《Linux 操作系统》学生实验报告

学院 数计学院 **专业** 计算机科学与技术 **班级** 计科三班

姓名 周吉瑞 **学号** 20190521340 **日期** 2021年4月22日

课程名称：Linux 操作系统

实验名称：实验六_磁盘管理

指导老师：姚坤

一、实验任务

1.用 df 命令查看当前磁盘的分区、空间使用情况和每个分区的挂载点，然后在当前用户目录下创建一个文件夹（用自己的名字的拼音命名）；

2.安装 quota 软件包并用 whereis 查看 quotacheck 是否被安装；

3.给新硬盘分区并开启磁盘配额功能；

4.扫描所有支持磁盘配额的分区并在其当前目录下的挂载目录生成相应的配置文件;

5.为用户/组设置磁盘配额大小，设置配额为20M;

6.先关闭然后再开启磁盘配额功能;

7.进入第一步所创建的文件夹，然后写1G 的数据到当前文件夹下;

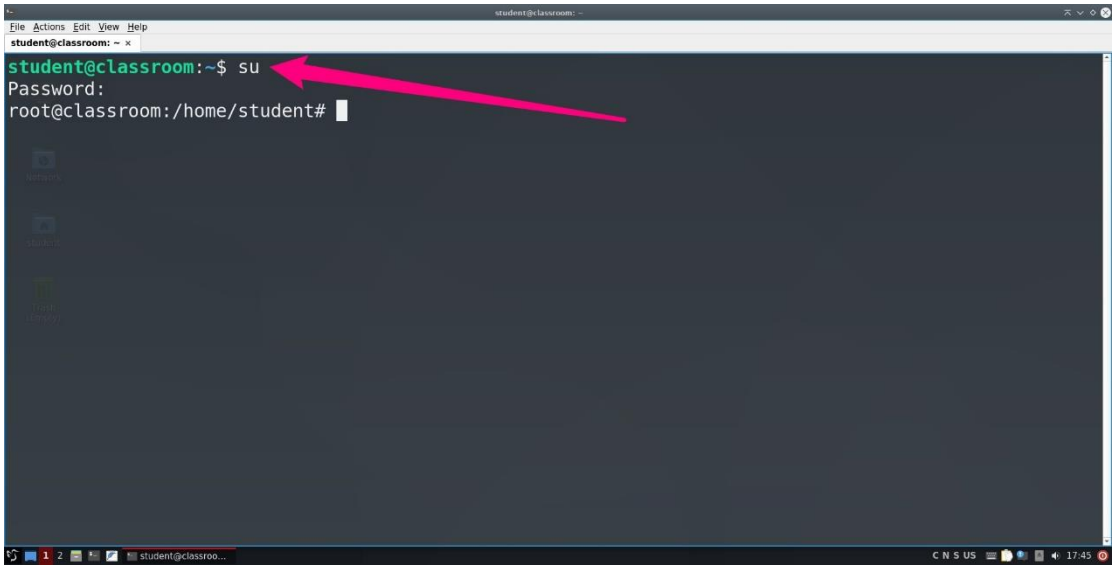
8.使用 du 查看当前文件夹或者生成的文件所占磁盘空间的大小。

二、实验记录及总结

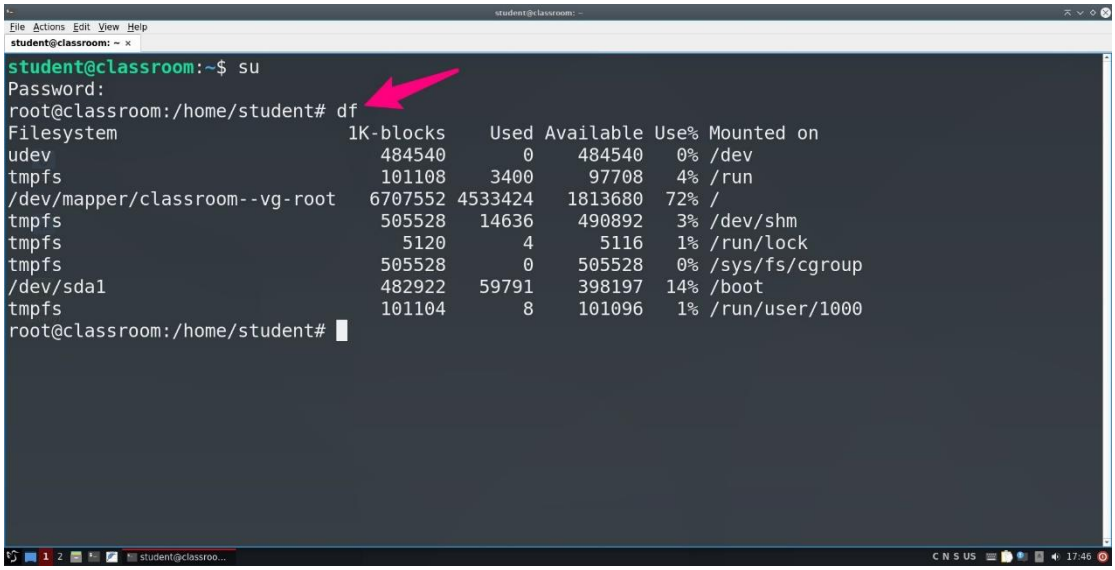
1.实验过程的操作记录（用图文说明）

（1）用 df 命令查看当前磁盘的分区、空间使用情况和每个分区的挂载点，然后在当前用户目录下创建一个文件夹（用自己的名字的拼音命名）；

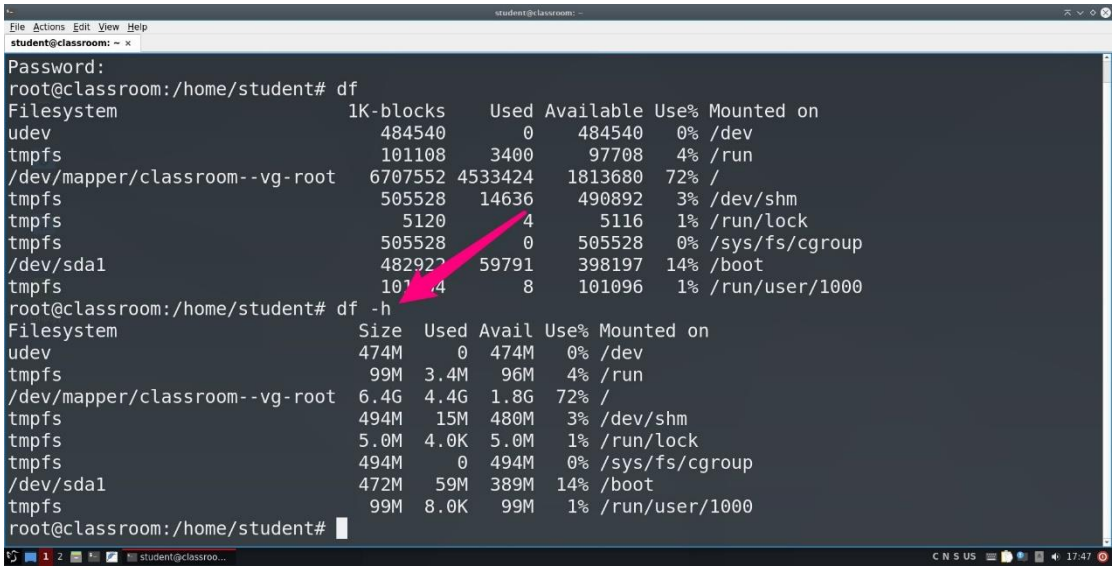
进入管理员模式



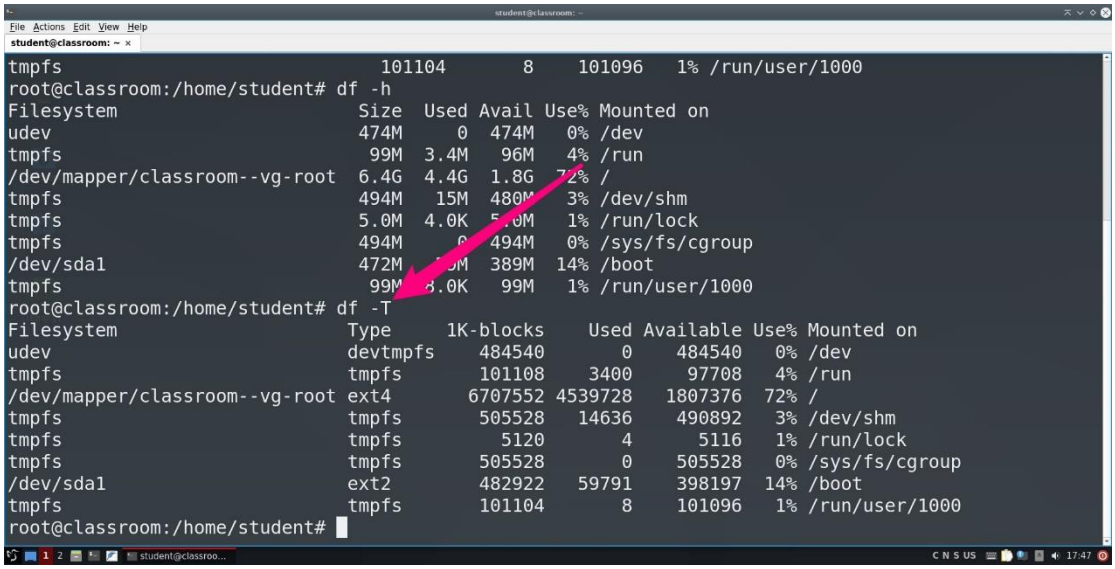
使用 df 命令查看磁盘



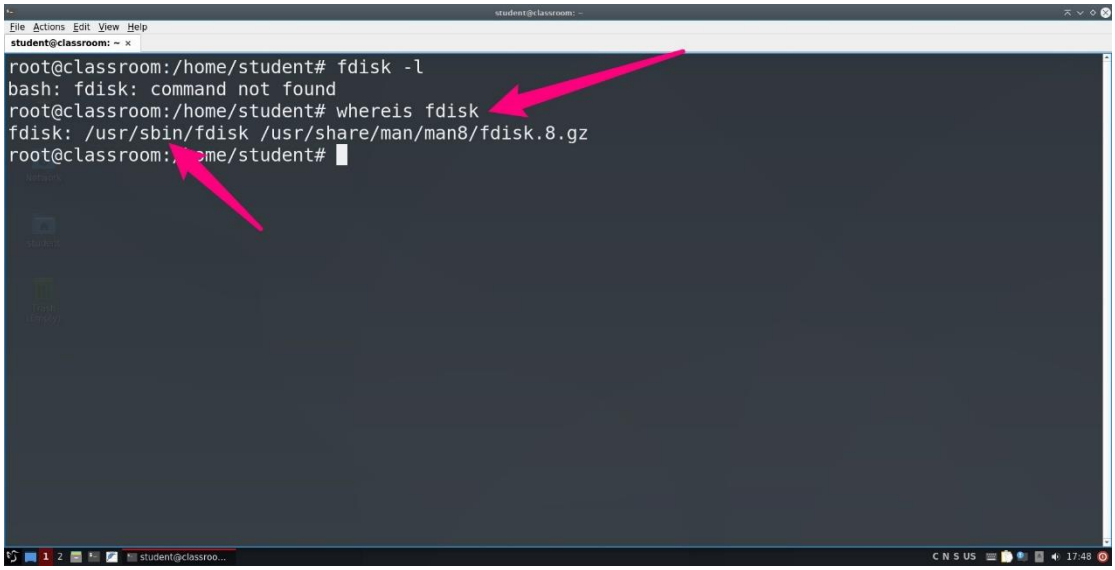
df 命令显示磁盘空间

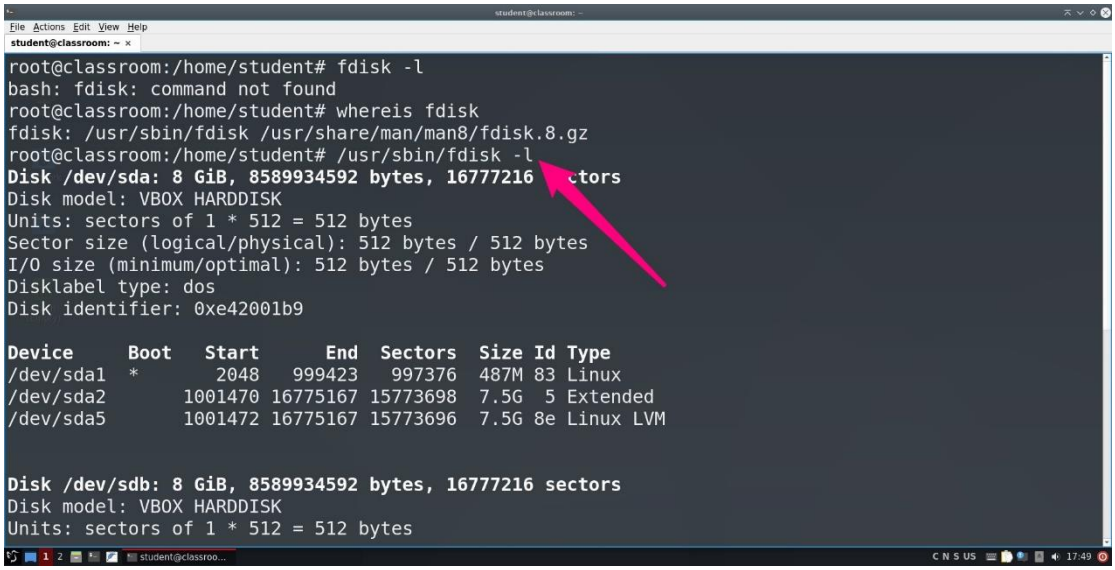


df -T 列出文件系统的类型

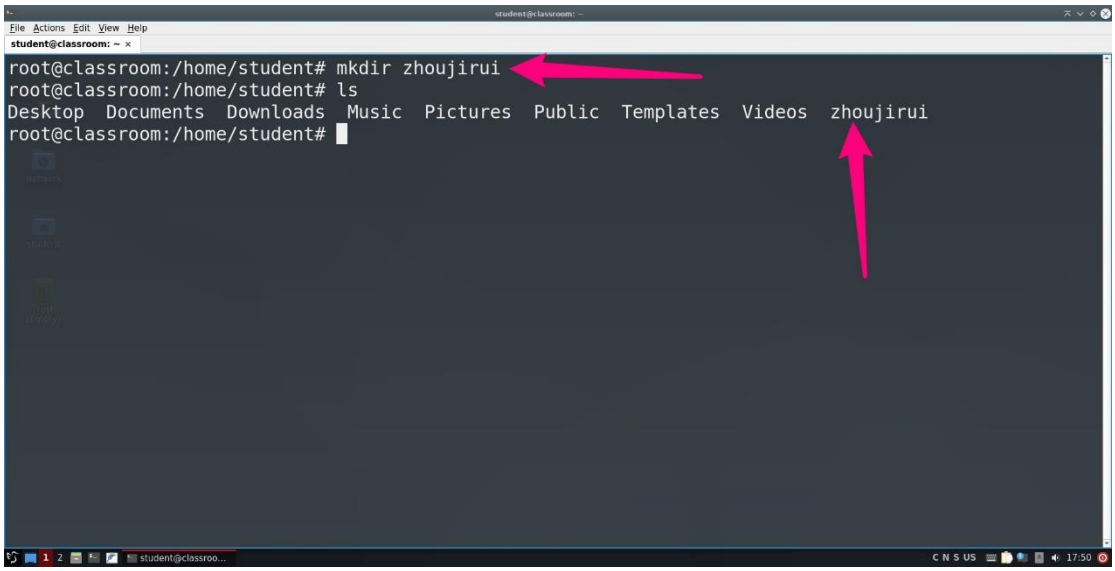


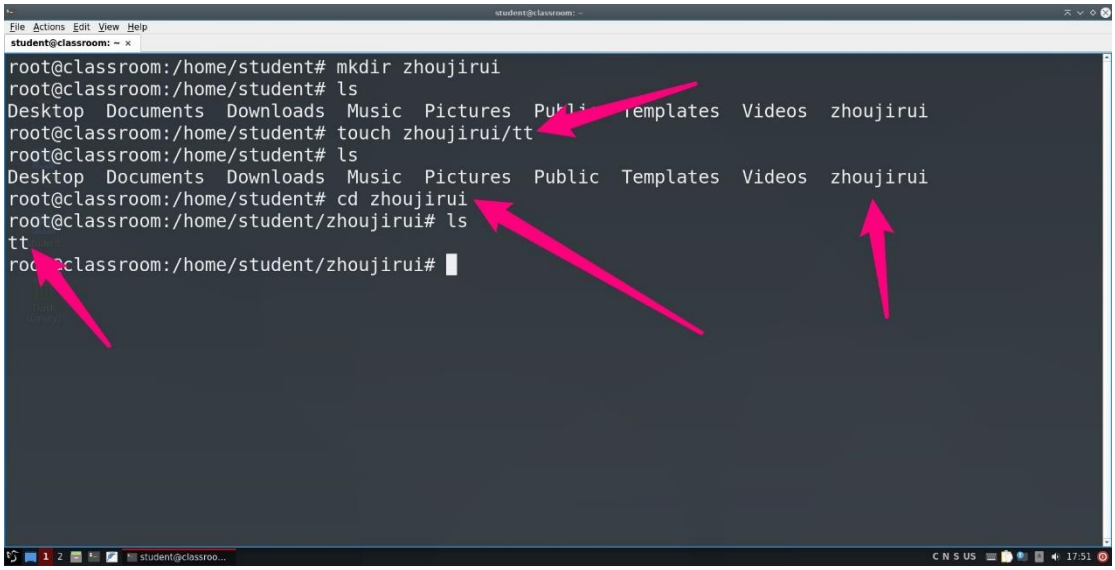
同时可以使用 fdisk


root@classroom:/home/student# fdisk -l
bash: fdisk: command not found
root@classroom:/home/student# whereis fdisk
fdisk: /usr/sbin/fdisk /usr/share/man/man8/fdisk.8.gz
root@classroom:/home/student#


root@classroom:/home/student# fdisk -l
bash: fdisk: command not found
root@classroom:/home/student# whereis fdisk
fdisk: /usr/sbin/fdisk /usr/share/man/man8/fdisk.8.gz
root@classroom:/home/student# /usr/sbin/fdisk -l
Disk /dev/sda: 8 GiB, 8589934592 bytes, 16777216
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xe42001b9
Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 999423 997376 487M 83 Linux
/dev/sda2 1001470 16775167 15773698 7.5G 5 Extended
/dev/sda5 1001472 16775167 15773696 7.5G 8e Linux LVM
Disk /dev/sdb: 8 GiB, 8589934592 bytes, 16777216 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes

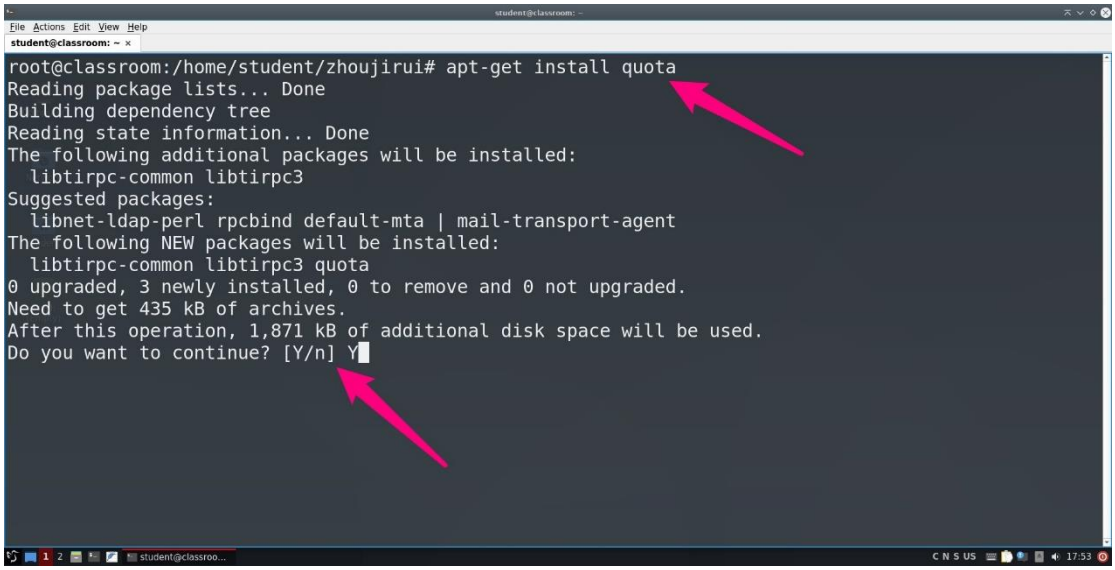
mkdir 创建目录


root@classroom:/home/student# mkdir zhoujirui
root@classroom:/home/student# ls
Desktop Documents Downloads Music Pictures Public Templates Videos zhoujirui
root@classroom:/home/student#

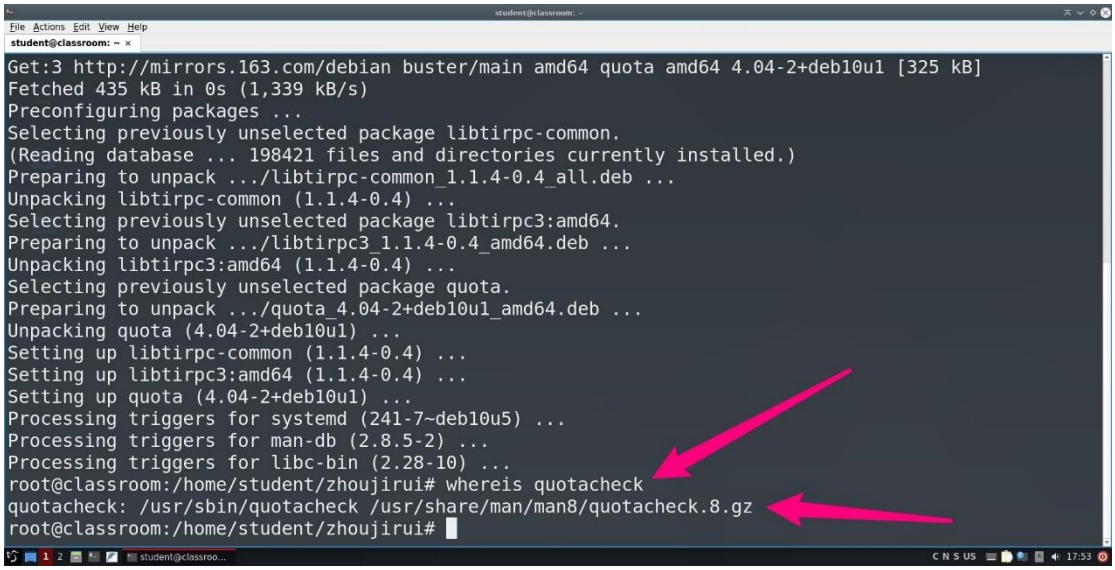


（2）安装 quota 软件包并用 whereis 查看 quotacheck 是否被安装；

apt-get install 安装命令

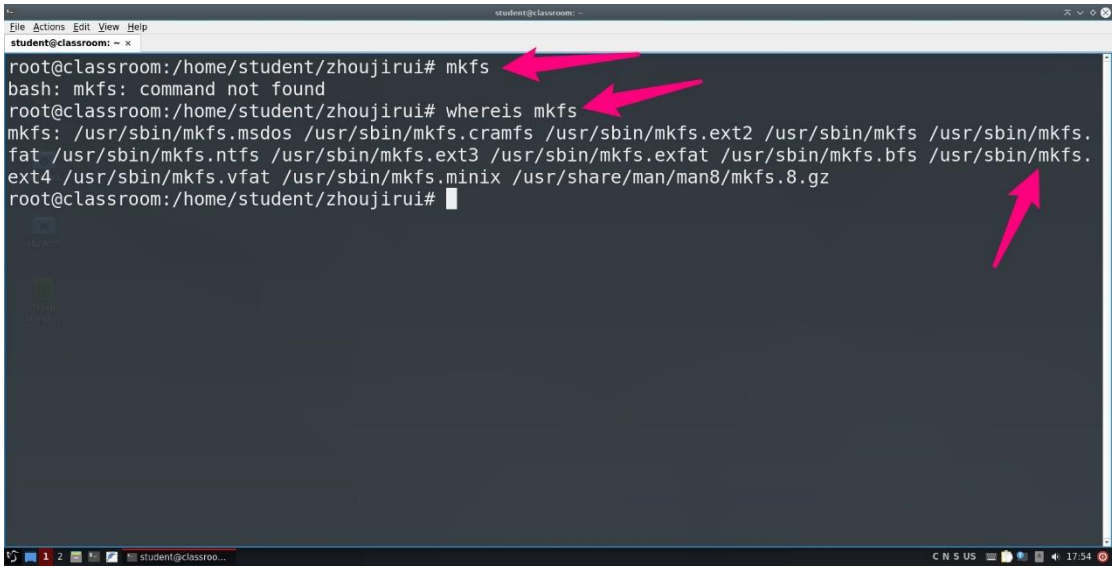


whereis 查找可执行文件位置

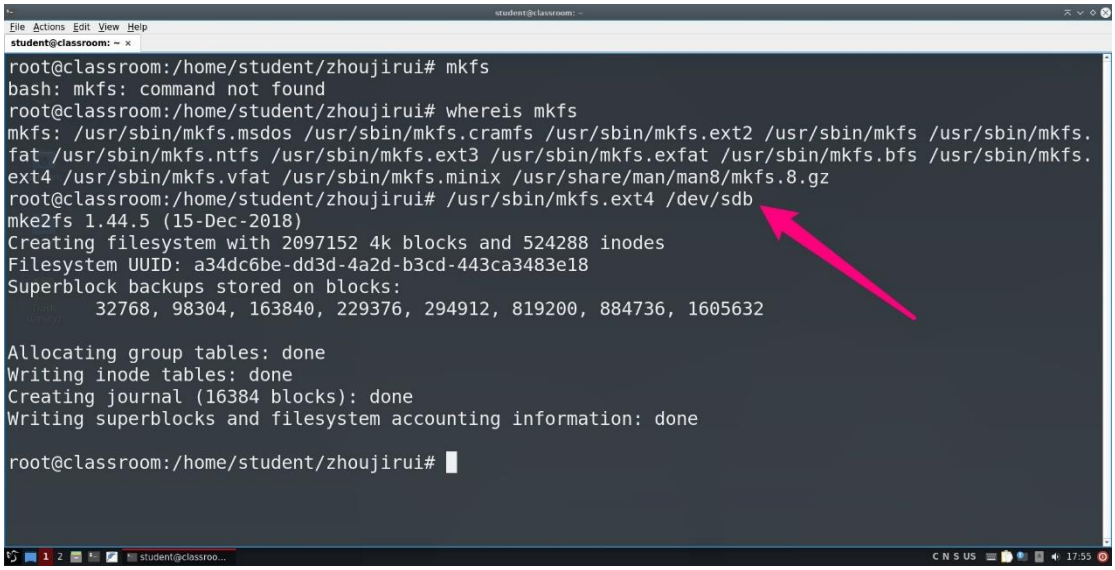


（3）给新硬盘分区并开启磁盘配额功能；

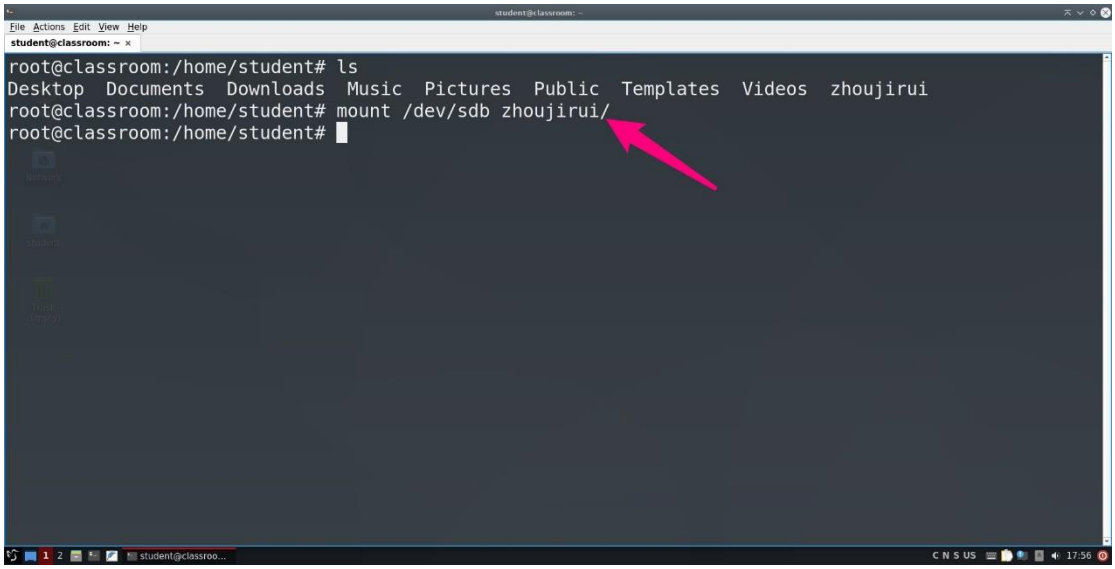
分区格式化命令 mkdir

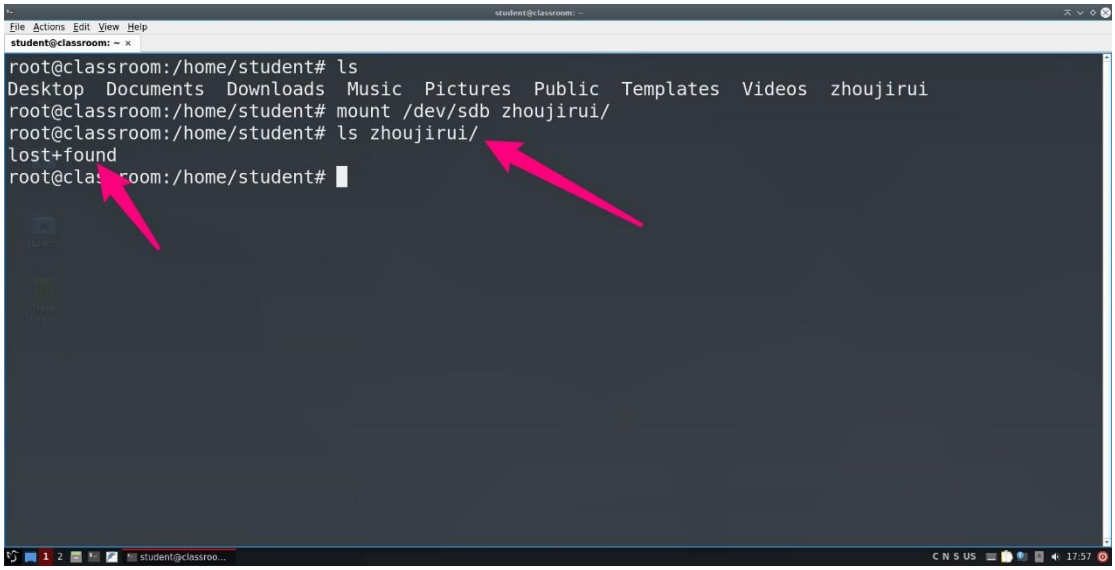


mkfs.ext4 分区格式化为 ext4 文件系统

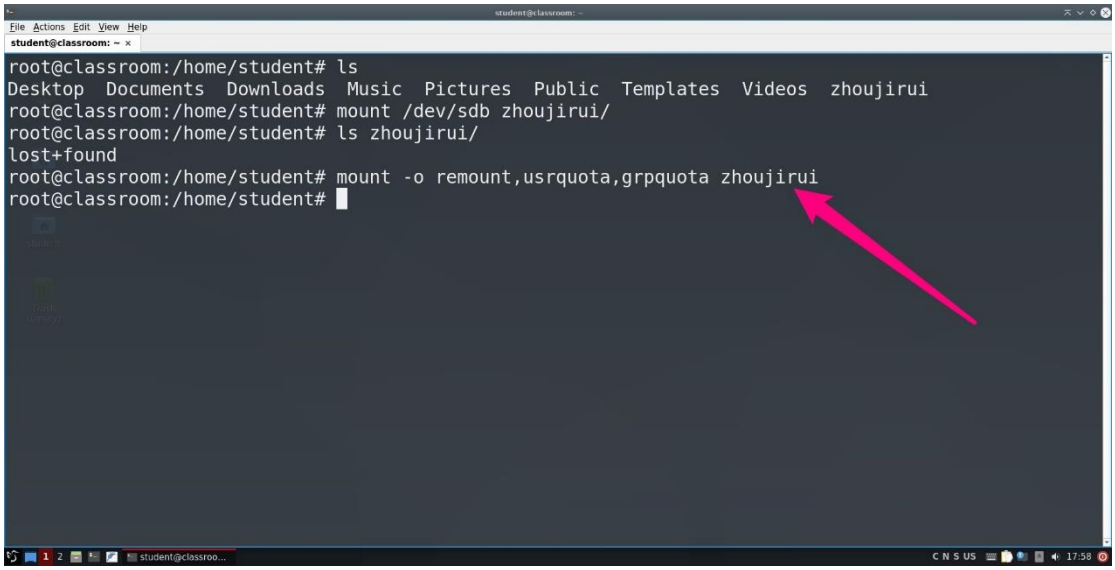

root@classroom:/home/student/zhoujirui# mkfs
bash: mkfs: command not found
root@classroom:/home/student/zhoujirui# whereis mkfs
mkfs: /usr/sbin/mkfs.msdos /usr/sbin/mkfs.cramfs /usr/sbin/mkfs.ext2 /usr/sbin/mkfs /usr/sbin/mkfs.fat /usr/sbin/mkfs.ntfs /usr/sbin/mkfs.ext3 /usr/sbin/mkfs.exfat /usr/sbin/mkfs.bfs /usr/sbin/mkfs.ext4 /usr/sbin/mkfs.vfat /usr/sbin/mkfs.minix /usr/share/man/man8/mkfs.8.gz
root@classroom:/home/student/zhoujirui# /usr/sbin/mkfs.ext4 /dev/sdb
mke2fs 1.44.5 (15-Dec-2018)
Creating filesystem with 2097152 4k blocks and 524288 inodes
Filesystem UUID: a34dc6be-dd3d-4a2d-b3cd-443ca3483e18
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632
Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done
root@classroom:/home/student/zhoujirui#

mount 挂载命令


root@classroom:/home/student# ls
Desktop Documents Downloads Music Pictures Public Templates Videos zhoujirui
root@classroom:/home/student# mount /dev/sdb zhoujirui/
root@classroom:/home/student#

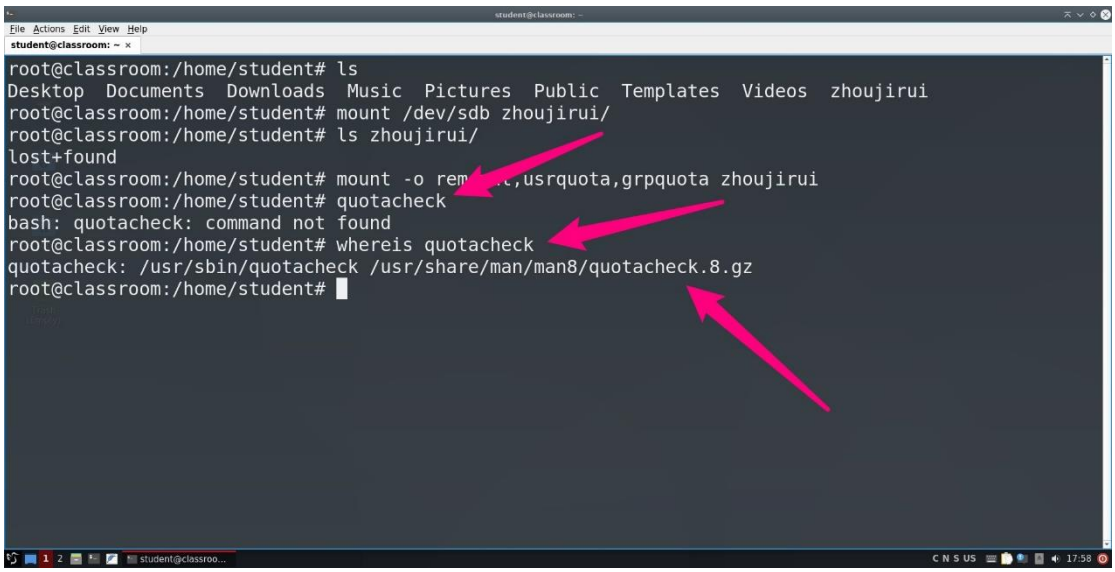

root@classroom:/home/student# ls
Desktop Documents Downloads Music Pictures Public Templates Videos zhoujirui
root@classroom:/home/student# mount /dev/sdb zhoujirui/
root@classroom:/home/student# ls zhoujirui/
lost+found
root@classroom:/home/student#

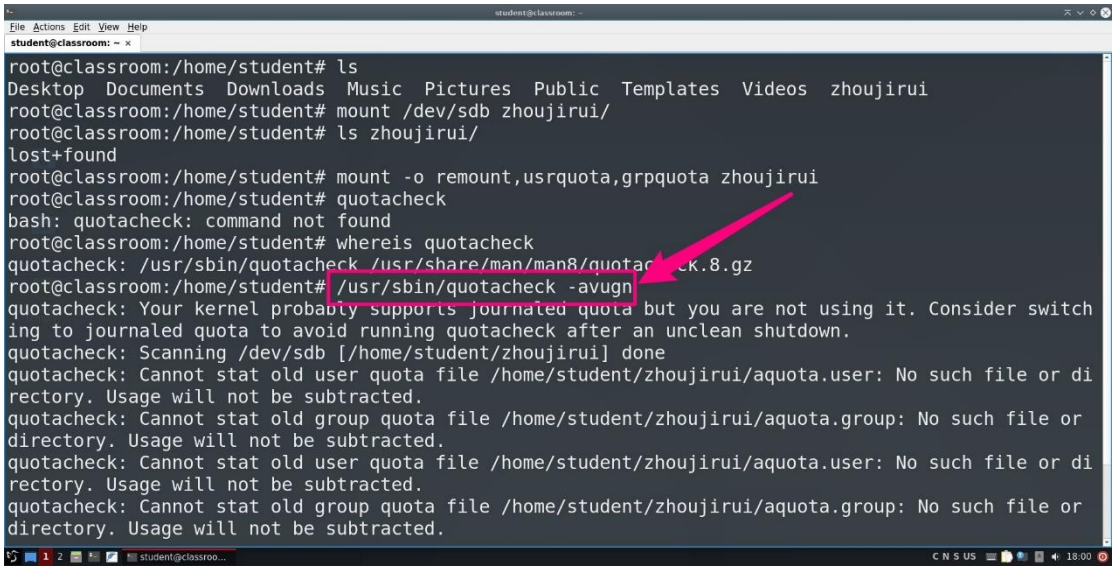
mount -o remount,usrquota,grpquota 配额权限分配

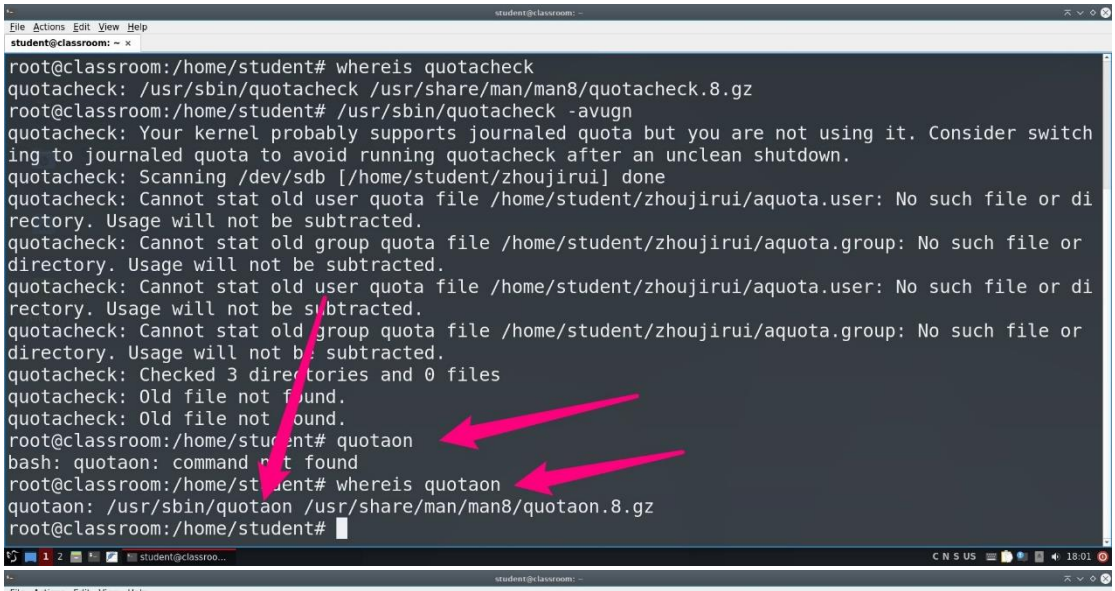


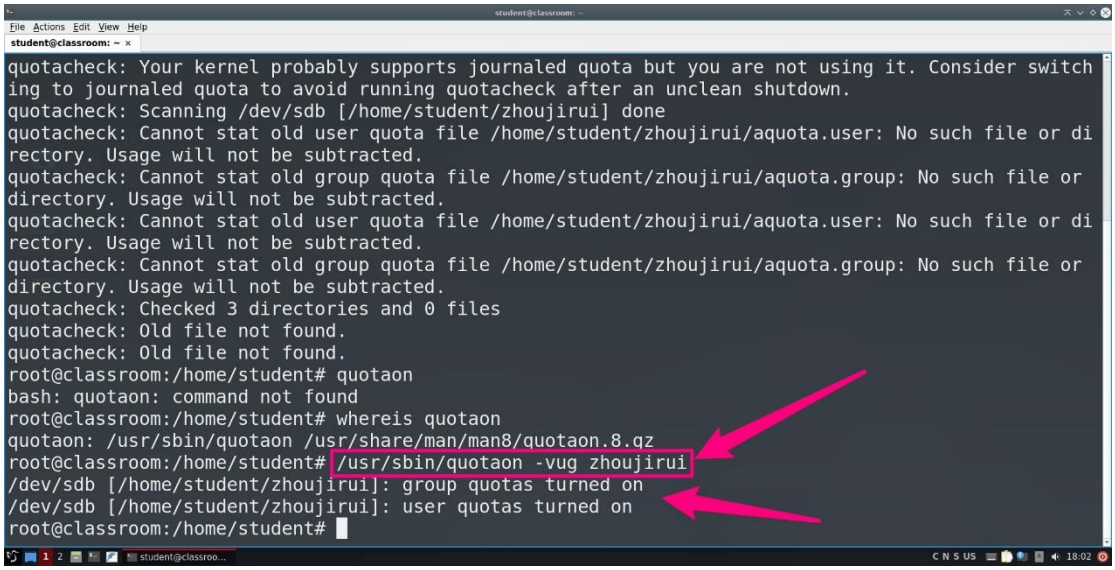
（4）扫描所有支持磁盘配额的分区并在其当前目录下的挂载目录生成相应的配置文件;

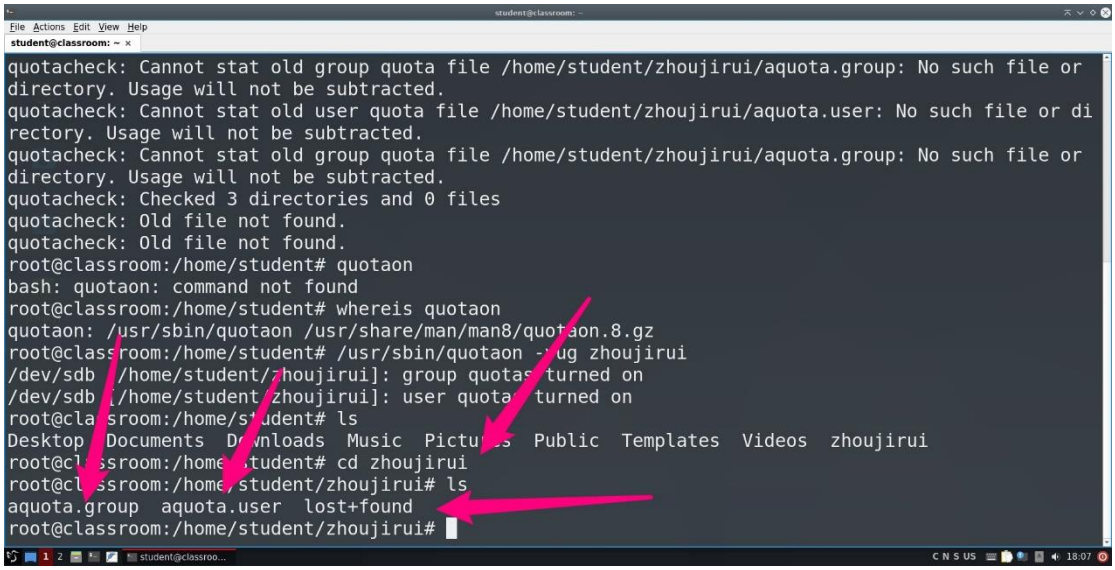
quotacheck -avugn




root@classroom:/home/student# ls
Desktop Documents Downloads Music Pictures Public Templates Videos zhoujirui
root@classroom:/home/student# mount /dev/sdb zhoujirui/
root@classroom:/home/student# ls zhoujirui/
lost+found
root@classroom:/home/student# mount -o remount,usrquota,grpquota zhoujirui
root@classroom:/home/student# quotacheck
bash: quotacheck: command not found
root@classroom:/home/student# whereis quotacheck
quotacheck: /usr/sbin/quotacheck /usr/share/man/man8/quotacheck.8.gz
root@classroom:/home/student# /usr/sbin/quotacheck -avugn
quotacheck: Your kernel probably supports journaled quota but you are not using it. Consider switching to journaled quota to avoid running quotacheck after an unclean shutdown.
quotacheck: Scanning /dev/sdb [/home/student/zhoujirui] done
quotacheck: Cannot stat old user quota file /home/student/zhoujirui/aquota.user: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old group quota file /home/student/zhoujirui/aquota.group: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old user quota file /home/student/zhoujirui/aquota.user: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old group quota file /home/student/zhoujirui/aquota.group: No such file or directory. Usage will not be subtracted.

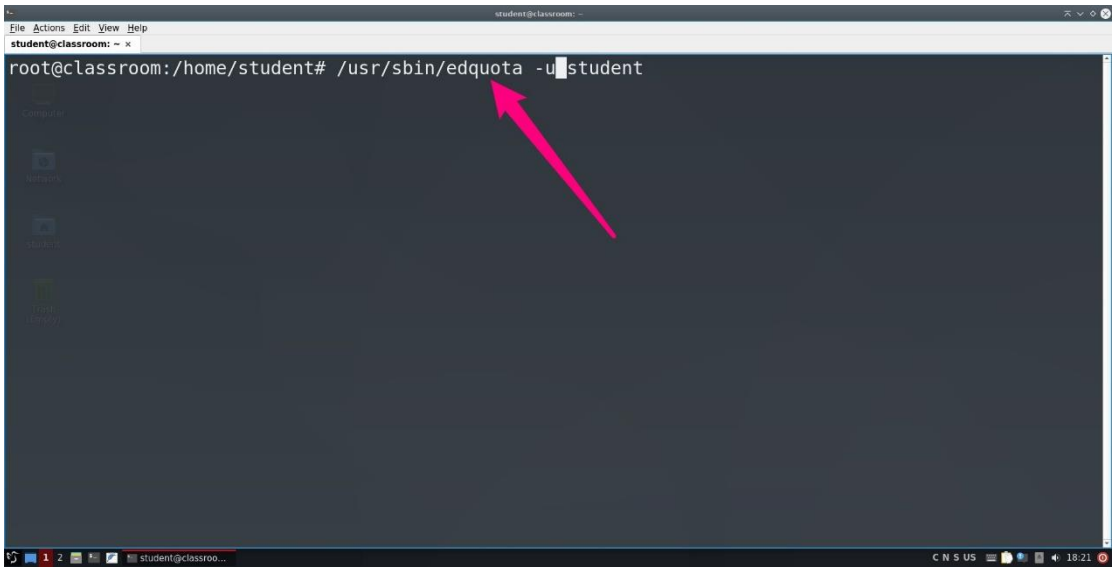

root@classroom:/home/student# whereis quotacheck
quotacheck: /usr/sbin/quotacheck /usr/share/man/man8/quotacheck.8.gz
root@classroom:/home/student# /usr/sbin/quotacheck -avugn
quotacheck: Your kernel probably supports journaled quota but you are not using it. Consider switching to journaled quota to avoid running quotacheck after an unclean shutdown.
quotacheck: Scanning /dev/sdb [/home/student/zhoujirui] done
quotacheck: Cannot stat old user quota file /home/student/zhoujirui/aquota.user: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old group quota file /home/student/zhoujirui/aquota.group: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old user quota file /home/student/zhoujirui/aquota.user: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old group quota file /home/student/zhoujirui/aquota.group: No such file or directory. Usage will not be subtracted.
quotacheck: Checked 3 directories and 0 files
quotacheck: Old file not found.
quotacheck: Old file not found.
root@classroom:/home/student# quotaon
bash: quotaon: command not found
root@classroom:/home/student# whereis quotaon
quotaon: /usr/sbin/quotaon /usr/share/man/man8/quotaon.8.gz
root@classroom:/home/student#

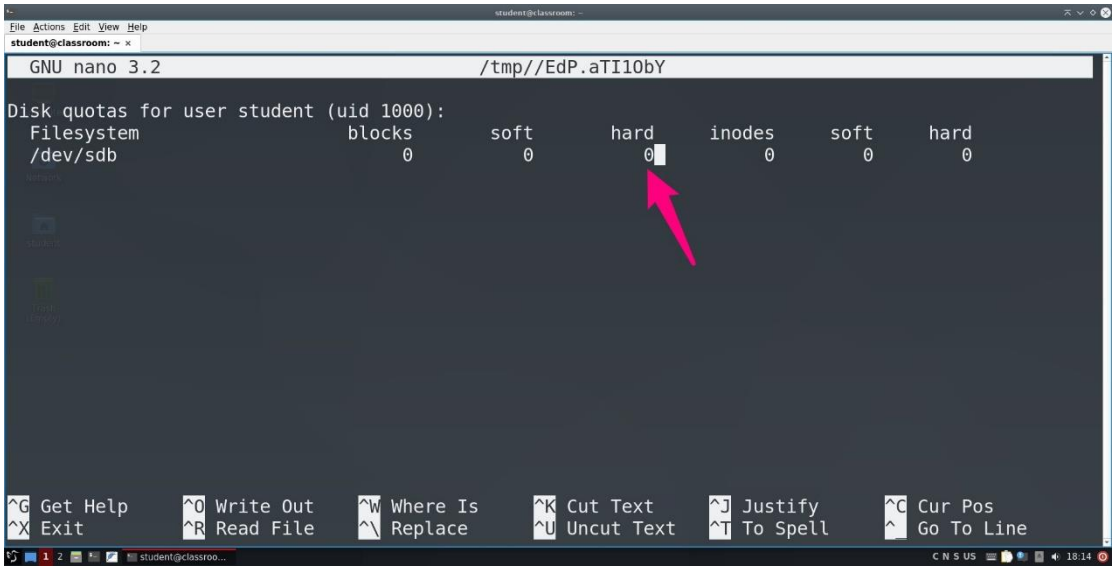

quotacheck: Your kernel probably supports journaled quota but you are not using it. Consider switching to journaled quota to avoid running quotacheck after an unclean shutdown.
quotacheck: Scanning /dev/sdb [/home/student/zhoujirui] done
quotacheck: Cannot stat old user quota file /home/student/zhoujirui/aquota.user: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old group quota file /home/student/zhoujirui/aquota.group: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old user quota file /home/student/zhoujirui/aquota.user: No such file or directory. Usage will not be subtracted.
quotacheck: Cannot stat old group quota file /home/student/zhoujirui/aquota.group: No such file or directory. Usage will not be subtracted.
quotacheck: Checked 3 directories and 0 files
quotacheck: Old file not found.
quotacheck: Old file not found.
root@classroom:/home/student# quotaon
bash: quotaon: command not found
root@classroom:/home/student# whereis quotaon
quotaon: /usr/sbin/quotaon /usr/share/man/man8/quotaon.8.gz
root@classroom:/home/student# /usr/sbin/quotaon -vug zhoujirui
/dev/sdb [/home/student/zhoujirui]: group quotas turned on
/dev/sdb [/home/student/zhoujirui]: user quotas turned on
root@classroom:/home/student#

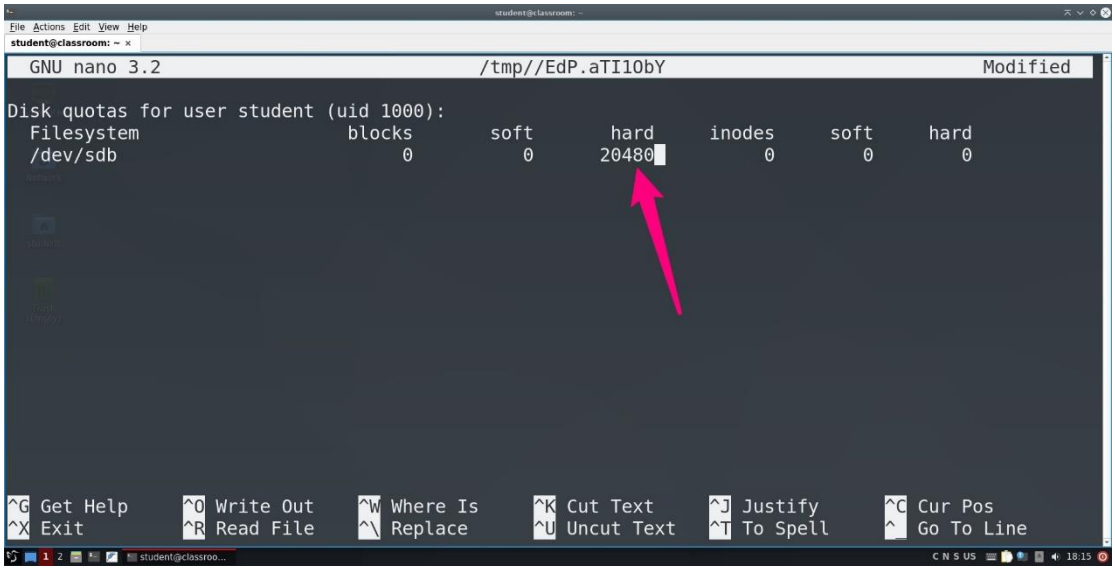


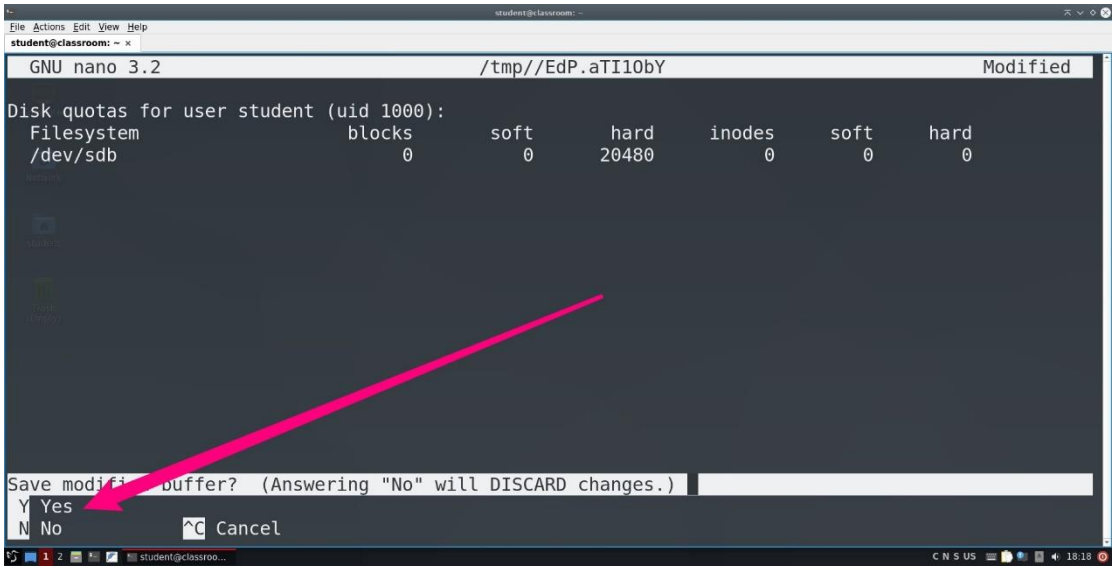
（5）为用户/组设置磁盘配额大小，设置配额为20M;

用户：

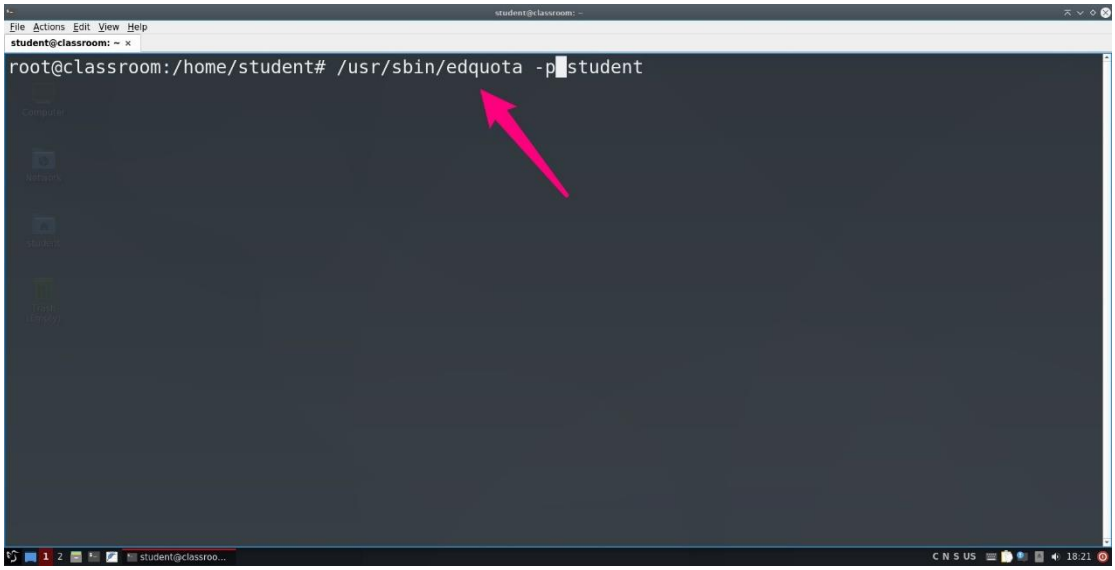



File Actions Edit View Help
student@classroom: ~
GNU nano 3.2 /tmp//EdP.aTI1ObY
Disk quotas for user student (uid 1000):
Filesystem blocks soft hard inodes soft hard
/dev/sdb 0 0 0 0 0 0
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line


File Actions Edit View Help
student@classroom: ~
GNU nano 3.2 /tmp//EdP.aTI1ObY Modified
Disk quotas for user student (uid 1000):
Filesystem blocks soft hard inodes soft hard
/dev/sdb 0 0 20480 0 0 0
^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

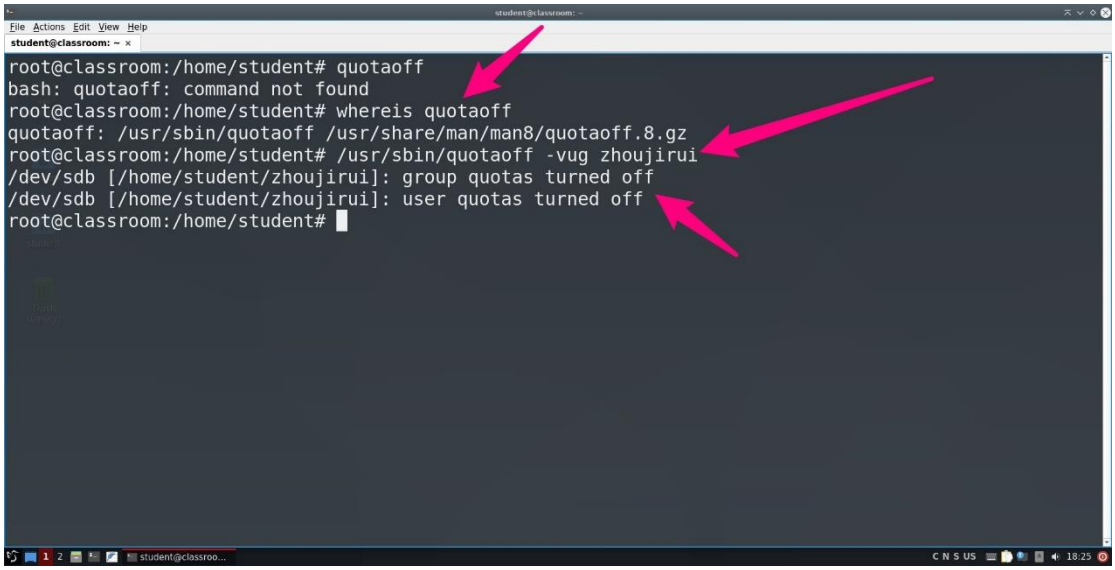

File Actions Edit View Help
student@classroom: ~
GNU nano 3.2 /tmp//EdP.aTI1ObY Modified
Disk quotas for user student (uid 1000):
Filesystem blocks soft hard inodes soft hard
/dev/sdb 0 0 20480 0 0 0
Save modified buffer? (Answering "No" will DISCARD changes.)
Y Yes
N No ^C Cancel

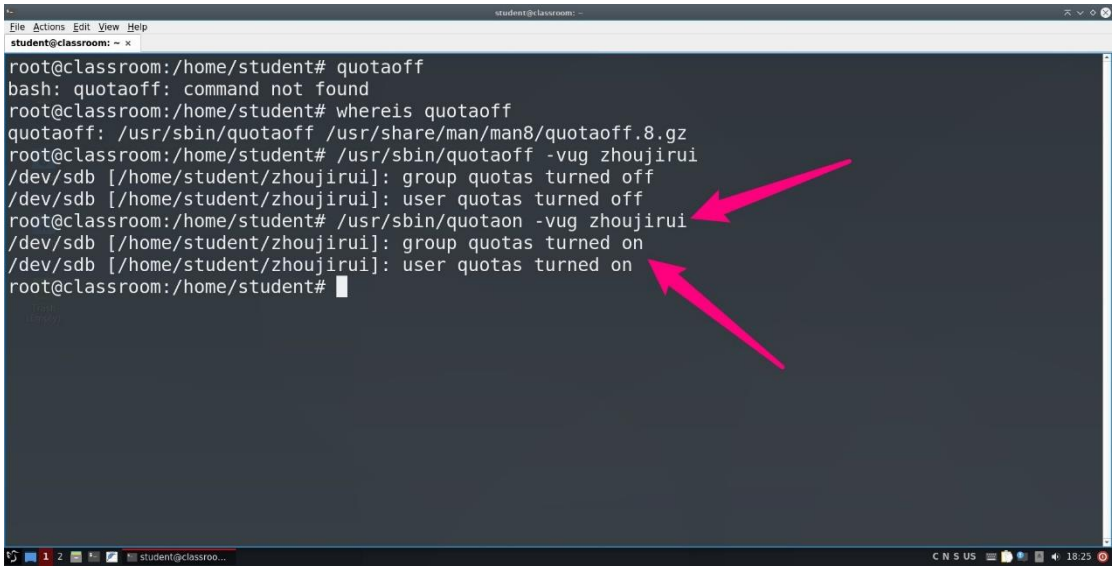
组：



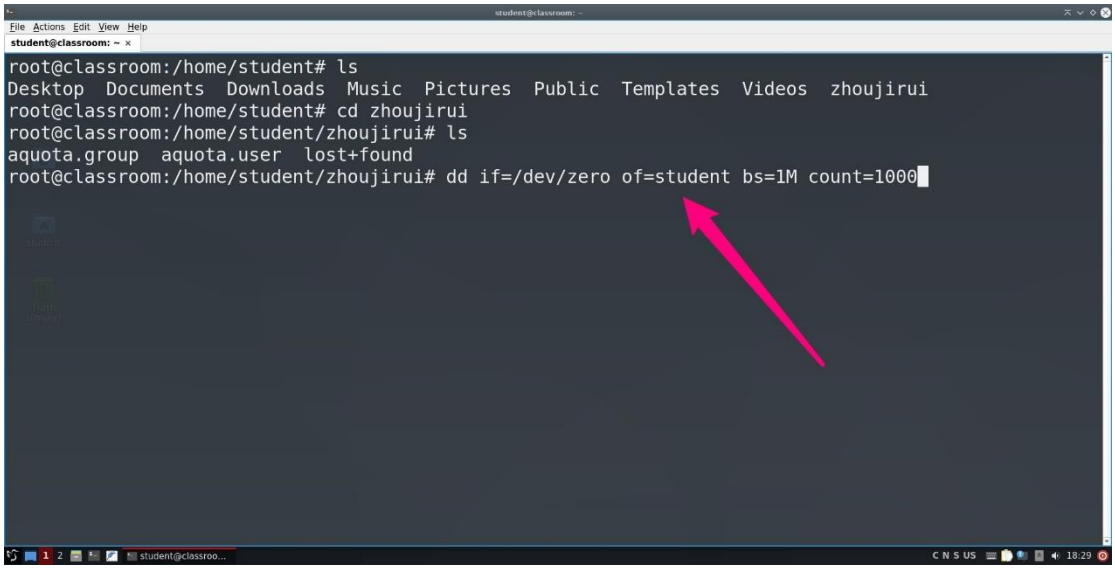
（6）先关闭然后再开启磁盘配额功能;

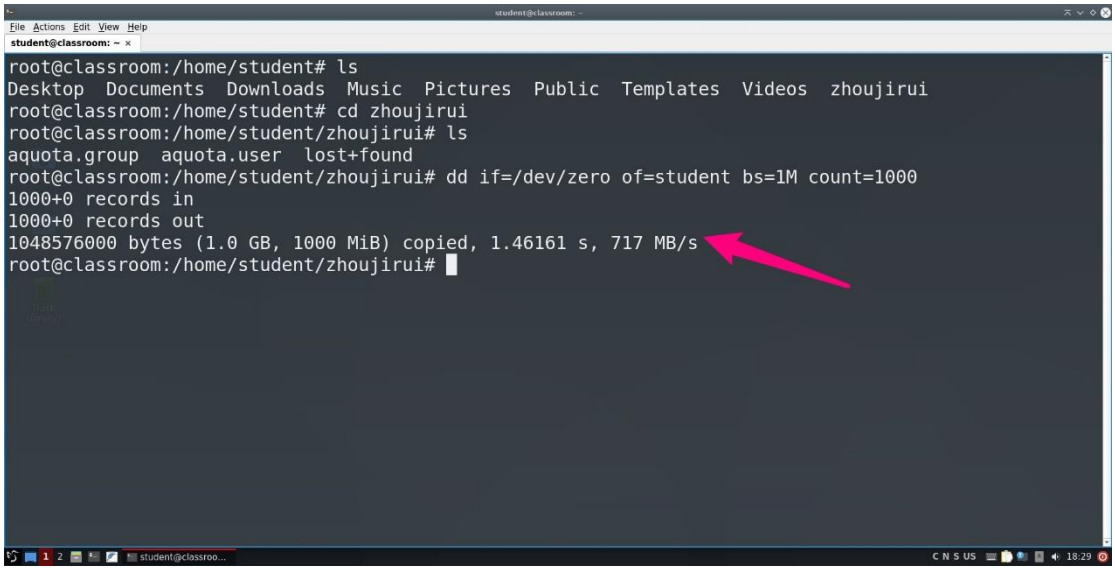
quotaoff 关闭 quotaon 开启



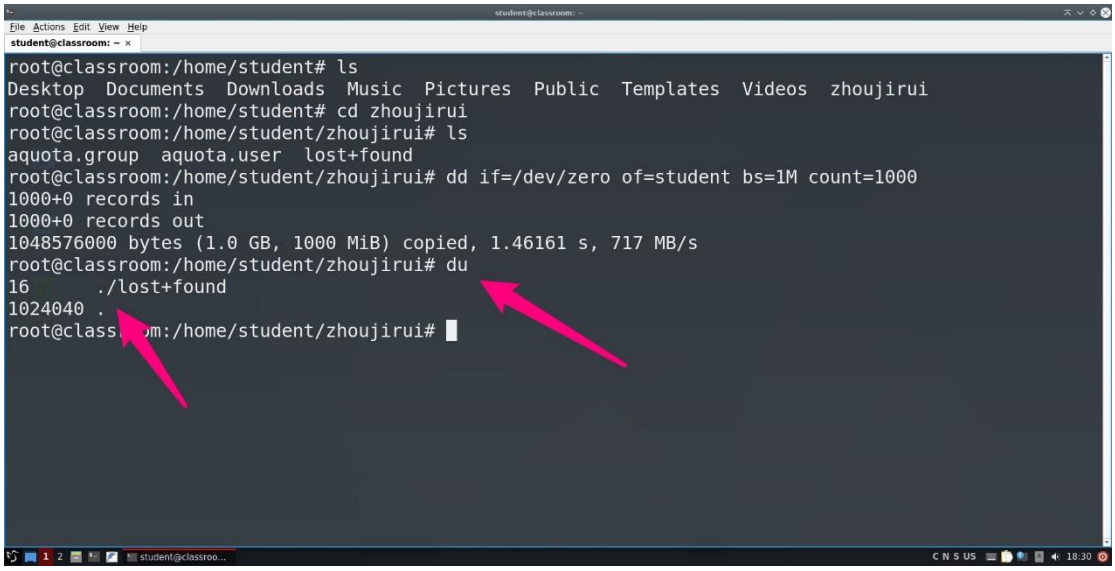


（7）进入第一步所创建的文件夹，然后写1G 的数据到当前文件夹下;





（8）使用 du 查看当前文件夹或者生成的文件所占磁盘空间的大小。



2.学会使用什么做什么事情；

（1）学会了如何检查磁盘空间的占用情况

（2）学会了统计目录或文件所占磁盘空间大小

（3）学会了挂载文件系统

（4）检查磁盘的使用空间与限制

（5）学会了打开与关闭磁盘空间限制

（6）学会了为指定用户分配限额

（7）学会了显示用户或工作组的磁盘配额信息

（8）学会了显示文件系统的配额信息

（9）学会了卸载文件系统

3.在实验过程中遇到了什么问题？是如何解决的？

在实验过程中，遇到了好几个命令，系统提示找不到的情况。

刚开始以为是命令没有安装，可是通过 whereis 命令查询后，发现是有该命令的，所以原因是该命令没有配置环境变量，所以只能进入到命令的安装目录下再使用该命令。

4.还有什么问题尚未解决？可能是什么原因导致的。

在使用 VM Virtual Box 时，一但我改变虚拟机的窗口大小后，虚拟机就黑屏了并且重启也没有效果，只能重新安装虚拟机。