

山东大学 计算机科学与技术 学院

操作系统 课程实验报告

学号：201705130120	姓名：苑宗鹤	班级：17 1 班
实验题目：实验五		
实验学时：2	实验日期：2020/4/17	
实验目的： 理解文件系统中文件操作的实现方法，如文件打开、读、写、扩展、定位、关闭等; 理解如何管理硬盘空闲块; 创建文件时，如何为文件分配目录项及文件头(FCB); 理解文件扩展时，如何为要扩展的数据查找并分配空闲块; 理解文件扩展后，文件大小是如何记录与保存的; 文件被删除后，如何回收为其分配的资源，如文件头、目录项、硬盘块等;		
实验环境：ubuntu18 x64 windows10 clion		
实验步骤： (1)文件创建时，其大小可初始化为 0; (2)当一个文件写入更多的数据时，其大小可随之增大; (3)要求能够在从一个文件的任何位置开始写入数据，即能够正确处理命令行参数-ap,-hap,及-nap;		
实验结果： 仓库地址： https://github.com/Yuandiaodiaodiao/nachos-cmake-x64 为什么一个文件最多 30 个 sector 一个 fileHeader 占用一个扇区 128Byte 4Byte 用来存文件大小 4Byte 用来存扇区数量 剩下 120Byte 每 4Byte 存一个扇区 id 所以 30 个		

为什么最多 10 个文件

1 扇区定义的文件索引大小为 0xc8 200Byte

一个文件索引由 20Byte 组成 一共最多 10 个文件

删除文件后都有哪些变化

文件索引中第一个文件使用 bool 标志被归 0

位图示文件中 对应被删除文件的头文件和数据文件所在扇区被置 0

Offset BUG 改进

如果 ap 一个 128bit 的文件到 nachos 的空文件中 会分配两个扇区

修改逻辑记录是否是空文件来解决 bug

```
if ( filesize == 0 && incrementBytes > 0 ) //新文件
{
    if ( freeMap->NumClear() < 1 ) { //查看有无空闲扇区
        return 0;
    }
    dataSectors[ 0 ] = freeMap->Find(); //分配1扇区给数据区
    numSectors = 1;
    numBytes = 0;
    newFile = true;

    numBytes = filesize;

    int newsectorBytes;
    if ( newFile ) {
        //新建文件 已有0号扇区分配
        newsectorBytes = incrementBytes - SectorSize;
    } else {
        int offset = numBytes % SectorSize;
        newsectorBytes = offset == 0 ? incrementBytes : incrementBytes - ( SectorSize - offset ); //总增量-最后扇区
    }
    //最后扇区的占用大小
    //需要在新扇区放置的bit
```

FileHeader::Allocate

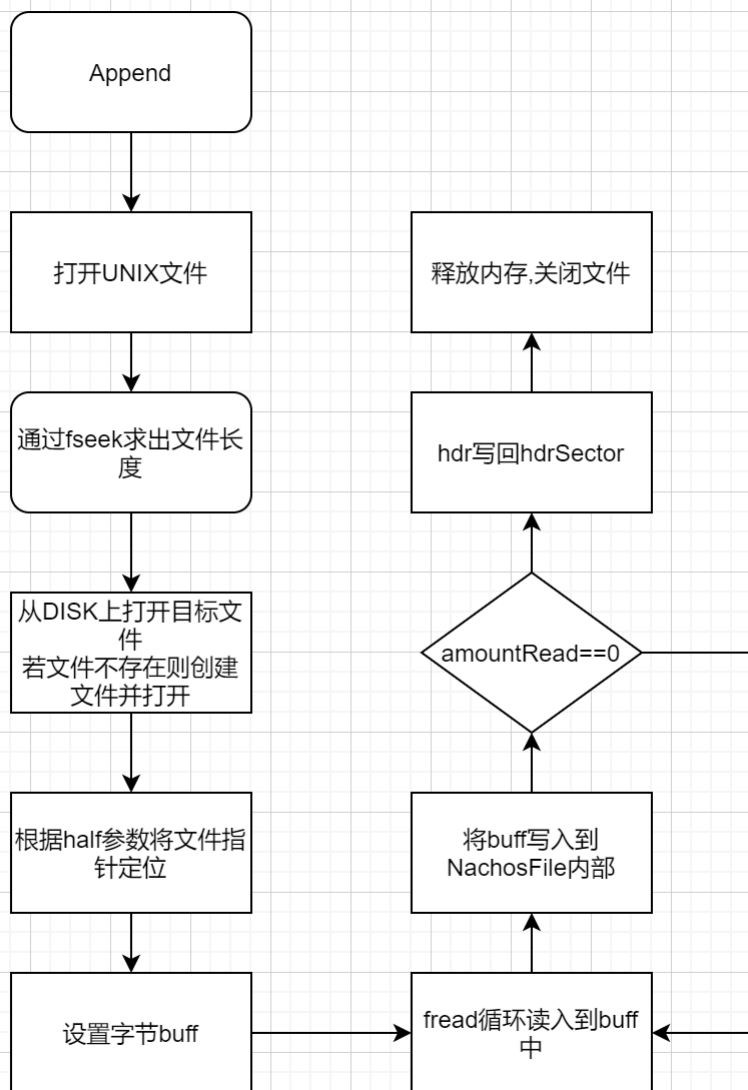
检查文件30扇区大小
限制

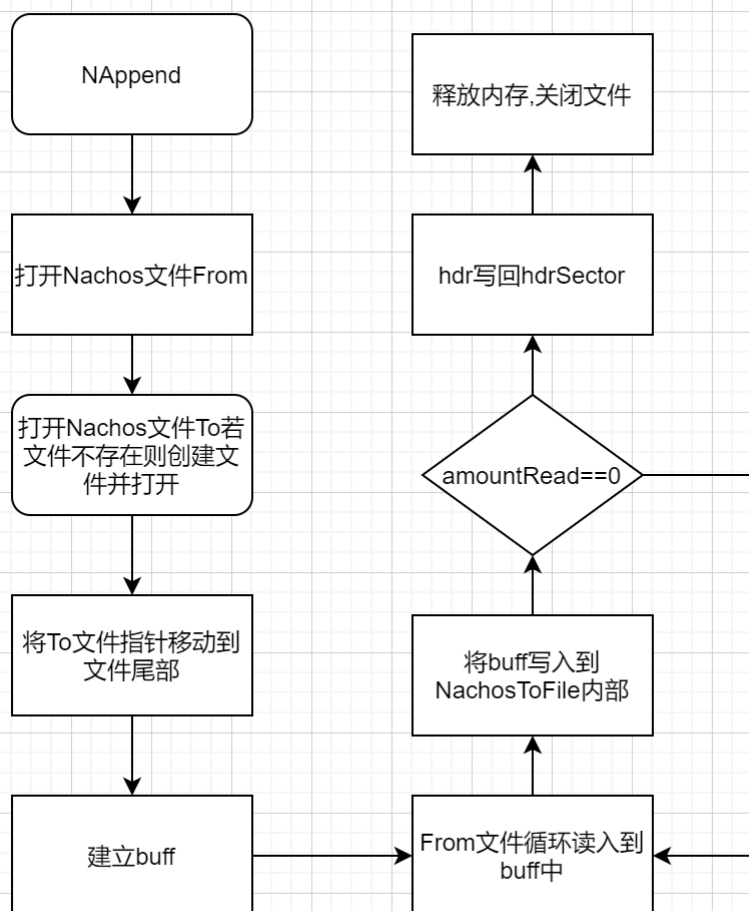
如果文件大小为0并且
有新增数据 分配一个
data扇区空间

计算填补已有扇区空
余空间后 需要新增的
扇区数量

分配额外扇区







```
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000100 00 00 00 00 1f 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 |.....|
+
00020004
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ ./lab5_nachos -cp test/small small
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 211520, idle 210580, system 940, user 0
Disk I/O: reads 18, writes 13
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ hexdump -C DISK
00000000 ab 89 67 45 80 00 00 00 01 00 00 00 02 00 00 00 |..gE.....|
00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000100 00 00 00 00 7f 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 |.....|
+
00000180 00 00 00 00 01 00 00 00 05 00 00 00 73 6d 61 6c |.....small|
00000190 6c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |l.....|
000001a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000280 00 00 00 00 54 00 00 00 01 00 00 00 06 00 00 00 |....T.....|
00000290 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000300 00 00 00 00 73 6d 61 6c 6c 20 66 69 6c 65 20 73 |...small file s|
00000310 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c 20 |small file small|
00000320 66 69 6c 65 0a 73 6d 61 6c 6c 20 66 69 6c 65 20 |file small file |
00000330 73 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c |small file small|
00000340 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 |file ***end of |
00000350 66 69 6c 65 2a 2a 2a 0a 00 00 00 00 00 00 00 00 |file***.....|
00000360 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00020004
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ ./lab5_nachos -cp test/small small
Copy: couldn't create output file small
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 2550, idle 2420, system 130, user 0
Disk I/O: reads 4, writes 0
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ hexdump -C DISK
00000000 ab 89 67 45 80 00 00 00 01 00 00 00 02 00 00 00 |..gE.....|
00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000100 00 00 00 00 7f 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 |.....|
+
00000180 00 00 00 00 01 00 00 00 05 00 00 00 73 6d 61 6c |.....small|
00000190 6c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |l.....|
000001a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000280 00 00 00 00 54 00 00 00 01 00 00 00 06 00 00 00 |....T.....|
00000290 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000300 00 00 00 00 73 6d 61 6c 6c 20 66 69 6c 65 20 73 |...small file s|
00000310 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c 20 |small file small|
00000320 66 69 6c 65 0a 73 6d 61 6c 6c 20 66 69 6c 65 20 |file small file |
00000330 73 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c |small file small|
00000340 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 |file ***end of |
00000350 66 69 6c 65 2a 2a 2a 0a 00 00 00 00 00 00 00 00 |file***.....|
00000360 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00020004
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ ./lab5_nachos -ap test/big small
written back
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 595020, idle 590630, system 4390, user 0
Disk I/O: reads 75, writes 71
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ hexdump -C DISK
00000000 ab 89 67 45 80 00 00 00 01 00 00 00 02 00 00 00 |..gE.....|
00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000100 00 00 00 00 ff 03 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 |.....|
+
00000180 00 00 00 00 01 00 00 00 05 00 00 00 73 6d 61 6c |.....small|
00000190 6c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |l.....|
000001a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000280 00 00 00 00 a8 01 00 00 04 00 00 00 06 00 00 00 |.....|
00000290 07 00 00 00 08 00 00 00 09 00 00 00 00 00 00 00 |.....|
000002a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00000300 00 00 00 00 73 6d 61 6c 6c 20 66 69 6c 65 20 73 |...small file s|
00000310 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c 20 |small file small|
00000320 66 69 6c 65 0a 73 6d 61 6c 6c 20 66 69 6c 65 20 |file small file |
00000330 73 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c |small file small|
00000340 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 |file ***end of |
00000350 66 69 6c 65 2a 2a 2a 0a 62 69 67 20 66 69 6c 65 |big file big fi|
00000360 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 |big file big fi|
00000370 6c 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 |le big file big |
00000380 66 69 6c 65 20 0a 62 69 67 20 66 69 6c 65 20 62 |file .big file b|
00000390 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 |ig file big file|
000003a0 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 |big file big fi|
000003b0 6c 65 20 0a 62 69 67 20 66 69 6c 65 20 62 69 67 |le .big file big|
000003c0 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 |file big file b|
000003d0 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 |ig file big file|
000003e0 20 0a 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 |big file big fi|
000003f0 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 |le big file big|
00000400 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 0a |file big file .|
00000410 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c |big file big fil|
00000420 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 |e big file .big |
00000430 69 6c 65 20 62 69 67 20 66 69 6c 65 20 0a 62 69 |ile big file .bi|
00000440 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 |g file big file |
00000450 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c |big file big fil|
00000460 65 20 62 69 67 20 66 69 6c 65 20 0a 62 69 67 20 |e big file .big |
00000470 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 |file big file .bi|
00000480 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 |g file big file |
00000490 62 69 67 20 66 69 6c 65 20 0a 2a 2a 2a 65 6e 64 |big file .***end|
000004a0 20 6f 66 20 66 69 6c 65 2a 2a 2a 0a 00 00 00 00 |of file***.....|
000004b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
+
00020004
yuan@ubuntu:/tmp/tmp.RsBw9hD0RQ/Lab5$ ./lab5_nachos -ap test/medium medium
written back
No threads ready or runnable, and no pending interrupts.
```

```
Ticks: total 357520, idle 354930, system 2590, user 0
Disk I/O: reads 40, writes 40
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBwH0DRQ/lab5$ hexdump -C DISK
00000000 ab 89 67 45 80 00 00 00 01 00 00 00 02 00 00 00 |.gE.....|
00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000100 00 00 00 00 ff 1f 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 |.....|
*
00000180 00 00 00 00 01 00 00 00 05 00 00 00 73 6d 61 6c |.....smal|
00000190 6c 00 00 00 00 00 00 00 01 00 00 00 0a 0a 00 00 |l.....|
000001a0 6d 65 64 69 75 6d 00 00 00 00 00 00 00 00 00 00 |medium.....|
000001b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000280 00 00 00 00 a8 01 00 00 04 00 00 00 06 00 00 00 |.....|
00000290 07 00 00 00 08 00 00 00 09 00 00 00 00 00 00 00 |.....|
000002a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000300 00 00 00 00 73 6d 61 6c 6c 20 66 69 6c 65 20 73 |....small file s|
00000310 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c 20 |small file small|
00000320 66 69 6c 65 0a 73 6d 61 6c 6c 20 66 69 6c 65 20 |file.small file |
00000330 73 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c |small file small|
00000340 20 66 69 6c 65 0a 2a 2a 2a 2a 65 6e 64 20 6f 66 20 |file***end of |
00000350 66 69 6c 65 2a 2a 2a 2a 2a 2a 2a 2a 2a 2a 2a 2a |le***big file |
00000360 20 62 69 67 20 6f 6f 6f 6f 6f 6f 6f 6f 6f 6f 6f |big file big fil|
00000370 6c 65 20 62 69 67 6f 6f 6f 6f 6f 6f 6f 6f 6f 6f |a big file big |
00000380 66 69 6c 65 20 6a 62 69 67 6f 6f 6f 6f 6f 6f 6f |file .big file b|
00000390 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 |ig file big file|
000003a0 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 | big file big fi|
000003b0 6c 65 20 6a 62 69 67 20 66 69 6c 65 20 62 69 67 |le .big file big|
000003c0 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 | file big file b|
000003d0 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 |ig file big file|
000003e0 20 0a 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 |.big file big fi|
000003f0 69 6c 65 20 6a 62 69 67 20 66 69 6c 65 20 62 69 67 |ile big file big|
00000400 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 | file big file |
00000410 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c |big file big fil|
00000420 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 |e big file big f|
00000430 69 6c 65 20 6a 62 69 67 20 66 69 6c 65 20 6a 62 |ile big file .bi|
00000440 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 |g file big file |
00000450 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c |big file big fil|
00000460 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 |um file medium f|
00000470 66 69 6c 65 20 6a 62 69 67 20 66 69 6c 65 20 6a |ile medium file.|
00000480 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 |medium file medi|
00000490 62 69 67 20 66 69 6c 65 20 6a 2a 2a 2a 65 6e 64 |um file medium f|
000004a0 20 6f 66 20 66 69 6c 65 2a 2a 2a 0a 00 00 00 00 |ile***end of fi|
000004b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |le***.....|
000004c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000500 00 00 00 00 a2 00 00 00 02 00 00 00 0b 00 00 00 |.....|
00000510 0c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
00000520 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000580 00 00 00 00 6d 65 64 69 75 6d 20 66 69 6c 65 20 |....medium file |
00000590 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi|
000005a0 75 6d 20 66 69 6c 65 0a 6d 65 64 69 75 6d 20 66 |um file.medium f|
000005b0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile medium file |
000005c0 6d 65 64 69 75 6d 20 66 69 6c 65 0a 6d 65 64 69 |medium file medi|
000005d0 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f|
000005e0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 0a |ile medium file.|
000005f0 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi|
00000600 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f|
00000610 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 66 69 |ile***end of fi|
00000620 6c 65 2a 2a 2a 0a 00 00 00 00 00 00 00 00 00 00 |le***.....|
00000630 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00020004
yuan@ubuntu:/tmp/tmp.RsBwH0DRQ/lab5$ ./lab5_nachos -hap test/medium small
written back
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 307020, idle 305750, system 1270, user 0
Disk I/O: reads 23, writes 19
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBwH0DRQ/lab5$ hexdump -C DISK
00000000 ab 89 67 45 80 00 00 00 01 00 00 00 02 00 00 00 |.gE.....|
00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000100 00 00 00 00 ff 1f 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 |.....|
*
00000180 00 00 00 00 01 00 00 00 05 00 00 00 73 6d 61 6c |.....smal|
00000190 6c 00 00 00 00 00 00 00 01 00 00 00 0a 0a 00 00 |l.....|
000001a0 6d 65 64 69 75 6d 00 00 00 00 00 00 00 00 00 00 |medium.....|
000001b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000280 00 00 00 00 a8 01 00 00 04 00 00 00 06 00 00 00 |.....|
00000290 07 00 00 00 08 00 00 00 09 00 00 00 00 00 00 00 |.....|
000002a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000300 00 00 00 00 73 6d 61 6c 6c 20 66 69 6c 65 20 73 |....small file s|
00000310 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c 20 |small file small|
00000320 66 69 6c 65 0a 73 6d 61 6c 6c 20 66 69 6c 65 20 |file.small file |
00000330 73 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c |small file small|
00000340 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 20 |file***end of |
00000350 66 69 6c 65 2a 2a 2a 2a 2a 2a 2a 2a 2a 2a 2a 2a |big file big fil|
00000360 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 | big file big fi|
00000370 6c 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 |le big file big |
00000380 66 69 6c 65 20 6a 62 69 67 20 66 69 6c 65 20 62 |file .big file b|
00000390 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 |ig file big file|
000003a0 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 | big file big fi|
000003b0 6c 65 20 6a 62 69 67 20 66 69 6c 65 20 62 69 67 |le .big file big|
000003c0 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 | file big file b|
000003d0 69 67 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |ig file medium f|
000003e0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile medium file.|
000003f0 6d 65 64 69 75 6d 20 66 69 6c 65 0a 6d 65 64 69 |medium file medi|
00000400 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f|
00000410 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 0a |ile medium file.|
00000420 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi|
00000430 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f|
00000440 69 6c 65 0a 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile.medium file |
00000450 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi|
00000460 75 6d 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f |um file***end o|
00000470 66 20 66 69 6c 65 2a 2a 2a 0a 69 6c 65 20 62 69 |f file***ile bi|
00000480 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 |g file big file |
00000490 62 69 67 20 66 69 6c 65 20 6a 2a 2a 2a 65 6e 64 |big file .***en|
000004a0 20 6f 66 20 66 69 6c 65 2a 2a 2a 0a 00 00 00 00 | of file***.....|
000004b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000004c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000500 00 00 00 00 a2 00 00 00 02 00 00 00 0b 00 00 00 |.....|
00000510 0c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
00000520 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000580 00 00 00 00 6d 65 64 69 75 6d 20 66 69 6c 65 20 |....medium file |
00000590 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi|
000005a0 75 6d 20 66 69 6c 65 0a 6d 65 64 69 75 6d 20 66 |um file.medium f|
000005b0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile medium file |
000005c0 6d 65 64 69 75 6d 20 66 69 6c 65 0a 6d 65 64 69 |medium file medi|
000005d0 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f|
000005e0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 0a |ile medium file.|
000005f0 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi|
00000600 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f|
00000610 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 66 69 |ile***end of fi|
00000620 6c 65 2a 2a 2a 0a 00 00 00 00 00 00 00 00 00 00 |le***.....|
00000630 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00020004
yuan@ubuntu:/tmp/tmp.RsBwH0DRQ/lab5$ ./lab5_nachos -nap medium small
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!
```



```
00020004
yuan@ubuntu:/tmp/tmp.RsBW9hD0RQ/lab5$ ./lab5_nachos -nap medium small
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 291020, idle 288100, system 2920, user 0
Disk I/O: reads 61, writes 36
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBW9hD0RQ/lab5$ ./lab5_nachos -r small
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 50520, idle 50210, system 310, user 0
Disk I/O: reads 7, writes 3
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
yuan@ubuntu:/tmp/tmp.RsBW9hD0RQ/lab5$ hexdump -C DISK
00000000 ab 89 67 45 80 00 00 00 01 00 00 00 02 00 00 00 |..gE.....|
00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000080 00 00 00 00 c8 00 00 00 02 00 00 00 03 00 00 00 |.....|
00000090 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
000000a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000100 00 00 00 00 1f 1c 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 |.....|
*
00000180 00 00 00 00 00 00 00 00 05 00 00 00 73 6d 61 6c |.....smal|
00000190 6c 00 00 00 00 00 00 00 01 00 00 00 0a 00 00 00 |l.....|
000001a0 6d 65 64 69 75 6d 00 00 00 00 00 00 00 00 00 00 |medium.....|
000001b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000280 00 00 00 00 4a 02 00 00 05 00 00 00 06 00 00 00 |...J.....|
00000290 07 00 00 00 08 00 00 00 09 00 00 00 0d 00 00 00 |.....|
000002a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000300 00 00 00 00 73 6d 61 6c 6c 20 66 69 6c 65 20 73 |...small file s|
00000310 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c 20 |mall file small |
00000320 66 69 6c 65 0a 73 6d 61 6c 6c 20 66 69 6c 65 20 |file.small file |
00000330 73 6d 61 6c 6c 20 66 69 6c 65 20 73 6d 61 6c 6c |small file small |
00000340 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 | file.**end of |
00000350 66 69 6c 65 2a 2a 2a 0a 62 69 67 20 66 69 6c 65 |file**.big file |
00000360 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 | big file big fi |
00000370 6c 65 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 |le big file big |
00000380 66 69 6c 65 20 0a 62 69 67 20 66 69 6c 65 20 62 |file .big file b |
00000390 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 |ig file big file |
000003a0 20 62 69 67 20 66 69 6c 65 20 62 69 67 20 66 69 | big file big fi |
000003b0 6c 65 20 0a 62 69 67 20 66 69 6c 65 20 62 69 67 |le .big file big |
000003c0 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 62 | file big file b |
000003d0 69 67 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |ig file medium f |
000003e0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile medium file |
000003f0 6d 65 64 69 75 6d 20 66 69 6c 65 0a 6d 65 64 69 |medium file.medi |
00000400 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f |
00000410 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 0a |ile medium file. |
00000420 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi |
00000430 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f |
00000440 69 6c 65 0a 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile.medium file |
00000450 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi |
00000460 75 6d 20 66 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f |um file.**end o |
00000470 66 20 66 69 6c 65 2a 2a 2a 0a 69 6c 65 20 62 69 |f file**.ile bi |
00000480 67 20 66 69 6c 65 20 62 69 67 20 66 69 6c 65 20 |g file big file |
00000490 62 69 67 20 66 69 6c 65 20 0a 2a 2a 2a 65 6e 64 |big file .**end |
000004a0 20 6f 66 20 66 69 6c 65 2a 2a 2a 0a 6d 65 64 69 | of file**.medi |
000004b0 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f |
000004c0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 0a |ile medium file. |
000004d0 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi |
000004e0 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f |
000004f0 69 6c 65 0a 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile.medium file |
00000500 6d 65 64 69 a2 00 00 00 02 00 00 00 0b 00 00 00 |medi.....|
00000510 0c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
00000520 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000580 00 00 00 00 6d 65 64 69 75 6d 20 66 69 6c 65 20 |...medium file |
00000590 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi |
000005a0 75 6d 20 66 69 6c 65 0a 6d 65 64 69 75 6d 20 66 |um file.medium f |
000005b0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile medium file |
000005c0 6d 65 64 69 75 6d 20 66 69 6c 65 0a 6d 65 64 69 |medium file.medi |
000005d0 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f |
000005e0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 0a |ile medium file. |
000005f0 6d 65 64 69 75 6d 20 66 69 6c 65 20 6d 65 64 69 |medium file medi |
00000600 75 6d 20 66 69 6c 65 20 6d 65 64 69 75 6d 20 66 |um file medium f |
00000610 69 6c 65 0a 2a 2a 2a 65 6e 64 20 6f 66 20 66 69 |ile.**end of fi |
00000620 6c 65 2a 2a 2a 0a 00 00 00 00 00 00 00 00 00 00 |le***.....|
00000630 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00000680 00 00 00 00 75 6d 20 66 69 6c 65 20 6d 65 64 69 |...um file medi |
00000690 75 6d 20 66 69 6c 65 0a 6d 65 64 69 75 6d 20 66 |um file.medium f |
000006a0 69 6c 65 20 6d 65 64 69 75 6d 20 66 69 6c 65 20 |ile medium file |
000006b0 6d 65 64 69 75 6d 20 66 69 6c 65 0a 2a 2a 2a 65 |medium file.**e |
000006c0 6e 64 20 6f 66 20 66 69 6c 65 2a 2a 2a 0a 00 00 |nd of file***...|
000006d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
*
00020004
yuan@ubuntu:/tmp/tmp.RsBW9hD0RQ/lab5$ nachos -l
nachos: command not found
yuan@ubuntu:/tmp/tmp.RsBW9hD0RQ/lab5$ ./lab5_nachos -l
```



```
nachos: command not found
yuan@ubuntu:/tmp/tmp.RsBW9hD0RQ/lab5$ ./lab5_nachos -l
medium
No threads ready or runnable, and no pending interrupts.
Assuming the program completed.
Machine halting!

Ticks: total 2550, idle 2420, system 130, user 0
Disk I/O: reads 4, writes 0
Console I/O: reads 0, writes 0
Paging: faults 0
Network I/O: packets received 0, sent 0

Cleaning up...
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问题及收获: