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.

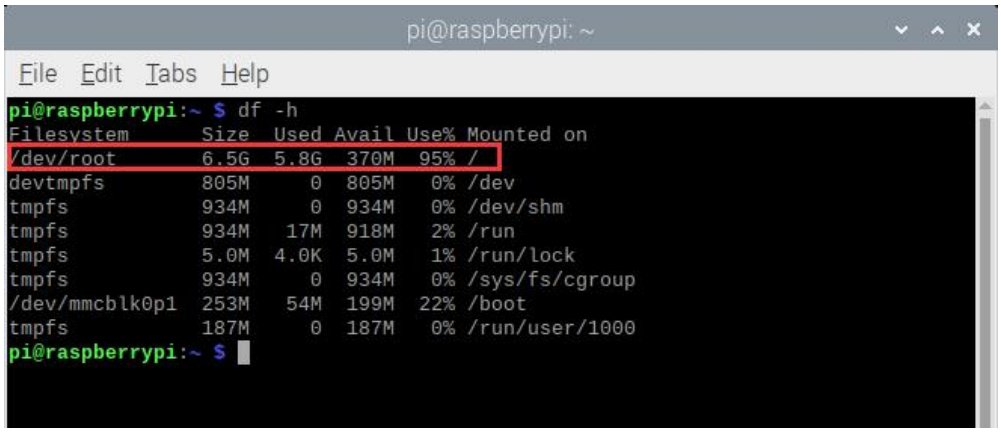
3) Open the tool of Win32DiskImager, click “Read” to switch the file in the Raspberry Pi SD card into images.

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.



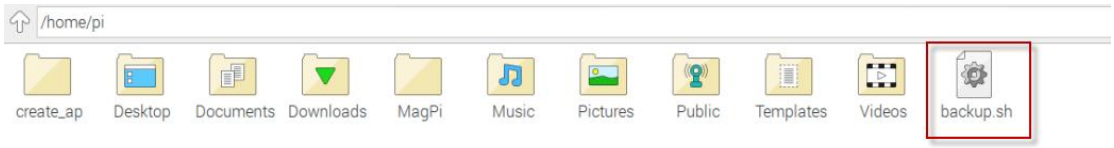
3) Enter the "sudo nano backup.sh" command in any location (for example, under home/pi) to create a script file named "backup". In its blank space, copy the following content.

```
#!/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
```

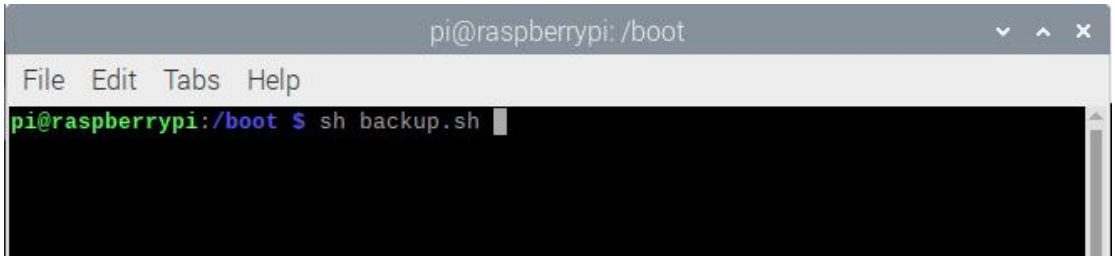
```
sudo cp -rfp /boot/* /media/
sudo umount /media
sudo mount -t ext4 $partRoot /media/
cd /media
sudo dump -0uaf - / | sudo restore -rf -
cd
sudo umount /media
sudo kpartx -d $loopdevice
sudo losetup -d $loopdevice
```

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.

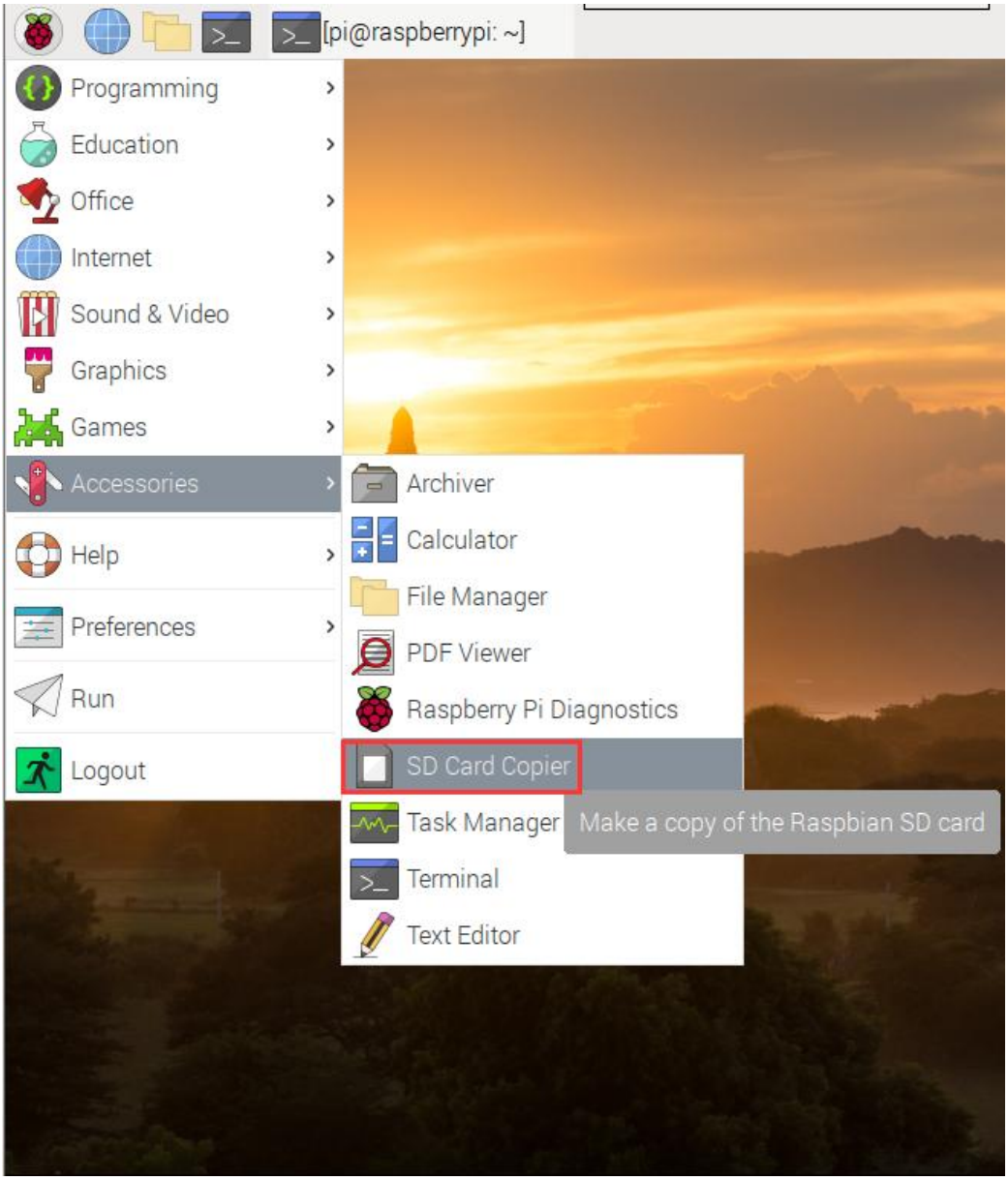


7) This is the backup file.

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.