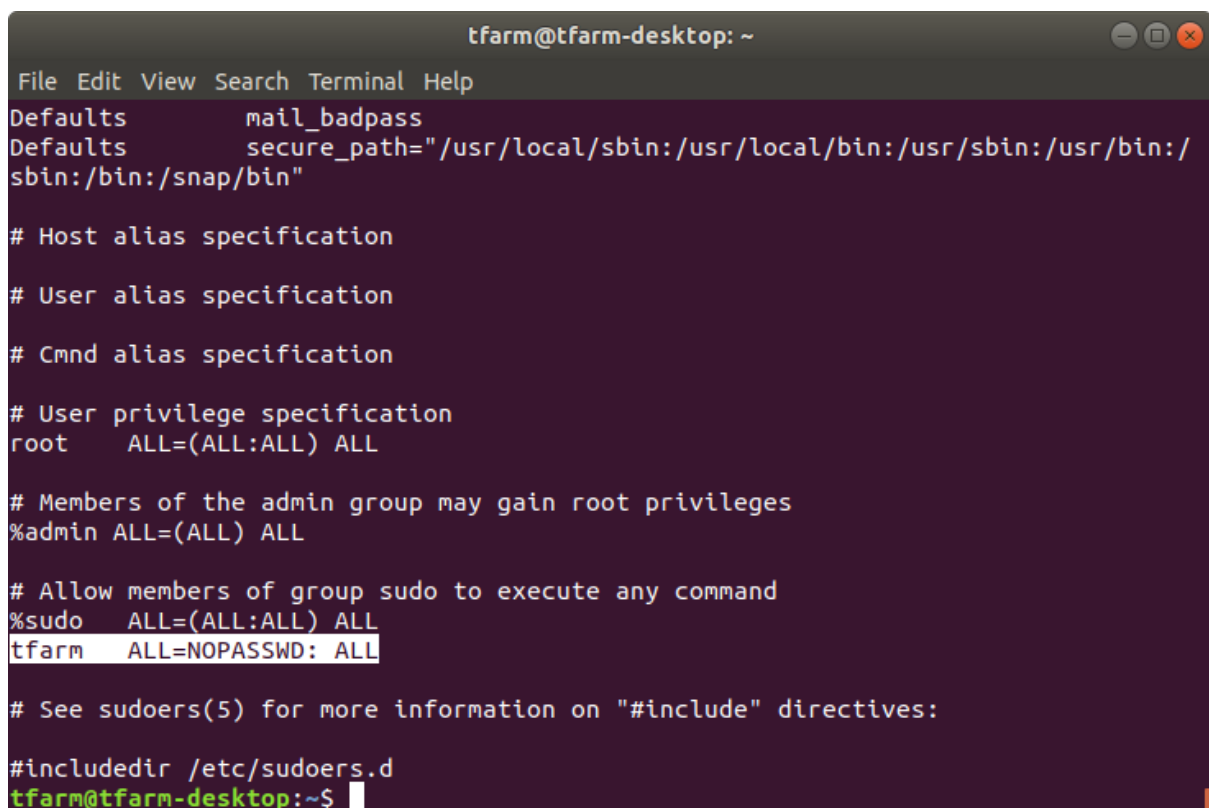


TCM-FM2L Manual

1. Download and install Ubuntu 18.04 desktop version.
2. For the example, the ID is 'tfarm' and Password is '12345'.
3. Select this option to install automatically.
4. After executing 'sudo nano /etc/sudoers', add the following comment: 'tfarm ALL=NOPASSWD: ALL' in 'suders' file.



The screenshot shows a terminal window titled 'tfarm@tfarm-desktop: ~'. The terminal displays the contents of the /etc/sudoers file, which is being edited with the nano text editor. The file content includes default settings for mail_badpass, secure_path, and various alias specifications. A new line has been added at the bottom: 'tfarm ALL=NOPASSWD: ALL', which is currently highlighted in white. The terminal prompt at the bottom is 'tfarm@tfarm-desktop:~\$'.

```
tfarm@tfarm-desktop: ~
File Edit View Search Terminal Help
Defaults          mail_badpass
Defaults          secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/
sbin:/bin:/snap/bin"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL

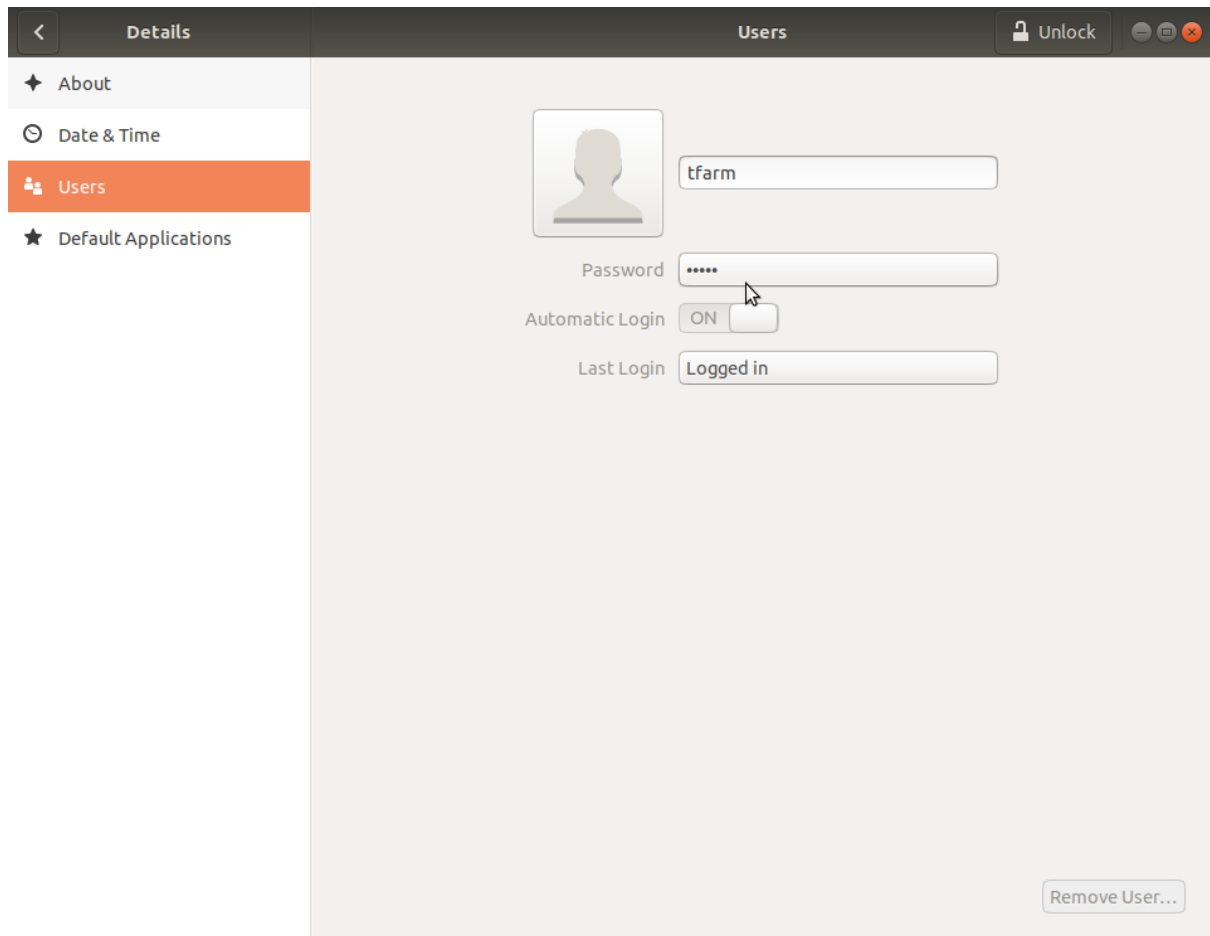
# Members of the admin group may gain root privileges
%admin  ALL=(ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL
tfarm   ALL=NOPASSWD: ALL

# See sudoers(5) for more information on "#include" directives:

#includedir /etc/sudoers.d
tfarm@tfarm-desktop:~$
```

5. If you can't log in automatically, do the following.
 - (1) After pressing 'WINDOW KEY', input 'SETTINGS' on 'SEARCH' bar. Click 'SETTINGS' application icon.



(2) After clicking DETAILS menu, click "Users" and then click the 'USERS UNLOCK' menu on the upper right corner.

(3) set up 'ON' of 'Automatic Login'

6. Unzip the provided minor program..

(1) unzip dckec.zip

```
tfarm@tfarm-desktop: ~  
File Edit View Search Terminal Help  
14104 2018-10-07 06:10 2dckeczp/ccminer-zp/dumpregs  
62 2018-10-06 05:39 2dckeczp/ccminer-zp/restore_pci.sh  
7 2018-10-10 16:37 2dckeczp/ccminer-zp/cores.txt  
62 2018-11-09 14:05 2dckeczp/ccminer-zp/save_pci.sh  
4096 2018-11-02 12:07 2dckeczp/ccminer-zp/device_config.1  
4096 2018-11-02 12:07 2dckeczp/ccminer-zp/device_config.4  
352 2018-11-02 12:08 2dckeczp/ccminer-zp/activator.sh  
4096 2018-11-02 12:07 2dckeczp/ccminer-zp/device_config.6  
1473 2018-12-04 10:52 2dckeczp/ccminer-zp/zenprotocol-tftest.sh  
-----  
31921198 47 files  
tfarm@tfarm-desktop:~$ ls  
1dckecsmc GNUstep vivado_lab_1548.backup.log  
2dckeczp Music vivado_lab_1795.backup.jou  
DC-Keccak.zip Pictures vivado_lab_1795.backup.log  
dckec.zip Public vivado_lab_1995.backup.jou  
Desktop Templates vivado_lab_1995.backup.log  
Digital-Crunch-Kec t.sh vivado_lab_2496.backup.jou  
DigitalCrunch-ZP Videos vivado_lab_2496.backup.log  
DigitalCrunch-ZP.zip vivado vivado_lab.jou  
Documents vivado_lab_1532.backup.jou vivado_lab.log  
Downloads vivado_lab_1532.backup.log vivado_lab_pid1532.str  
examples.desktop vivado_lab_1548.backup.jou vivado_lab_pid2496.str  
tfarm@tfarm-desktop:~$ unzip dckec.zip
```

(2) You can mine Smart Cash, Max Coin and Creative Coin in the '1dckecsmc' directory.

(3) You can mine Zen Protocol in the '2dckeczp' directory

7. How to check if the server is normally connected with the boards

(1) cd 1dckecsmc/ccminer

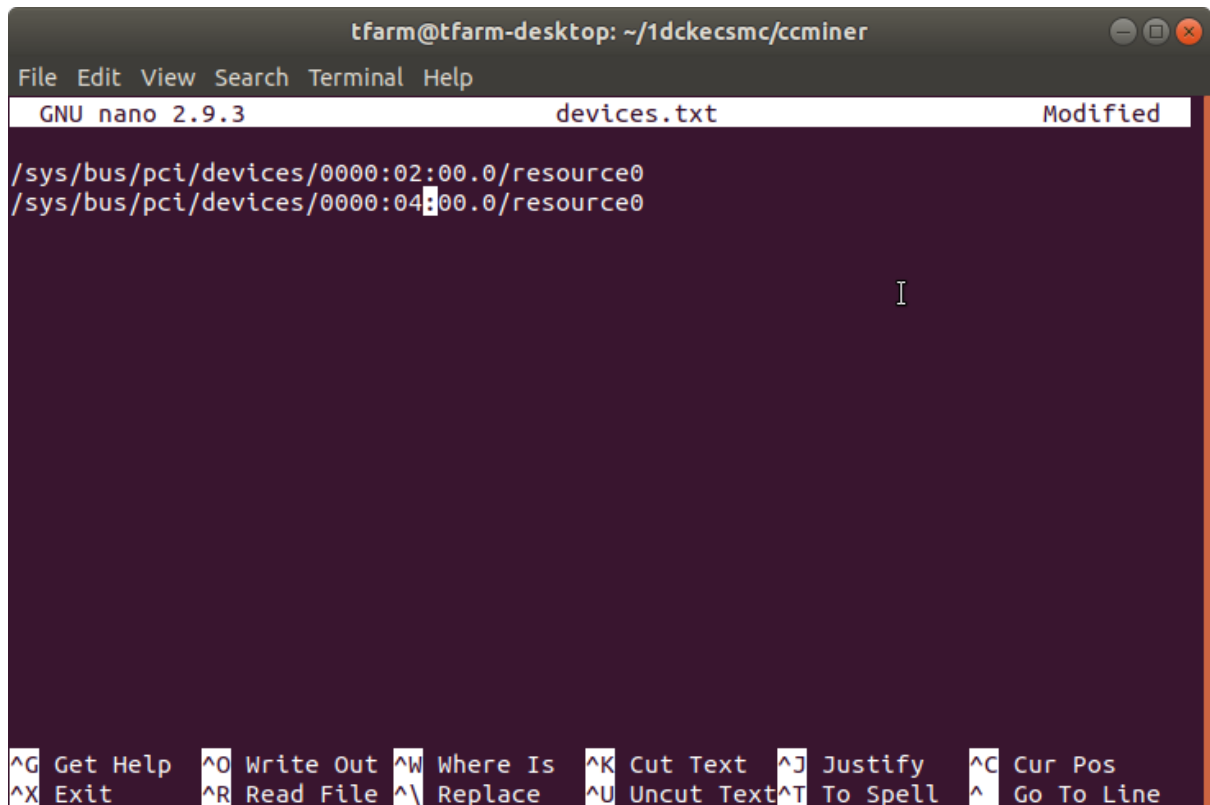
```
tfarm@tfarm-desktop: ~/1dckeasmc/ccminer
File Edit View Search Terminal Help
tfarm@tfarm-desktop:~/1dckeasmc/ccminer$ ls
activator          device_config.6    libcuda.so.1       smartcash.sh
activator.sh       devices.txt         license.keccak     tribus.sh
ccminer-keccak-tribus  firmware.txt      license.tribus     yiimp-crea.sh
cores.txt          libcudart.so.8.0   license.txt        zpool_maxcoin.sh
device_config.1     libcudart.so.8.0.61 restore_pci.sh
device_config.4     libcuda.so         save_pci.sh
tfarm@tfarm-desktop:~/1dckeasmc/ccminer$ lspci | grep -i xilinx
02:00.0 Memory controller: Xilinx Corporation Device 7011
04:00.0 Memory controller: Xilinx Corporation Device 7011
tfarm@tfarm-desktop:~/1dckeasmc/ccminer$
```

(2) Execute this command: 'lspci | grep -i xilinx'

For example, slot 2 and slot 4 are connected.

8. Edit device.txt in order to set up 'ccminer program' to recognize the FPGA boards

(1) nano devices.txt



```
tfarm@tfarm-desktop: ~/1dckecsmc/ccminer
File Edit View Search Terminal Help
GNU nano 2.9.3 devices.txt Modified

/sys/bus/pci/devices/0000:02:00.0/resource0
/sys/bus/pci/devices/0000:04:00.0/resource0

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

(2) setting example for slot 2 and slot 4

```
/sys/bus/pci/devices/0000:02:00.0/resource0
/sys/bus/pci/devices/0000:04:00.0/resource0
```

9. How to execute 'Smart Cash' program

(1) Set up and verify Wallet

-- Wallet address can be created in 'smartcash.cc'

After running 'nano smartcash.sh', edit like the below example for being enable of 'pcidevice'. Next, set the wallet address (see: orange color) and the worker name (for example: 'tfm2ml'). And then save and exit.

If the slot 2 and slot 4 are connected, the below two comment lines must be included:

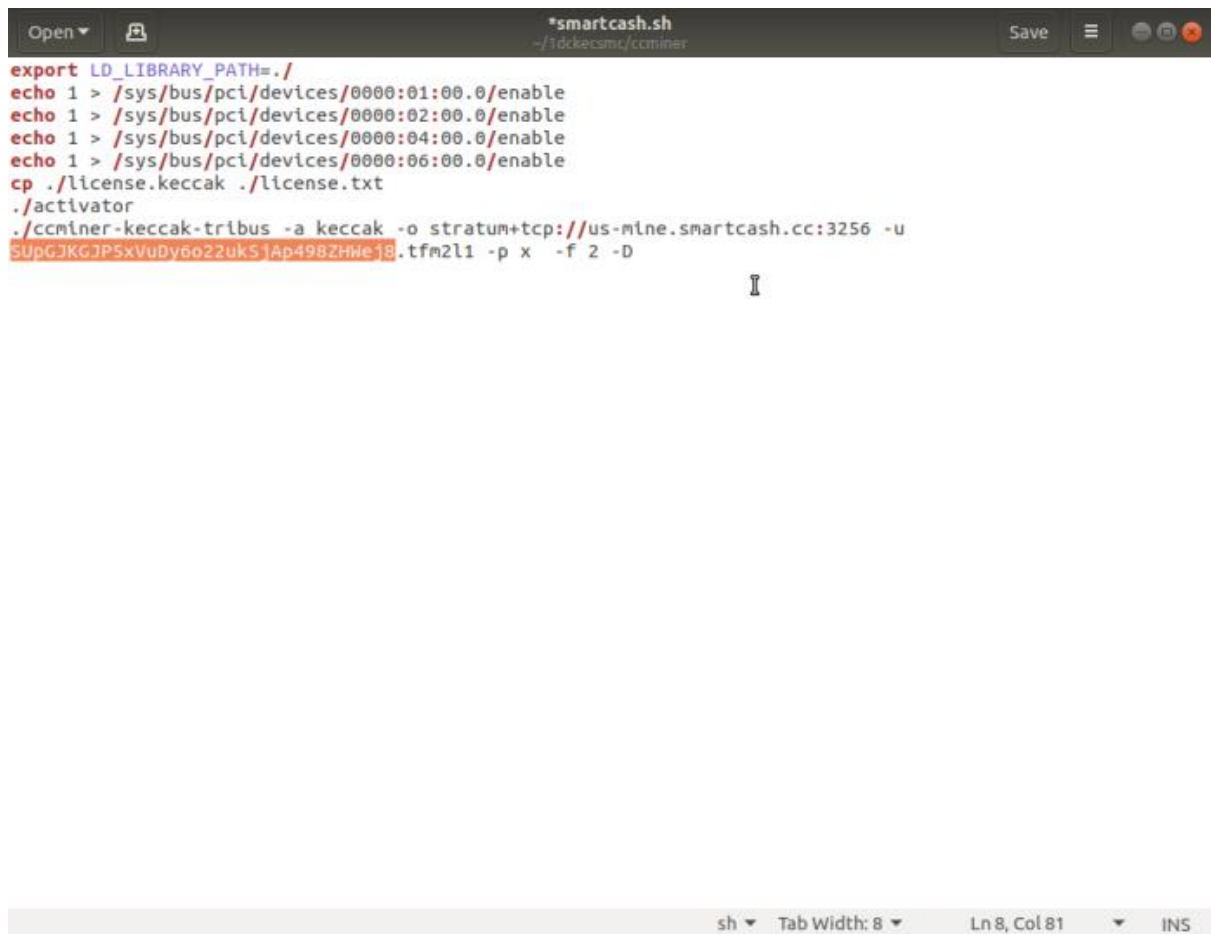
```
/sys/bus/pci/devices/0000:02:00.0/enable
```

/sys/bus/pci/devices/0000:04:00.0/enable

However, the below comment line is not matter if they are in 'smartcash.sh'.

/sys/bus/pci/devices/0000:01:00.0/enable

/sys/bus/pci/devices/0000:06:00.0/enable



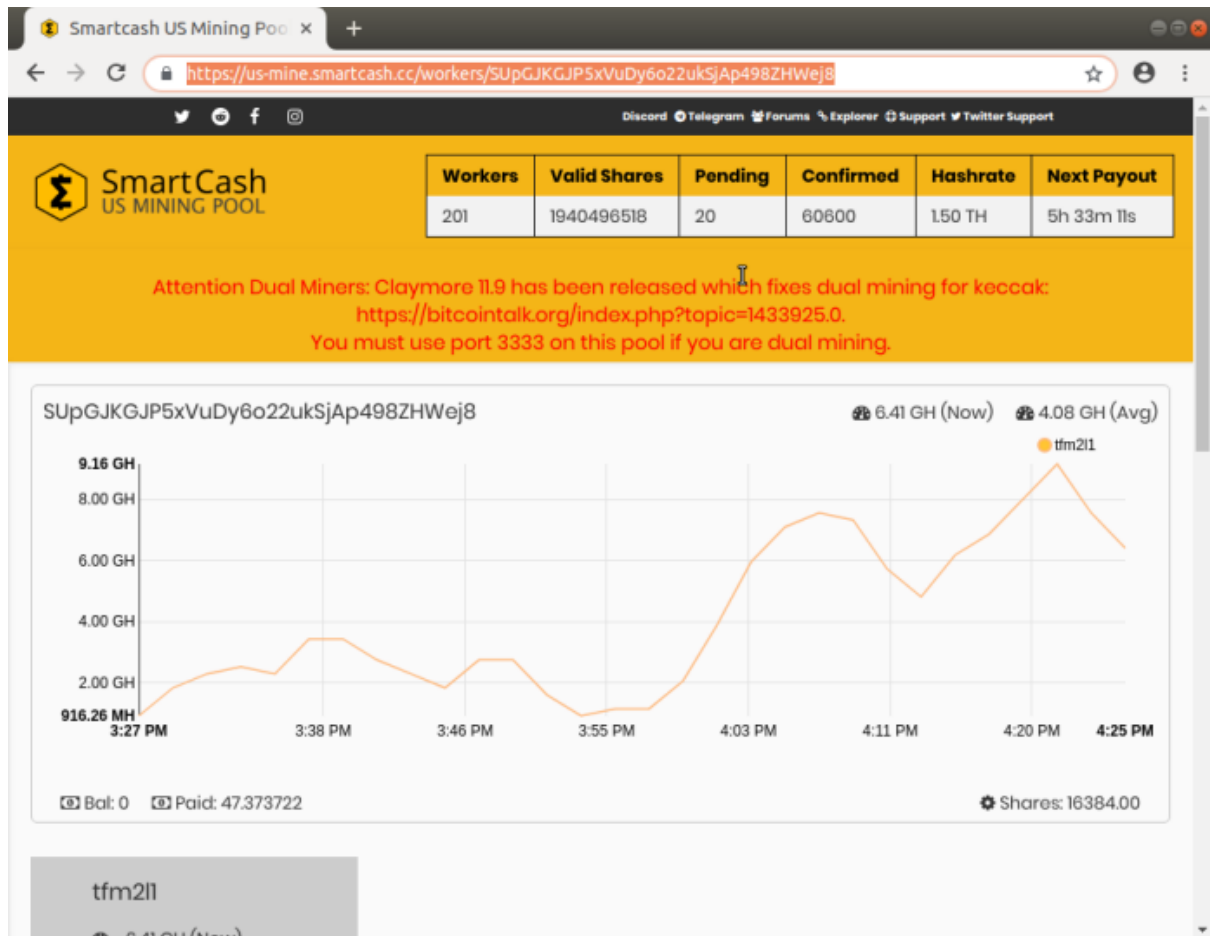
```
Open [icon] *smartcash.sh
~/1dkecsmc/ccminer
Save [icon] [icon] [icon]
export LD_LIBRARY_PATH=./
echo 1 > /sys/bus/pci/devices/0000:01:00.0/enable
echo 1 > /sys/bus/pci/devices/0000:02:00.0/enable
echo 1 > /sys/bus/pci/devices/0000:04:00.0/enable
echo 1 > /sys/bus/pci/devices/0000:06:00.0/enable
cp ./license.keccak ./license.txt
./activator
./ccminer-keccak-tribus -a keccak -o stratum+tcp://us-mine.smartcash.cc:3256 -u
SUpG3KGJP5xVuDy6o22ukS1Ap498ZHwe18.tfm2l1 -p x -f 2 -D

sh Tab Width: 8 Ln 8, Col 81 INS
```

(2) Run Smart Cash shell

sudo ./smartcash.sh

(3) After confirming the running, it is possible to check the 2.5gh in the pool after 30 minutes. You can search for 'workers stats' on the left of Smart Cash URL: <https://us-mine.smartcash.cc/>

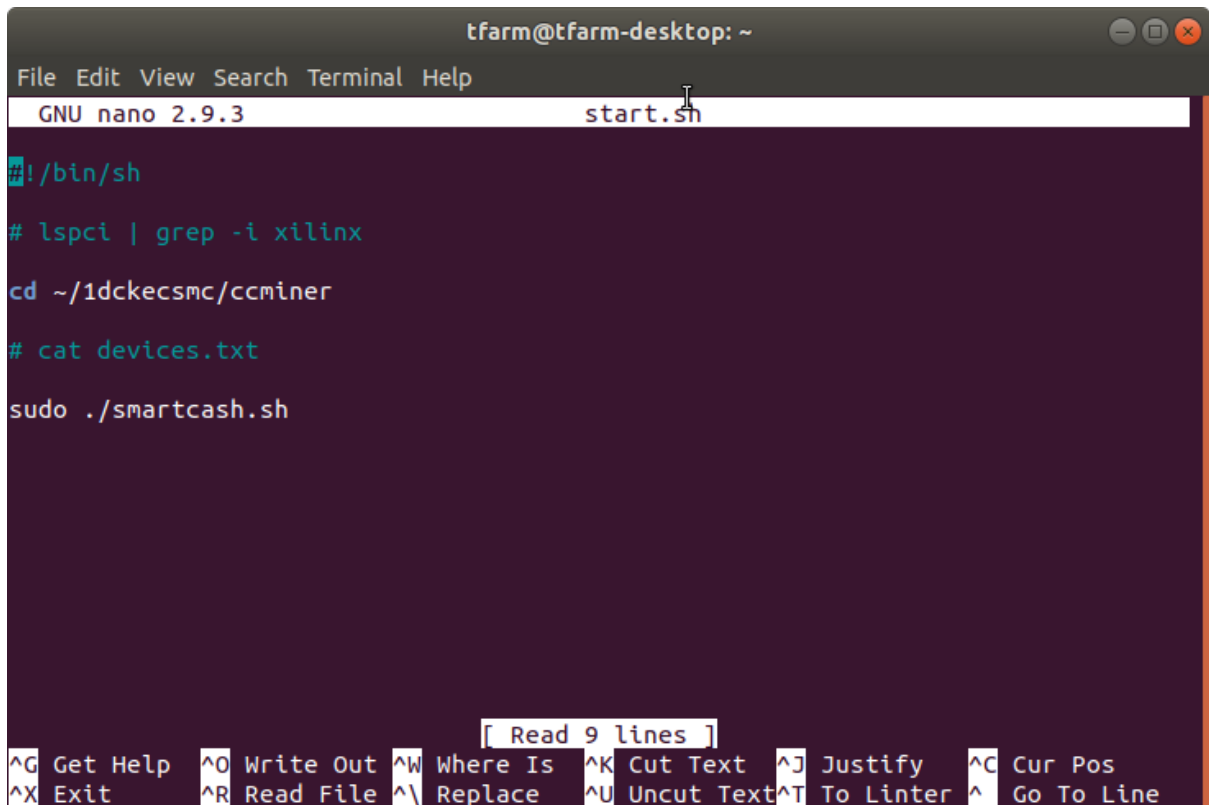


For example, you can access your wallet URL of Smart Cash like <https://us-mine.smartcash.cc/workers/SUPxxxxxxx>. 'SUPxxxxxxx' means your wallet address.

10. How to make it run automatically when you start your computer

(1) Create 'start.sh' shell file in any directory and make it run automatically when the computer restarts.

(2) Example of creating start.sh under '/home/tfarm'



```
tfarm@tfarm-desktop: ~  
File Edit View Search Terminal Help  
GNU nano 2.9.3 start.sh  
#!/bin/sh  
# lspci | grep -i xilinx  
cd ~/1dckeasmc/ccminer  
# cat devices.txt  
sudo ./smartcash.sh  
[ Read 9 lines ]  
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos  
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Linter ^_ Go To Line
```

Run 'nano start.sh' and insert the following executable script.

```
cd /home/tfarm/1dckeasmc/ccminer
```





```
sudo ./smartcash.sh
```

(3) Register 'start.sh' above to be executed automatically when login to account.

After pushing button 'window key' and finding 'startup application' of Search bar, click 'add' button and run 'Startup Application Preference'. Next, type 'gnome-terminal - /home/tfarm/start.sh' in 'command' of 'Startup Application Preference' window and then restart after saving.

Startup Applications Preferences

Additional startup programs:

- ☒  **gnome terminal**
No description
- ☒  **mining app**
mining
- ☒  **Snap user application autostart helper**
Helper program for launching snap applications that are configured t...
- ☒  **SSH Key Agent**
GNOME Keyring: SSH Agent

Add

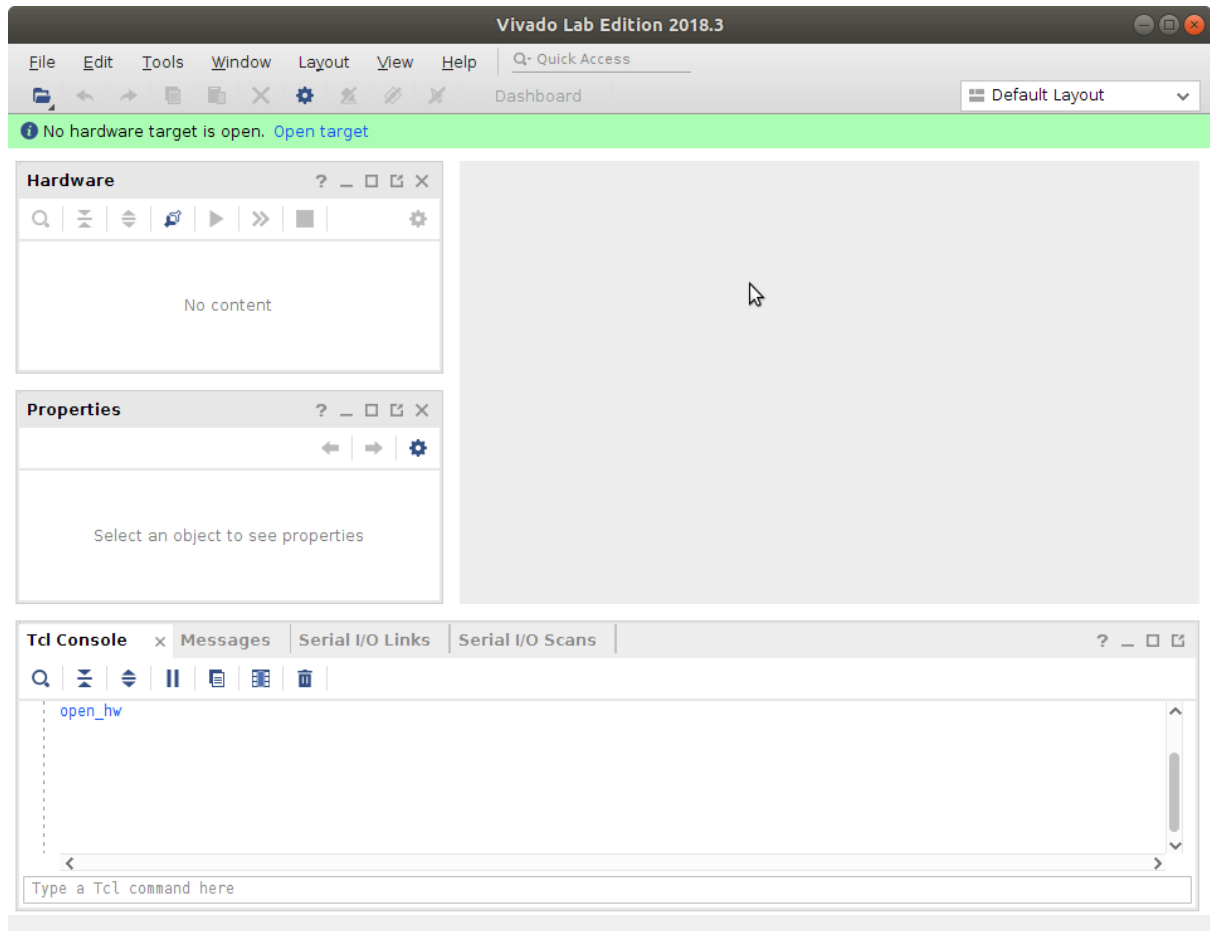
Remove

Edit

Close

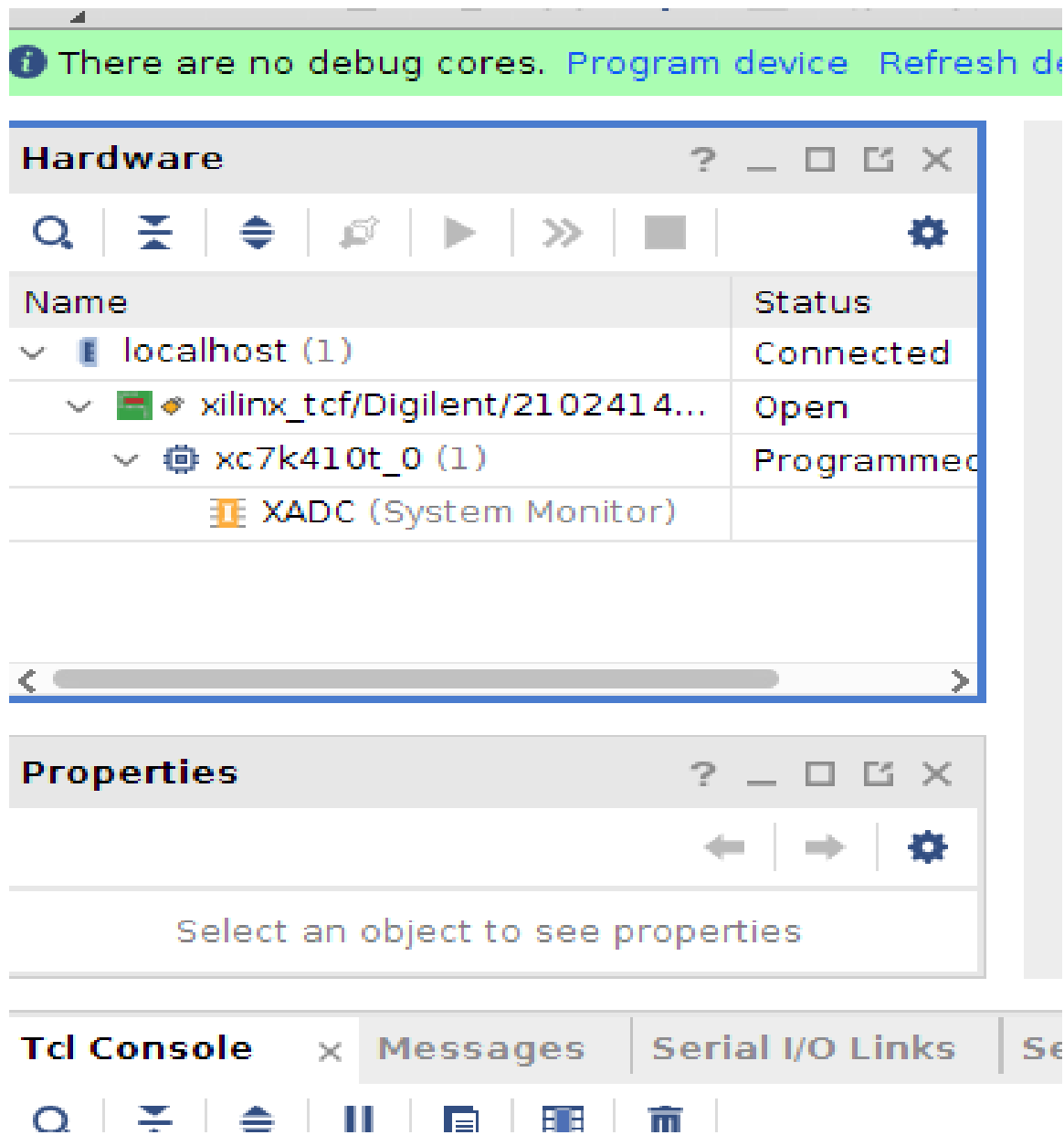
11. Run Vivado_lab

(1) After running 'Vivado_lab', click 'Open Hardware Manager' and the following screen will be displayed. At this time, click 'Auto Connect' icon for connecting a Board.



(2) When the FPGA board is properly connected, the following screen appears.

If not, the platform driver is not recognized by Ubuntu.



(3) If the FPGA board is not properly connected, reinstall the platform cable driver in Ubuntu.

```
'cd /tool/Xilinx/Vivado_lab/2018.3/data/xicom/cable_drivers/lin64/install_script/install_drivers/'
```

```
'sudo ./install_drivers'
```

The driver will be installed as shown below.

```
tfarm@tfarm-desktop: /tools/Xilinx/Vivado_Lab/2018.3/data/xicom/cable_drivers/lin64/install_script/install_drivers
File Edit View Search Terminal Help
install_digilent.sh          vivado_lab_2300.backup.jou  vivado_lab_pid3309.str
tfarm@tfarm-desktop:/tools/Xilinx/Vivado_Lab/2018.3/data/xicom/cable_drivers/lin64/install_script/i
ninstall_drivers$ sudo ./install_drivers
INFO: Installing cable drivers.
INFO: Script name = ./install_drivers
INFO: HostName = tfarm-desktop
INFO: Current working dir = /tools/Xilinx/Vivado_Lab/2018.3/data/xicom/cable_drivers/lin64/install_
script/install_drivers
INFO: Kernel version = 4.15.0-20-generic.
INFO: Arch = x86_64.
USB udev file exists and will not be updated.
--File /etc/udev/rules.d/52-xilinx-ftdi-usb.rules exists.
--File /etc/udev/rules.d/52-xilinx-ftdi-usb.rules version = 0001
--File 52-xilinx-ftdi-usb.rules exists.
--File 52-xilinx-ftdi-usb.rules version = 0001
--File 52-xilinx-ftdi-usb.rules is already updated.
--File /etc/udev/rules.d/52-xilinx-pcusb.rules exists.
--File /etc/udev/rules.d/52-xilinx-pcusb.rules version = 0002
--File 52-xilinx-pcusb.rules exists.
--File 52-xilinx-pcusb.rules version = 0002
--File 52-xilinx-pcusb.rules is already updated.

INFO: Digilent Return code = 0
INFO: Xilinx Return code = 0
INFO: Xilinx FTDI Return code = 0
INFO: Return code = 0
INFO: Driver installation successful.
CRITICAL WARNING: Cable(s) on the system must be unplugged then plugged back in order for the drive
r scripts to update the cables.
tfarm@tfarm-desktop:/tools/Xilinx/Vivado_Lab/2018.3/data/xicom/cable_drivers/lin64/install_script/i
ninstall_drivers$
```