DWIN Linux Screen Development Guide

(42 Series)

Contents

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1.1 OS Version

linux 3.4 kernel

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- Standard screen*1

1.3 Accessories Recommended for Self-Preparation

- 12V 2A power supply
- USB flash drive
- SD card (Max 64GB)
- USB to Ethernet Port Converter
- Network cable
- The adapter board and related wires for connecting your serial port or power supply device

Chapter 2 Tool Introduction

2.1 The Tools Provided

- Ubuntu 22.04 virtual machine package (the password is 123)
- Toolkit: lvgl8.3Demo.tar.gz (includes toolchain and factory demo source code)
- SD card burning tool: Allwinner_Phoenixcard.rar
- Firmware of Standard Product

2.2 Tools Which Might Require Self-Downloading

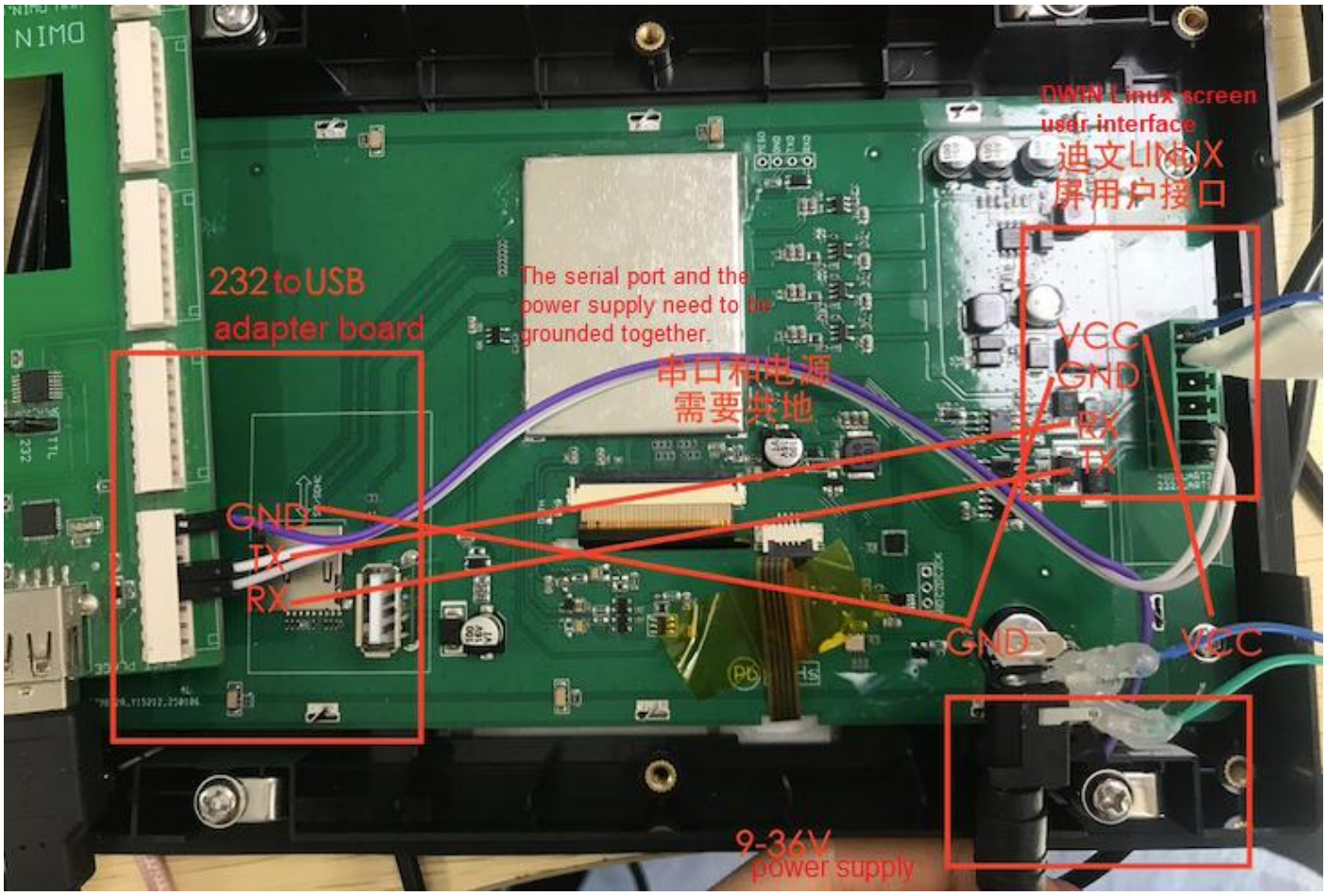
- VMware Workstation (It is recommended to use version 17)
- MobaXterm
- Visual Studio Code

Chapter 3 Debugging Mode

Currently, the DWIN 42 series Linux screens support logging in to the screen via the serial port.

3.1 Serial Port Parameter Configuration

- The serial port and the power supply need to be grounded together.
- The RX (Receive) port of the device is connected to the TX (Transmit) port of the peripheral.
- The TX (Receive) port of the device is connected to the RX (Transmit) port of the peripheral.



3.2 Login Steps

- Power on the screen and make the wiring connections.
- Install MobaXterm on the computer and open it. Click "Session" - "New Session" in the top toolbar.
- Select the type "Serial".
- Confirm the Serial port to which the device is connected by plugging and unplugging, and select it in the window.
- Set the baud rate to "115200".
- After clicking "OK", wait until the default content is fully loaded, and then you can start the operation.

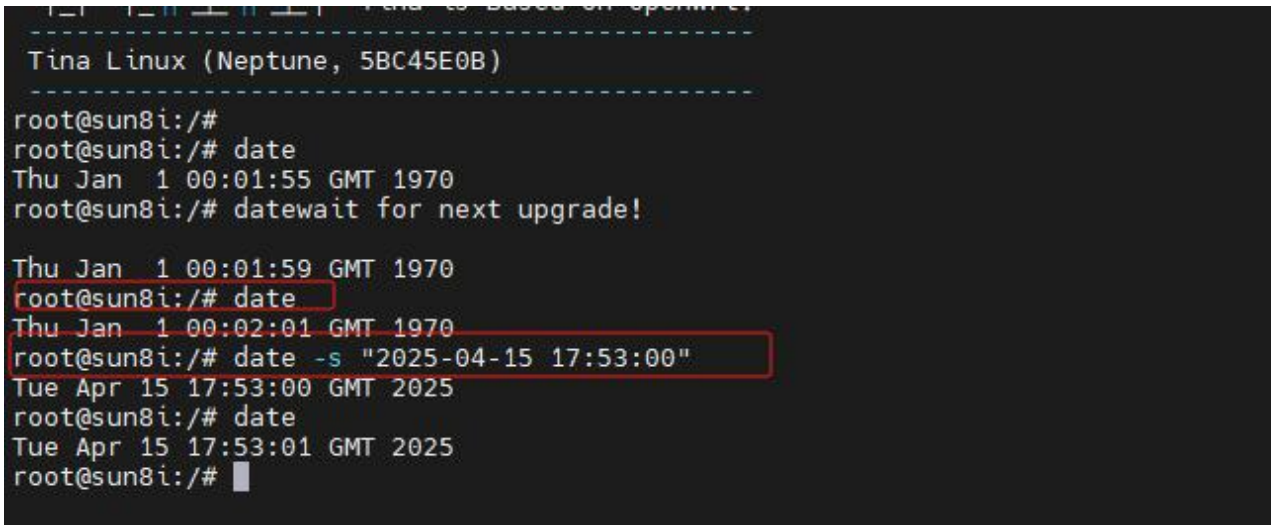
Chapter 4 Reference Instruction Example

4.1 Time Modification

The instructions are as follows:

data: check the system time

data -s: set the system time



4.2 Boot LOGO Modification

- Create a new folder named "logo" on the computer.
- Prepare a 16-color bitmap image in BMP format. Name it "bootlogo", change its extension to "fex", and place it in the "logo" folder.
- Then put the "logo" folder into the USB flash drive, and then insert the USB flash drive into the USB interface of the device.

In the MobaXterm session window newly created in Chapter 3, type "df -h" and then press Enter. You can see the mounted devices. Locate the path of the USB flash drive (you can confirm it by plugging and unplugging the USB flash drive).

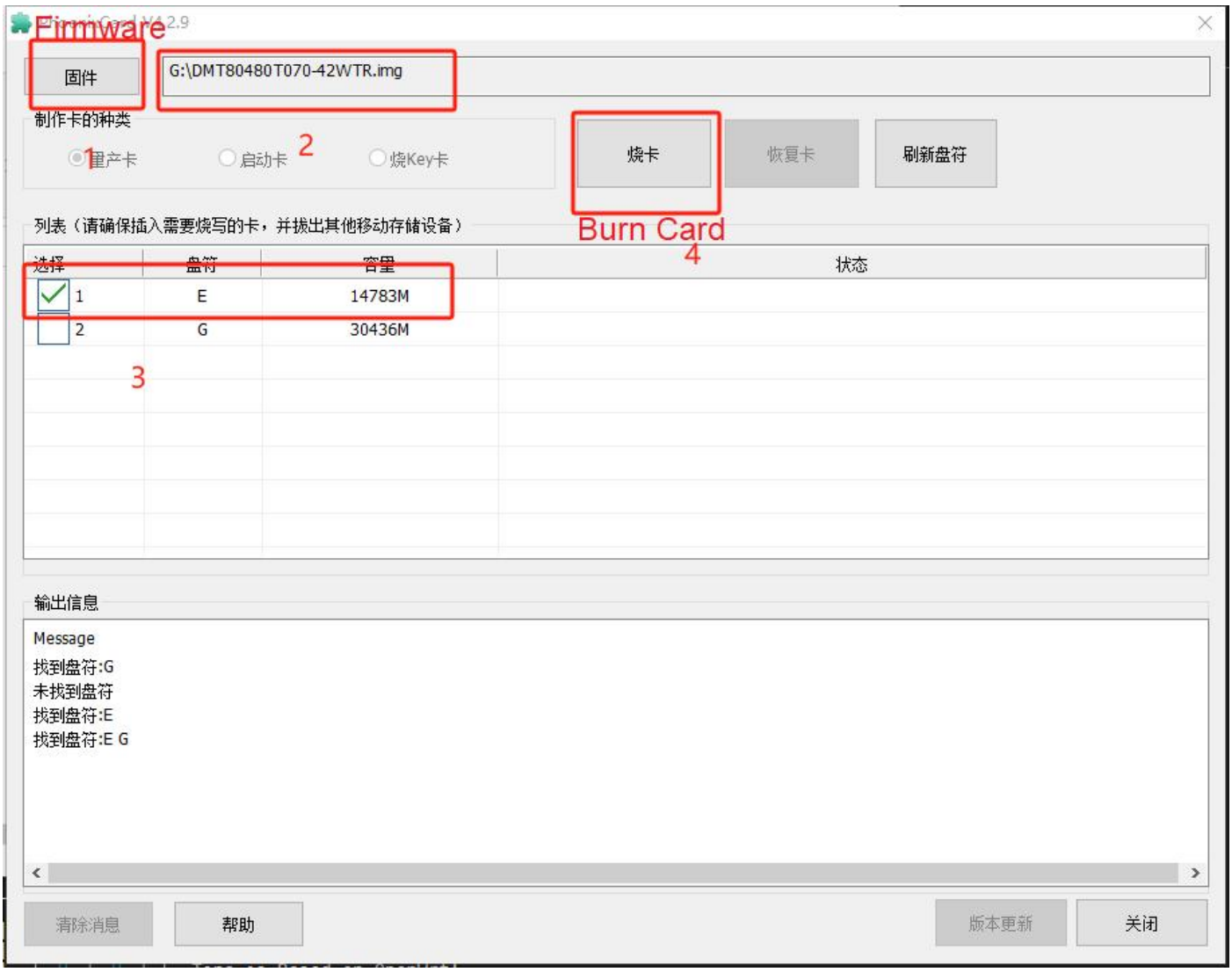
Replace the part with a red background in the following command with the path of the USB flash drive, and then run this command. After the progress is completed, power on the device again.

```
dd if=/mnt/exUDISK/logo/bootlogo.fex of=/dev/nanda
```

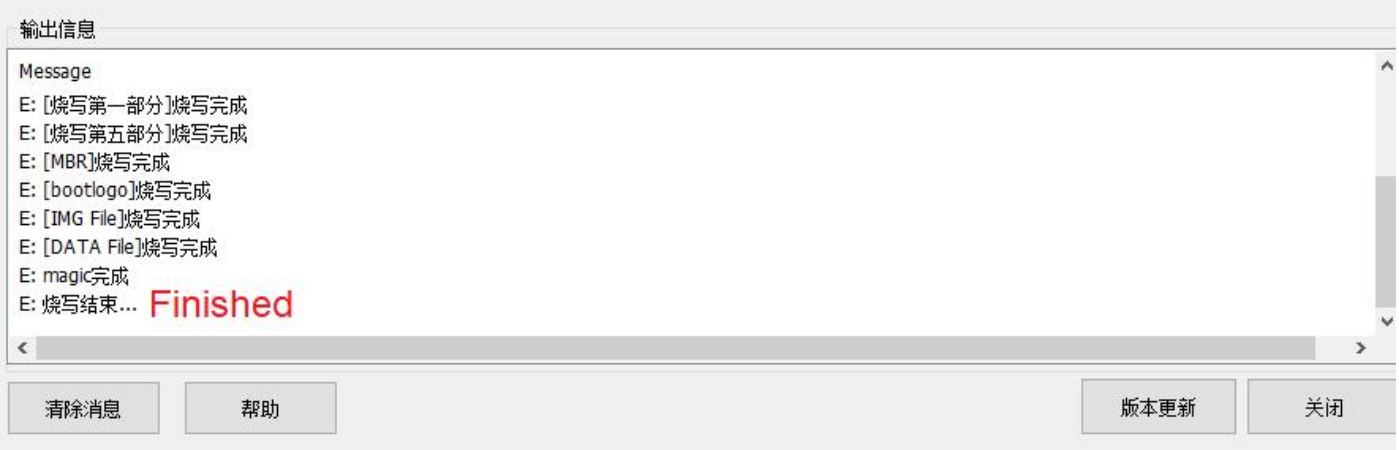
Chapter 5 Firmware Burning

The DWIN 42 series Linux screens support firmware burning via SD card.

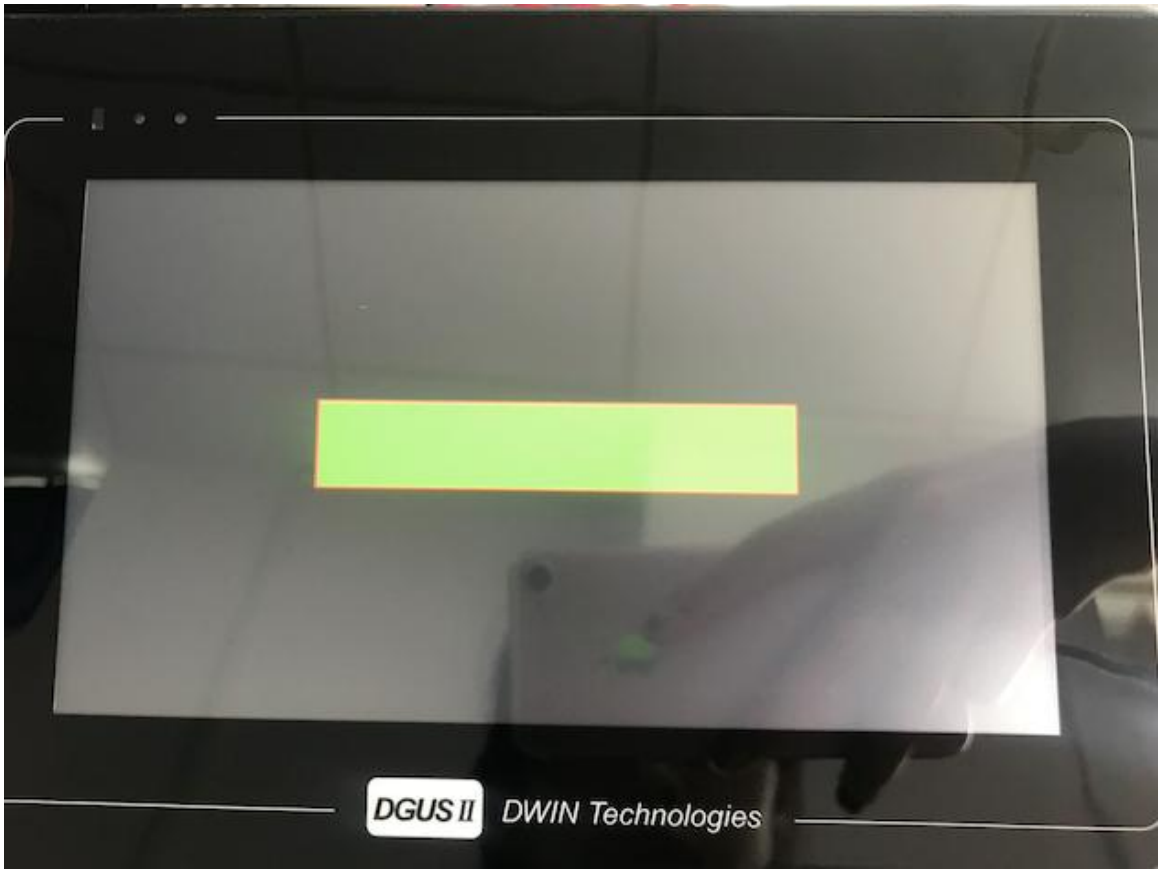
- Insert the card reader with the SD card loaded into a USB port on your computer. Open PhoenixCard, click the "Firmware" box first, and locate the firmware you need to burn.
- Select the card reader to be used for burning, and then click Burn Card



- Wait until the progress is finished.



- Take out the SD card and insert it into the SD card slot of the device. Power on the device with 12V DC, and the screen will automatically start the upgrade. You can see the progress bar as shown in the following picture.



- After the upgrade is completed, take out the SD card and power on the device again to finish the process. After the resistive touch screen has its new firmware burned, you can calibrate the touch function when it is powered on for the first time.

Chapter 6 Virtual Machine Configuration

- Self-download and install VMware Workstation.
- After the installation is completed, click "File" in the menu bar, then select "Open", and finally choose the Ubuntu 22.04 virtual machine package.
- Start the virtual machine and enter the password 123 to log in.

Chapter 7 Compilation and Download of LVGL Project

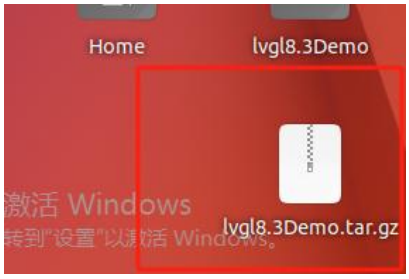
This article takes the source code of the sample project in Devin's toolkit as an example.

If you are using an LVGL APP developed by yourself, you need to refer to the code for the initialization of the device driver in the main.c of the sample project source code provided by Devin. You can design and plan the page UI and logic of the APP on your own.

7.1 Project File Generation

(1) First, download the provided toolkit to the USB flash drive. Then, insert the USB flash drive into the computer and make selections according to the order shown in the following picture.

(2) Drag the toolkit onto the desktop of the Ubuntu virtual machine.



(3) Open the Ubuntu terminal. The virtual machine needs to be connected to the Internet.

Use the instructions:

sudo apt update

Use the command "sudo apt install cmake" to install CMake.

The password of the virtual machine, which has been provided at the beginning of the document, is 123.

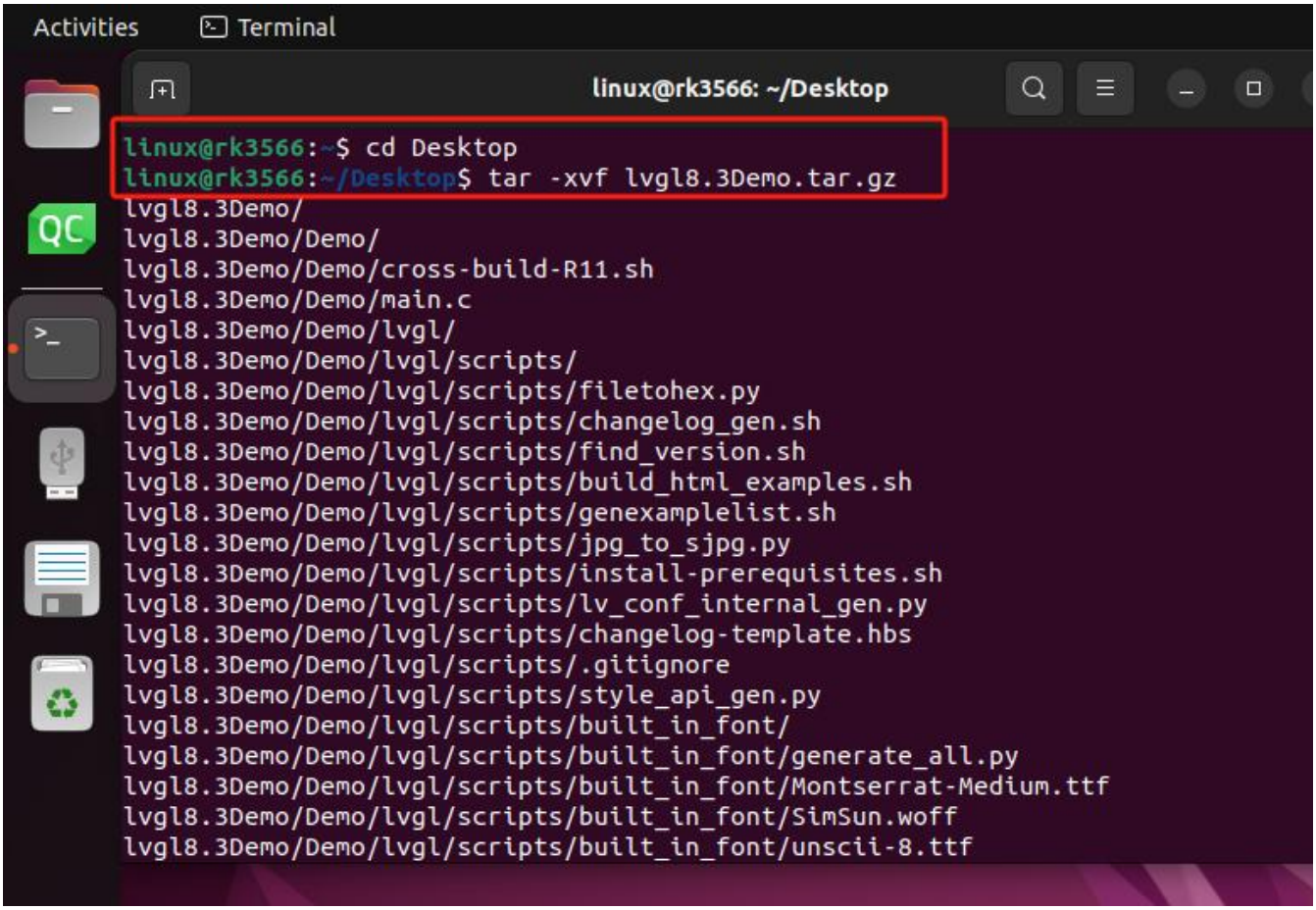
```
snow@ubuntu:~/Desktop$ sudo apt update
[sudo] snow 的密码:
命中:1 http://us.archive.ubuntu.com/ubuntu focal InRelease
命中:2 http://security.ubuntu.com/ubuntu focal-security InRelease
命中:3 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease
命中:4 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease
获取:5 http://us.archive.ubuntu.com/ubuntu focal/main Translation-zh_CN [113 kB]
获取:6 http://us.archive.ubuntu.com/ubuntu focal/restricted Translation-zh_CN [1,324 B]
获取:7 http://us.archive.ubuntu.com/ubuntu focal/universe Translation-zh_CN [388 kB]
获取:8 http://us.archive.ubuntu.com/ubuntu focal/multiverse Translation-zh_CN [4,612 B]
已下载 507 kB，耗时 3秒 (200 kB/s)
正在读取软件包列表... 完成
正在分析软件包的依赖关系树
正在读取状态信息... 完成
有 521 个软件包可以升级。请执行 'apt list --upgradable' 来查看它们。
snow@ubuntu:~/Desktop$ sudo apt install cmake
正在读取软件包列表... 完成
正在分析软件包的依赖关系树
正在读取状态信息... 完成
建议安装:
  cmake-doc ninja-build
下列【新】软件包将被安装:
  cmake
升级了 0 个软件包，新安装了 1 个软件包，要卸载 0 个软件包，有 521 个软件包未被升级。
需要下载 3,668 kB 的归档。
解压缩后会消耗 19.2 MB 的额外空间。
获取:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 cmake amd64 3.16.3-1ubuntu1.20.
已下载 3,668 kB，耗时 3秒 (1,266 kB/s)
正在选中未选择的软件包 cmake。
(正在读取数据库 ... 系统当前共安装有 195527 个文件和目录。)
准备解压 .../cmake_3.16.3-1ubuntu1.20.04.1_amd64.deb  ...
正在解压 cmake (3.16.3-1ubuntu1.20.04.1) ...
正在设置 cmake (3.16.3-1ubuntu1.20.04.1) ...
正在处理用于 man-db (2.9.1-1) 的触发器 ...
snow@ubuntu:~/Desktop$
```

(4) Enter the desktop and use the "tar" instruction to extract the toolkit.

The reference code is as follows:

cd Desktop

tar -xvf lvgl8.30Demo.tar.gz



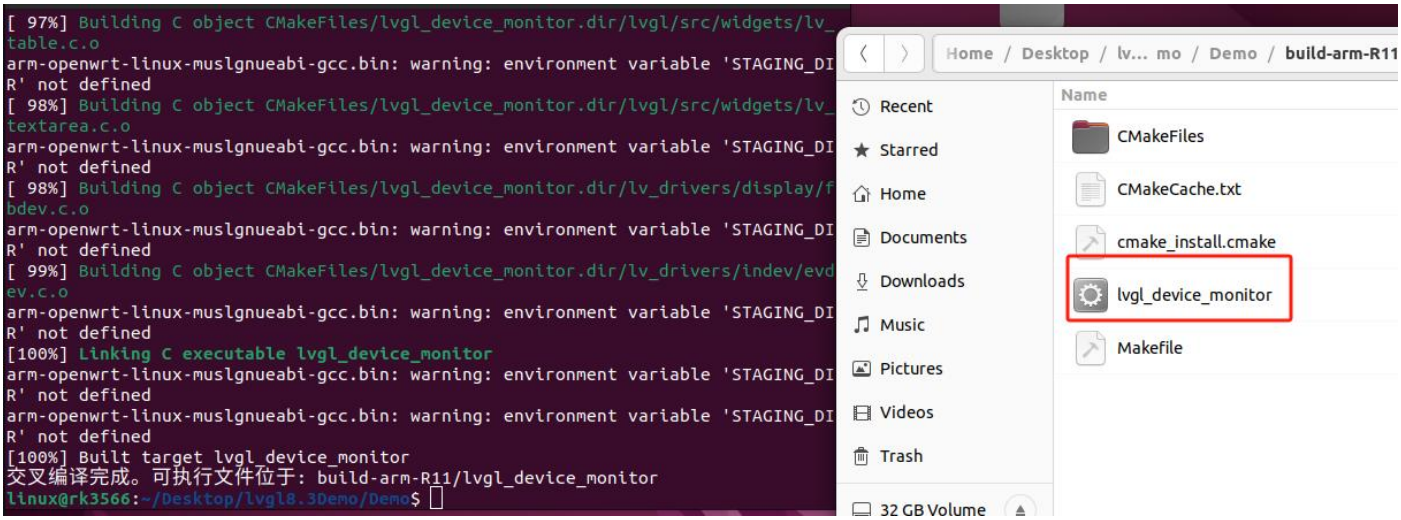
(5) After the extraction is complete, navigate to the Demo folder and execute the shell script file under the Demo folder using the following command. The reference code is as follows:

cd lvgl8.3Demo/Demo/

chmod +x cross-build-R11.sh

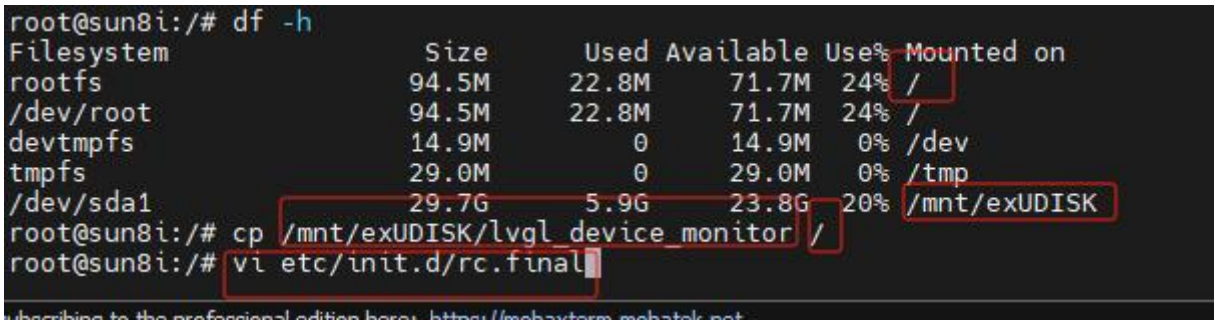
./cross-build-R11.sh

(6) After the script execution is completed, it will prompt the path of the generated download file. According to the path, locate the download file "lvgl_device_monitor", and then copy it to the USB flash drive.



7.2 USB Flash Drive Downloads

(1) Remove the USB flash drive and plug it into the device. Open the MobaXterm session window that has been configured according to Chapter 3. You can first use the "df -h" instruction to query the path of the USB flash drive and the path where you want to store it in the device. Here, it will be directly stored in the root directory of the device. Use the "cp" instruction to copy the project files in the USB flash drive to the device. The reference code is as follows:



df -h：query the mounted device

/：the path of the root directory

/mnt/exUDISK：USB path

cp instruction：cp (space) the path of the file + the file name + (space) + the target path

7.3 Run LVGL Project

Type vi (with a space here) /etc/init.d/rc.final

Move the cursor to the beginning of the line containing lvgl_device_monitor &. Press i to enter insert mode. Type # at the start of the line to comment it out. Next, move the cursor to the end of the line and press Enter to create a new line. On the new line, enter the absolute path of the project file + a space + &. Press Esc to exit insert mode. Type :wq and press Enter to save the changes to the file.

```
amixer -D hw:audiocodec cset name='MIC2 boost AMP gain control' 1
amixer -D hw:audiocodec cset name='MIC2 SRC' 0

###dd if=/dev/zero of=/dev/fb0

#tps02 touch driver
serio_uinput &

ifconfig eth0 192.168.199.34
ifconfig eth0:0 192.168.1.189
route add default gw 192.168.199.1
myresolv="/etc/resolv.conf"
if [ ! -f "$myresolv" ]; then
 echo -e "nameserver 8.8.8.8" > /etc/resolv.conf
fi


if [ ! -f "/etc/pointercal" ]; then
    ts_calibrate
    sync
fi

#lvgl_device_monitor &
/lvgl_device_monitor &
~
~
~
~
~
~
~
:wq
```

Then continue to enter the following code. The setup will be completed after the device reboots.

reboot (Press Enter to make it effective)

```
root@sun8i:/# vi etc/init.d/rc.final
root@sun8i:/# reboot
```

Chapter 8 Revised Version

Version	Date	Content	Editor
00	2025.04.30	First release	Chen Xian