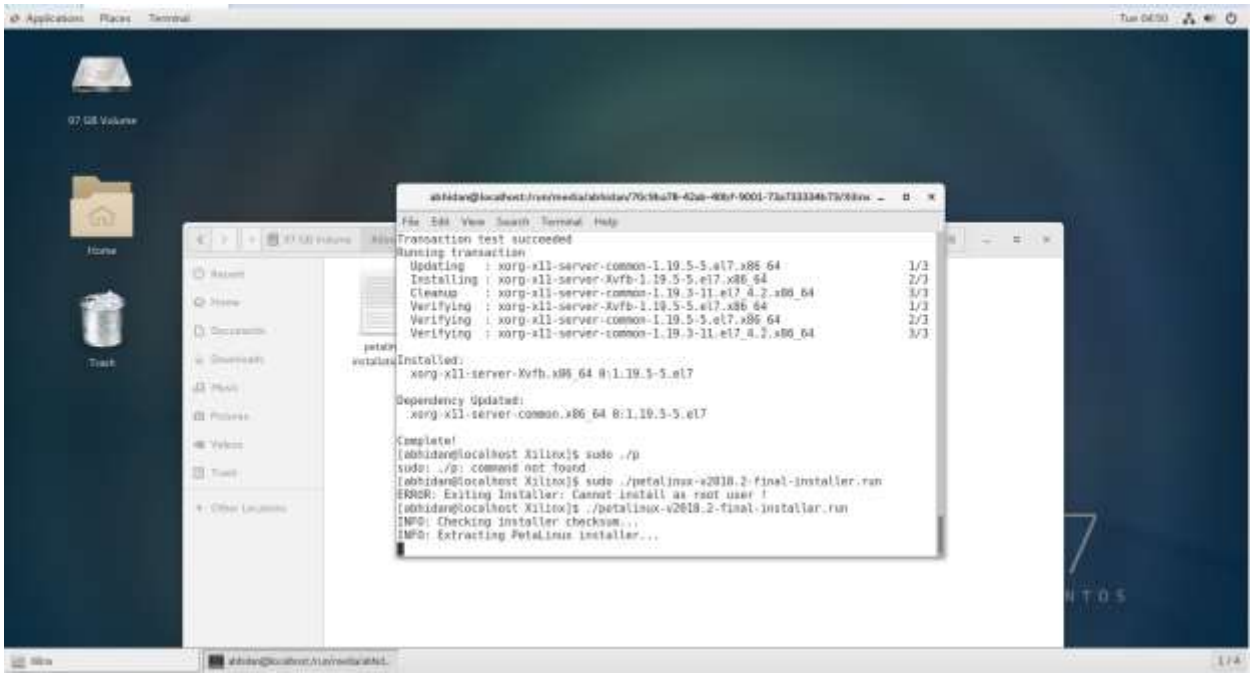
Thank You for following this Tutorial!

For any queries, please write to us at: info@logictronix.com

References:

1.Installing Petalinux 2017.2 on Ubuntu 2016.04: https://blog.mphomphego.co.za/blog/2017/11/03/xilinx-petalinux-2017-2-installation-on-ubuntu-16-04-3.html
2. Install Petalinux 2018.2 on Ubuntu 2016.04 https://www.knitronics.com/knitronicsblog/installing-vivado-w-sdk-20182-on-ubuntu-1604-lts and https://www.knitronics.com/knitronicsblog/installing-petalinux-20182-on-ubuntu-1604-lts

7. Run PetaLinux Tools installer for CentOS: Example Demo



- Now the installation will start. During installation you have to agree to PetaLinux End User License Agreement (EULA). This is mandatory and integral part of the PetaLinux Tools installation process. During the installation you will see option to see license agreements and you should press ENTER to display the license agreements.

```
abhidan@localhost:/run/media/abhidan/70c9ba78-42ab-40bf-9001-73a733334b73/Xilinx
File  Edit  View  Search  Terminal  Help

Dependency Updated:
  xorg-x11-server-common.x86_64 0:1.19.5-5.el7

Complete!
[abhidan@localhost Xilinx]$ sudo ./p
sudo: ./p: command not found
[abhidan@localhost Xilinx]$ sudo ./petalinux-v2018.2-final-installer.run
ERROR: Exiting Installer: Cannot install as root user !
[abhidan@localhost Xilinx]$ ./petalinux-v2018.2-final-installer.run
INFO: Checking installer checksum...
INFO: Extracting PetaLinux installer...

LICENSE AGREEMENTS

PetaLinux SDK contains software from a number of sources.  Please review
the following licenses and indicate your acceptance of each to continue.

You do not have to accept the licenses, however if you do not then you may
not use PetaLinux SDK.

Use PgUp/PgDn to navigate the license viewer, and press 'q' to close

Press Enter to display the license agreements
```

- After viewing the license agreement press 'q' to close and you will have option to accept Xilinx End User License Agreement. You have to say yes to proceed further in the installation. Press 'y' and enter to agree.

```
abhidan@localhost:/run/media/abhidan/70c9ba78-42ab-40bf-9001-73a733334b73/Xilinx
File  Edit  View  Search  Terminal  Help
Dependency Updated:
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[abhidan@localhost Xilinx]$ sudo ./p
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Use PgUp/PgDn to navigate the license viewer, and press 'q' to close

Press Enter to display the license agreements
Do you accept Xilinx End User License Agreement? [y/N] >
```

- There are three license agreements
  - Xilinx End User License Agreement
  - Webtalk Terms and Conditions
  - Third Party End User License Agreements

  For further information on these License refer to UserGuide-1144.
- After agreeing to all the license agreements the installation will proceed. You will see a warning "You haven't specified the installation location" if you have not specified the installation directory and you have to press 'y' and enter to proceed the installation further. In this case the PetaLinux will be installed in you current working directory.

```
abhidan@localhost:/run/media/abhidan/70c9ba78-42ab-40bf-9001-73a733334b73/Xilinx
File  Edit  View  Search  Terminal  Help
not use PetaLinux SDK.

Use PgUp/PgDn to navigate the license viewer, and press 'q' to close

Press Enter to display the license agreements
Do you accept Xilinx End User License Agreement? [y/N] > y
Do you accept Webtalk Terms and Conditions? [y/N] > y
Do you accept Third Party End User License Agreement? [y/N] > y
INFO: Checking installation environment requirements...
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 "PetaLinux SDK Installation Guid
e" for its impact and solution
INFO: Installing PetaLinux...
**********************************************
WARNING: You haven't specified the installation location.
**********************************************
**********************************************
WARNING: By default, it will be installed in your working directory: /run/media/
abhidan/70c9ba78-42ab-40bf-9001-73a733334b73/Xilinx
**********************************************
Please input "y" to proceed the installation, "n" to exit otherwise:
```

- Now you wait for the installation to complete. This will take around 30 minutes depending on your system performance.After installation you there are few steps to make bash shell recognize petalinux commands.
- Goto installed directory, there you will find 'settings.sh' file. Open a terminal in that directory by right clicking and choosing option open in terminal. Run the following command

  ```
  $ chmod +x  ./settings.sh
  ```

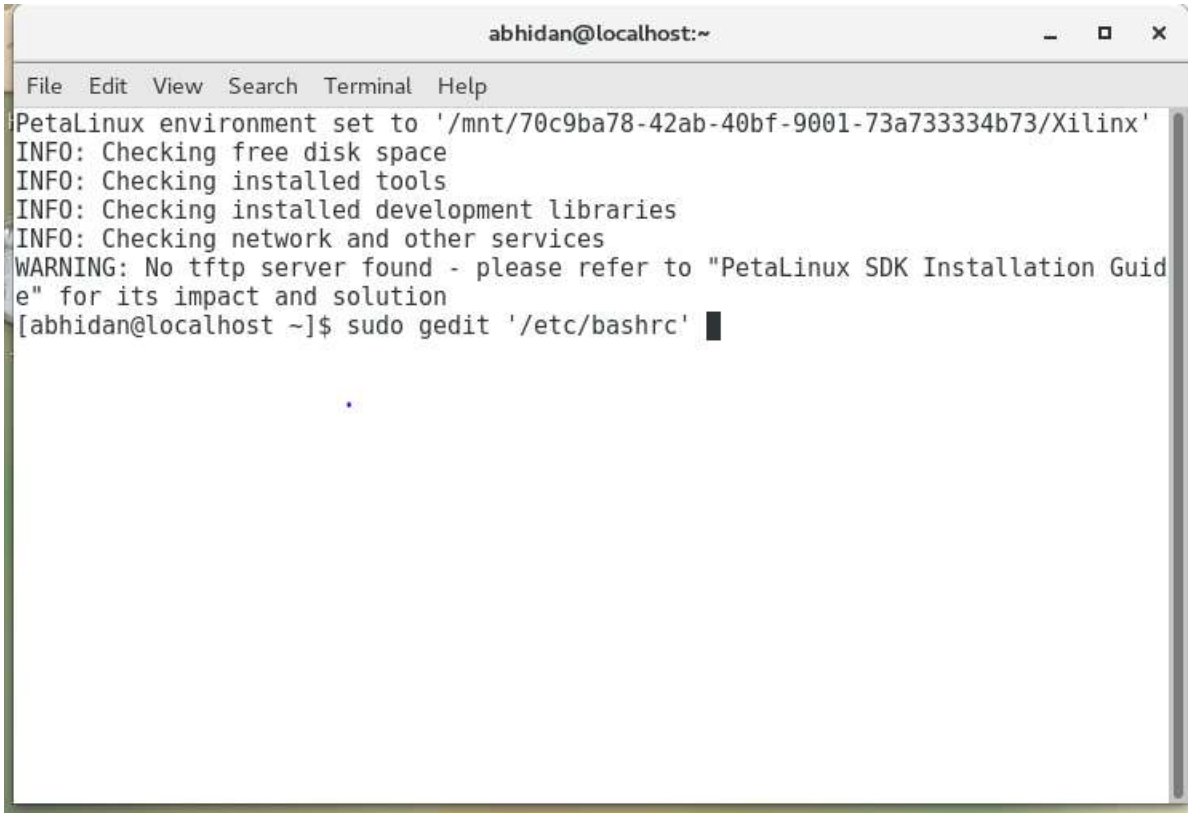
  Now run the following command

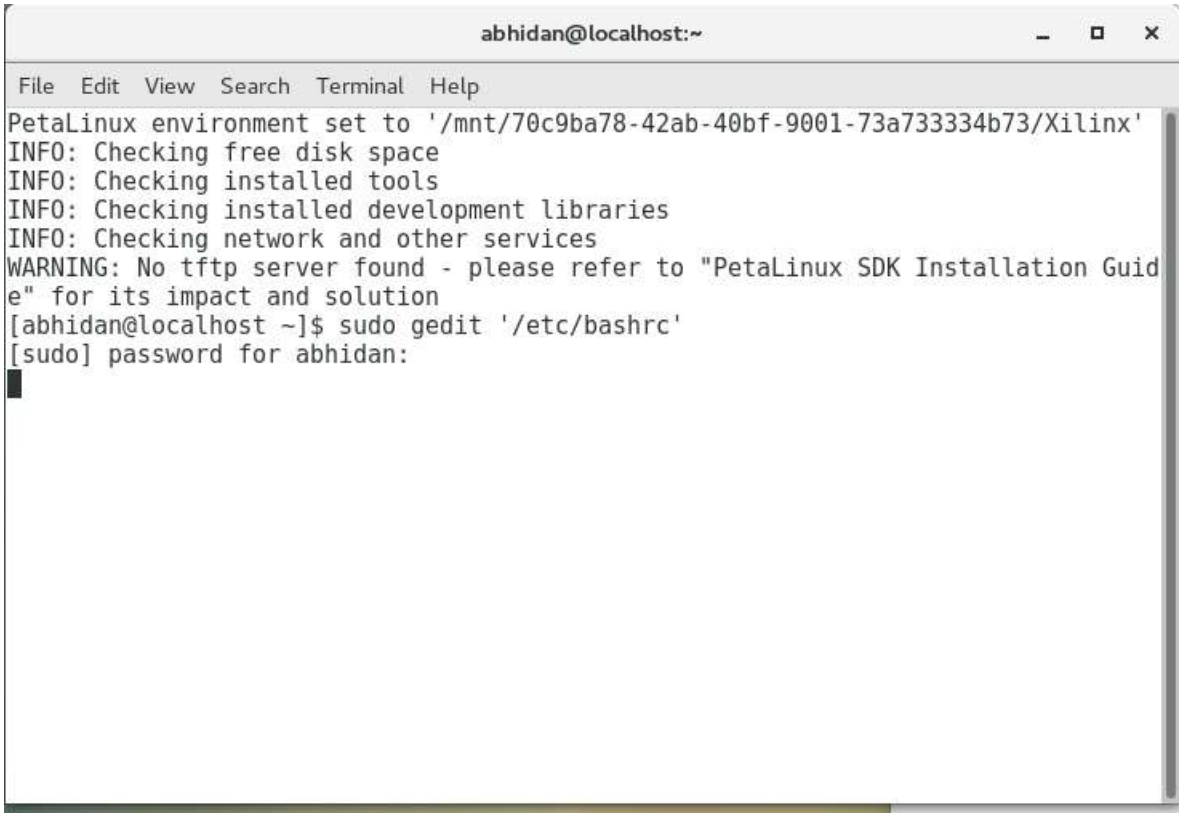
  ```
  $ sudo gedit /etc/bashrc
  ```

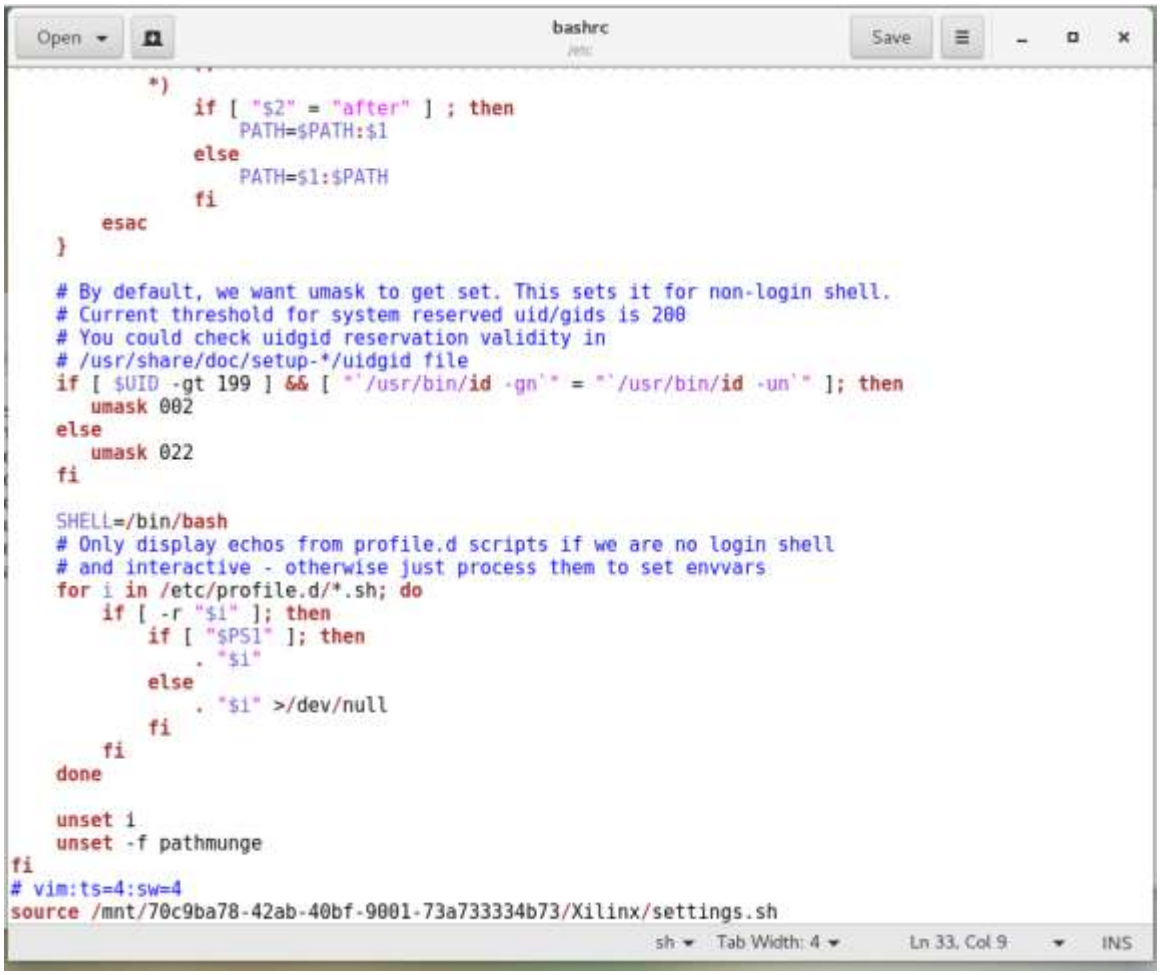
  You will get prompt to enter you password. Enter the password and a editor will open. Enter the following line at end of the file

  ```
  source <petalinux-installed-directory>/settings.sh
  ```

  And save the file.


abhidan@localhost:~
File Edit View Search Terminal Help
PetaLinux environment set to '/mnt/70c9ba78-42ab-40bf-9001-73a733334b73/Xilinx'
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 "PetaLinux SDK Installation Guide" for its impact and solution
[abhidan@localhost ~]$ sudo gedit '/etc/bashrc'


abhidan@localhost:~
File Edit View Search Terminal Help
PetaLinux environment set to '/mnt/70c9ba78-42ab-40bf-9001-73a733334b73/Xilinx'
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 "PetaLinux SDK Installation Guide" for its impact and solution
[abhidan@localhost ~]$ sudo gedit '/etc/bashrc'
[sudo] password for abhidan:



- Verify that the working environment has been set by following command
  `$echo $PETALINUX`
  If you get a reply
  ```
  PetaLinux environment set to '<petalinux-installed-directory>'
  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 see "PetaLinux SDK
  Installation Guide" for its impact and solution
  ```
  the system is ready.
- Now you can start working on PetaLinux.

Thank You!

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Reference:

i. LogicTronix Petalinux Tutorial Series: https://logictronix.com/our-resources/petalinux-development/