

Lesson 10 Raspberry Pi System Backup

1. Why to Backup

In order to prevent accidental situations such as file or data loss or damage, copy the data of the Raspberry Pi SD card to other storage devices is very necessary.

2. How to Backup

Table 1 Raspberry Pi Version

| Platform | Tool | Advantage | Disadvantage |
|------------------|---------------------------|---|---|
| Windows | Win32DiskImager、WinImager | Simple imaging | Long time for imaging |
| Raspbian (Linux) | Command line, script | The generated image file is small and does not occupy computer space. | Difficult to operate |
| Raspbian (Linux) | SD Card Copier | Out of box, save time | Unable to generate image files, difficult to batch. |

2.1 Use third-party software to create images under Windows

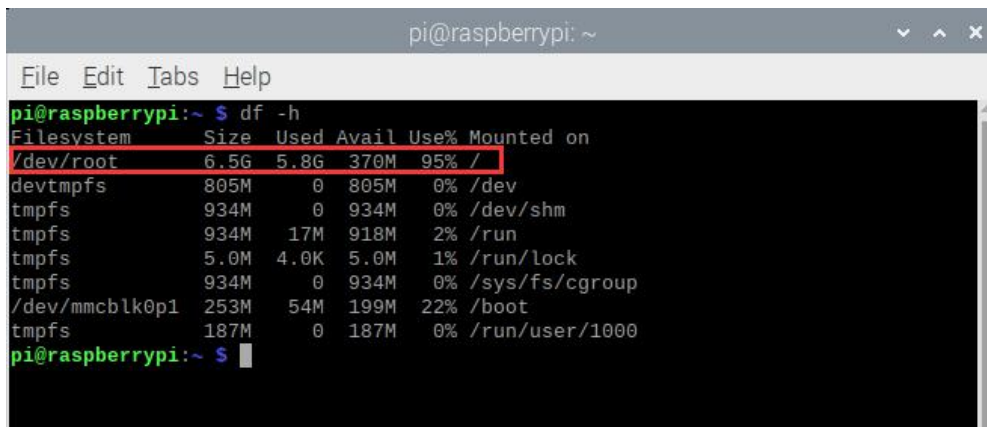
- 1) Create a blank file with .img suffix (it is recommended to use WinImager software. The detailed tutorials can be searched in Google).
- 2) Insert the SD card with the system image and select the drive letter of the corresponding SD card.
- 3) Open the tool of Win32DiskImager, click “Read” to switch the file in the Raspberry Pi SD card into images.

2.2 Command under Linux

1) Start Raspberry Pi and open LX terminal. Enter the following commands in turn to install the required software (when the prompt to select “y” and “n” appears, please all select “y”).

```
sudo apt-get install dosfstools
sudo apt-get install dump
sudo apt-get install parted
sudo apt-get install kpartx
```

2) Enter the "df -h" command (there is a space between df and -h) to check the space used by the Raspberry Pi, and then determine the size of the generated file. Check the remaining space of root and find that 5.8G has been used.



```
pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        6.5G   5.8G  370M  95% /
devtmpfs         805M     0  805M   0% /dev
tmpfs            934M     0  934M   0% /dev/shm
tmpfs            934M   17M  918M   2% /run
tmpfs            5.0M   4.0K   5.0M   1% /run/lock
tmpfs            934M     0  934M   0% /sys/fs/cgroup
/dev/mmcblk0p1   253M   54M  199M  22% /boot
tmpfs            187M     0  187M   0% /run/user/1000
pi@raspberrypi:~ $
```

3) Enter the "sudo nano backup.sh" command in any location (for example, under home/pi) to create a script file named "backup". In its blank space, copy the following content.

```
#!/bin/sh

sudo dd if=/dev/zero of=raspberrypi.img bs=1MB count=7500

sudo parted raspberrypi.img --script -- mklabel msdos

sudo parted raspberrypi.img --script -- mkpart primary fat32 8192s 122879s

sudo parted raspberrypi.img --script -- mkpart primary ext4 122880s -1

loopdevice=`sudo losetup -f --show raspberrypi.img`

device=`sudo kpartx -va $loopdevice | sed -E 's/.*(loop[0-9])p.*\1/g' | head
-1`

device="/dev/mapper/${device}"

partBoot="${device}p1"

partRoot="${device}p2"

sudo mkfs.vfat $partBoot

sudo mkfs.ext4 $partRoot

sudo mount -t vfat $partBoot /media
```

```
sudo cp -rfp /boot/* /media/

sudo umount /media

sudo mount -t ext4 $partRoot /media/

cd /media

sudo dump -0uaf - / | sudo restore -rf -

cd

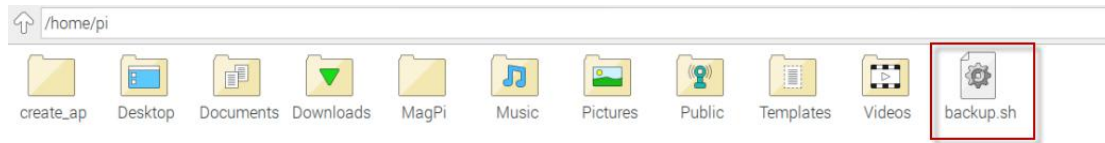
sudo umount /media

sudo kpartx -d $loopdevice

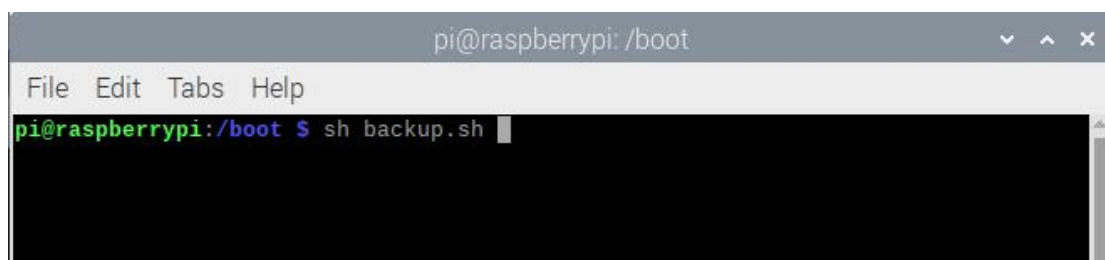
sudo losetup -d $loopdevice
```

4) After copying, press "Ctrl+X", you will be prompted to confirm whether to save, press "Y" key to confirm and press "Enter" key to exit.

5) After exiting, enter the "sudo chmod 777 backup.sh" command to add a permission that allows all users to read, write and execute to the file.



6) Enter "sh backup.sh" command to execute a script to enable the backup function.




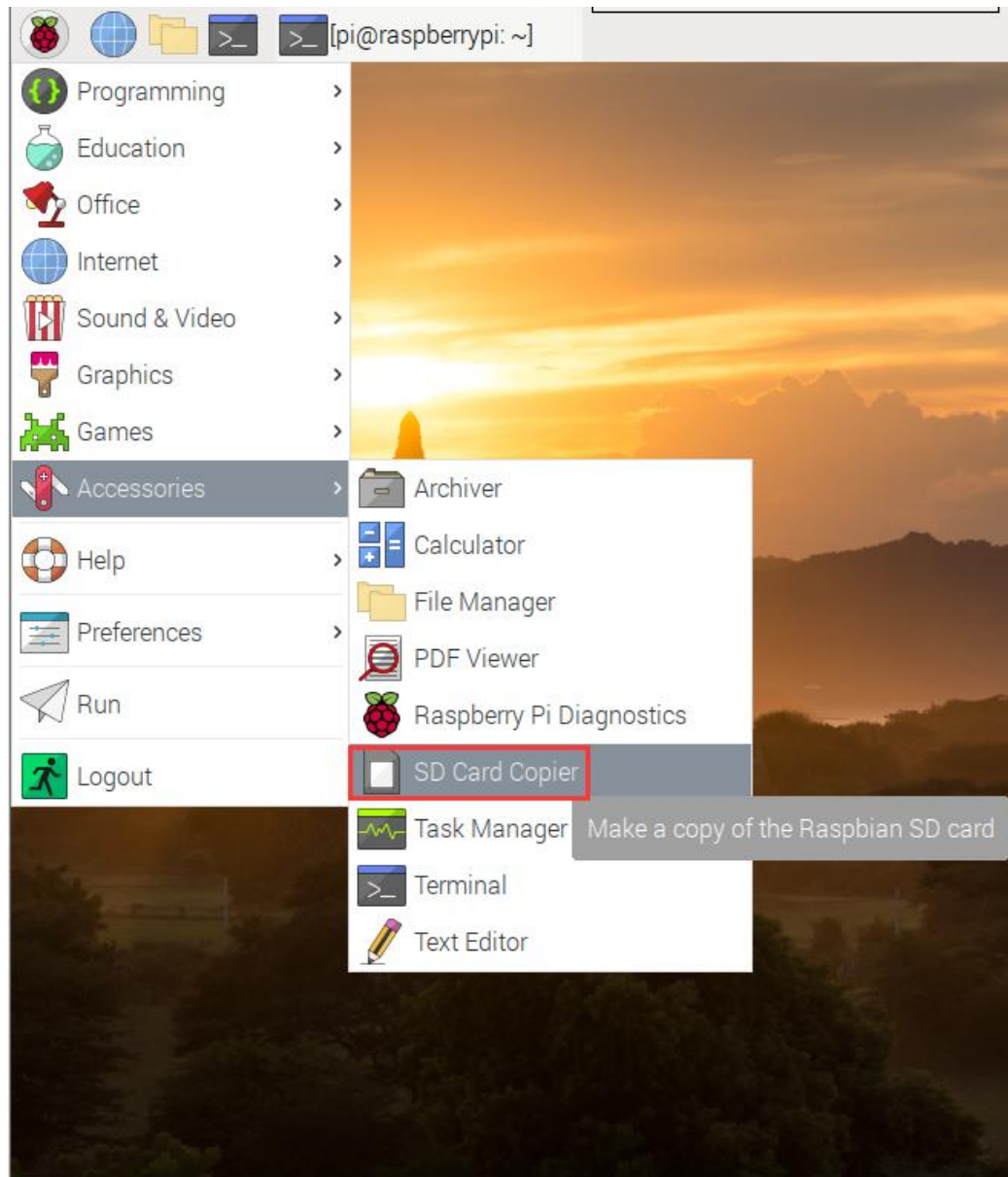
7) This is the backup file.



2.3 SD Card Copier Tool of Raspberry Pi

1) Insert the reader with blank SD card into the Raspberry Pi USB port.

2) Turn on Raspberry Pi, click  and Accessories to open "SD Card Copier" tool.



3) Select the SD card with "Copy From Device" on the path of dev/mmcblk0. Choose the new SD card (path: /dev/sda) in the "Copy To Device". "New Partition UUIDs" is an option for creating new partitions. You can check them according to your own needs.

