

# 操作系统第十三次作业

## 一.实验目的

实现对fat32磁盘的读写

## 二.实验过程

1. 首先使用mount命令将磁盘挂载到/mnt 目录下

```
cg2112966@cg2112966-VirtualBox:~$ sudo mount -t vfat -o defaults,users,loop,umask=000,iocharset=utf8 usbfat32d.img /mnt
```

2. 使用ls命令查看详细信息

先使用ls命令查看目录下文件

```
cg2112966@cg2112966-VirtualBox:~$ ls /mnt
bin  csong.txt  download_xv6.txt  hello.txt  xv6-public  xv6.tgz
```

接着使用ls -l命令查看目录下文件详细信息

```
cg2112966@cg2112966-VirtualBox:~$ ls -l /mnt
总计 17656
drwxrwxrwx 2 root root    512 12月  2  2017 bin
-rwxrwxrwx 1 root root   1071 12月  2  2017 csong.txt
-rwxrwxrwx 1 root root    51 12月  2  2017 download_xv6.txt
-rwxrwxrwx 1 root root    12 12月  2  2017 hello.txt
drwxrwxrwx 4 root root  17408 12月  2  2017 xv6-public
-rwxrwxrwx 1 root root 18058852 12月  2  2017 xv6.tgz
```

### 3. 使用cp命令和cp -r命令分别拷贝文件和目录到/mnt目录下

使用cp命令后使用ls -l命令查看是否拷贝

```
cg2112966@cg2112966-VirtualBox:~$ sudo cp ./copy.c /mnt
cg2112966@cg2112966-VirtualBox:~$ ls -l /mnt
总计 17659
drwxrwxrwx 2 root root    512 12月 2 2017 bin
-rwxrwxrwx 1 root root   2397 12月 31 00:16 copy.c
-rwxrwxrwx 1 root root   1071 12月 2 2017 csong.txt
-rwxrwxrwx 1 root root    51 12月 2 2017 download_xv6.txt
-rwxrwxrwx 1 root root    12 12月 2 2017 hello.txt
drwxrwxrwx 4 root root  17408 12月 2 2017 xv6-public
-rwxrwxrwx 1 root root 18058852 12月 2 2017 xv6.tgz
```

使用cp -r命令拷贝文件夹

```
cg2112966@cg2112966-VirtualBox:~$ sudo cp -r ./hw4 /mnt
cg2112966@cg2112966-VirtualBox:~$ ls -l /mnt
总计 17659
drwxrwxrwx 2 root root    512 12月 2 2017 bin
-rwxrwxrwx 1 root root   2397 12月 31 00:16 copy.c
-rwxrwxrwx 1 root root   1071 12月 2 2017 csong.txt
-rwxrwxrwx 1 root root    51 12月 2 2017 download_xv6.txt
-rwxrwxrwx 1 root root    12 12月 2 2017 hello.txt
drwxrwxrwx 4 root root    512 12月 31 00:17 hw4
drwxrwxrwx 4 root root  17408 12月 2 2017 xv6-public
-rwxrwxrwx 1 root root 18058852 12月 2 2017 xv6.tgz
```

同样使用使用ls -l命令查看是否拷贝

```
cg2112966@cg2112966-VirtualBox:~$ diff -r ./hw4 /mnt/hw4
```

并使用diff -r命令查看是否拷贝完整

### 4. 使用hexedit命令来查看 fat32d.img 的十六进制信息

```
cg2112966@cg2112966-VirtualBox: ~
00000000 EB 58 90 6D 6B 66 73 2E 66 61 74 00 02 01 20 00 .X.mkfs.fat...
00000010 02 00 00 00 00 F8 00 00 20 00 40 00 00 00 00 00 .....@.....
00000020 00 90 01 00 14 03 00 00 00 00 00 00 02 00 00 00 .....
00000030 01 00 06 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000040 80 01 29 45 51 9E 71 4F 53 32 30 31 37 46 41 54 ..)EQ.q0S2017FAT
00000050 33 32 46 41 54 33 32 20 20 20 0E 1F BE 77 7C AC 32FAT32 ...w|.
00000060 22 C0 74 0B 56 B4 0E BB 07 00 CD 10 5E EB F0 32 ".t.V.....^..2
00000070 E4 CD 16 CD 19 EB FE 54 68 69 73 20 69 73 20 6E .....This is n
00000080 6F 74 20 61 20 62 6F 6F 74 61 62 6C 65 20 64 69 ot a bootable di
00000090 73 6B 2E 20 20 50 6C 65 61 73 65 20 69 6E 73 65 sk. Please inse
000000A0 72 74 20 61 20 62 6F 6F 74 61 62 6C 65 20 66 6C rt a bootable fl
000000B0 6F 70 70 79 20 61 6E 64 00 0A 70 72 65 73 73 20 oppy and..press
000000C0 61 6E 79 20 6B 65 79 20 74 6F 20 74 72 79 20 61 any key to try a
000000D0 67 61 69 6E 20 2E 2E 2E 20 0D 0A 00 00 00 00 00 gain ...
000000E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
000000F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000140 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000150 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
00000160 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
--- usbfat32d.img --0x0/0x3200000--0%-----
```

5. 使用mkdir命令在/mnt目录下生成文件夹

```
cg2112966@cg2112966-VirtualBox:/mnt$ mkdir lab13
cg2112966@cg2112966-VirtualBox:/mnt$ ls -l ./
总计 17660
drwxrwxrwx 2 root root    512 12月  2 2017 bin
-rwxrwxrwx 1 root root 2397 12月 31 00:16 copy.c
-rwxrwxrwx 1 root root 1071 12月  2 2017 csong.txt
-rwxrwxrwx 1 root root   51 12月  2 2017 download_xv6.txt
-rwxrwxrwx 1 root root   12 12月  2 2017 hello.txt
drwxrwxrwx 4 root root    512 12月 31 00:17 hw4
drwxrwxrwx 2 root root    512 12月 31 00:25 lab13
drwxrwxrwx 4 root root 17408 12月  2 2017 xv6-public
-rwxrwxrwx 1 root root 18058852 12月  2 2017 xv6.tgz
```

## 6. 使用rmdir命令来删除目录

```
cg2112966@cg2112966-VirtualBox:/mnt$ rmdir lab13
cg2112966@cg2112966-VirtualBox:/mnt$ ls -l ./
总计 17659
drwxrwxrwx 2 root root    512 12月  2 2017 bin
-rwxrwxrwx 1 root root 2397 12月 31 00:16 copy.c
-rwxrwxrwx 1 root root 1071 12月  2 2017 csong.txt
-rwxrwxrwx 1 root root   51 12月  2 2017 download_xv6.txt
-rwxrwxrwx 1 root root   12 12月  2 2017 hello.txt
drwxrwxrwx 4 root root    512 12月 31 00:17 hw4
drwxrwxrwx 4 root root 17408 12月  2 2017 xv6-public
-rwxrwxrwx 1 root root 18058852 12月  2 2017 xv6.tgz
```

## 7. 使用touch命令来创建一个新的文件

```
cg2112966@cg2112966-VirtualBox:/mnt$ touch lab13.txt
```

## 8. 使用ed命令来进行文件的编辑，然后保存

```
cg2112966@cg2112966-VirtualBox:/mnt$ ed lab13.txt
0
a
hello!
o
.
?
W
11
q
```

9. 使用md5sum来检验 fat32 文件系统的文件 lab13.txt 的校验和

```
cg2112966@cg2112966-VirtualBox:/mnt$ sudo md5sum lab13.txt
c21d6c5e1e9b34d10d64163719973eca lab13.txt
```

10. 使用file来看lab13.txt的类型

```
cg2112966@cg2112966-VirtualBox:/mnt$ file lab13.txt
lab13.txt: Unicode text, UTF-8 text
```

11. 使用tree命令来看目录的结构

```
cg2112966@cg2112966-VirtualBox:/mnt$ sudo tree
.
├── bin
│   └── kernel
├── copy.c
├── csong.txt
├── download_xv6.txt
├── hello.txt
├── hw4
│   ├── bin
│   │   └── Debug
│   │       └── hw4
│   ├── hw4.cbp
│   ├── hw4.layout
│   ├── main.c
│   ├── obj
│   │   └── Debug
│   │       └── main.o
└── xv6-public
```

12. 使用umount命令来卸载挂载在/mnt上的磁盘文件

```
cg2112966@cg2112966-VirtualBox:/$ sudo umount /mnt
cg2112966@cg2112966-VirtualBox:/$ ls -l /mnt
总计 0
```

至此完成实验所有操作

### 三.实验心得体会

本次实验完成了对 fat32 磁盘的读写。通过使用与 fat32 文件系统相关的命令来进行一系列文件的操作比如挂载和取消挂载，创建文件并编辑。此次实验加深了我对linux系统文件读写命令的认识，对文件系统有了进一步的理解。